ORDINANCE NO. 1474

CITY OF LACEY

AN ORDINANCE ADOPTING MODIFICATIONS TO VARIOUS PARTS OF THE CITY'S COMPREHENSIVE PLAN, APPROVING CHANGES TO THE CITY'S COMPREHENSIVE PLAN AND ZONING MAPS, AMENDING TABLE 16T – 06 DIVISIONS F/G AND K AND SECTION 16.03.015 OF THE LACEY MUNICIPAL CODE, ADOPTING THE 2015 WASTEWATER COMPREHENSIVE PLAN UPDATE, AND APPROVING A SUMMARY FOR PUBLICATION.

WHEREAS, pursuant to the Growth Management Act as set forth in Chapter 36.70A RCW, the City may only amend the Comprehensive Plan once per year, and

WHEREAS, this annual amendment is intended to provide a coordinated review to ensure the various plan elements are consistent with each other, and

WHEREAS, owners of certain property in the City have requested modifications to the comprehensive plan and zoning maps of the City, and

WHEREAS, the Planning Commission has reviewed, conducted a public hearing and recommended approval of such applications, and

WHEREAS, the City Council finds that the approval of such applications will be in the public interest, and

WHEREAS, owners of certain property in the City have submitted application to allow multi-family residential as a permitted use in the Central Business District 7 zoning district, and

WHEREAS, the Planning Commission has reviewed, conducted a public hearing and recommends approval of such application, and

WHEREAS, the City Council finds that the approval of such application will be in the public interest, and

WHEREAS, the Planning Commission has reviewed, conducted a public hearing, and voted to forward to the Council its recommendation to adopt the City of Lacey 2015 Wastewater Comprehensive Plan Update, and

WHEREAS, the City Council finds that the adoption of said Plan will be in the public interest, NOW, THEREFORE,

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LACEY, WASHINGTON, AS FOLLOWS:

Section 1. The zoning designations shown on the Comprehensive Plan and Land Use Maps of the City for those properties shown on Exhibit A, attached hereto, are hereby changed from their current designations of Open Space Institutional and Open Space Institutional – School to Light Industrial.

Section 2. After the required modifications are made to the Comprehensive Plan and Land Use Maps of the City pursuant to the direction of Section 1, said Maps shall be designated as "Revised 2015" and identified by the approving signatures of the Mayor and City Clerk.

Section 3. Table 16-T – 06 Division F/G of the Lacey Municipal Code is hereby amended to read as set forth in Exhibit B, attached hereto.

Section 4. Table 16-T – 06 Division K of the Lacey Municipal Code is hereby amended to read as set forth in Exhibit C, attached hereto.

Section 5. That certain document entitled City of Lacey 2015 Wastewater Comprehensive Plan Update, attached hereto as Exhibit D, as the same may hereafter be amended by action of the City Council, is hereby adopted as the City of Lacey Wastewater Comprehensive Plan referenced in Section 16.03.015 of the Lacey Municipal Code as a portion of the Lacey Comprehensive Plan.

Section 6. Section 16.03.015 of the Lacey Municipal Code is hereby amended to read as follows:

Lacey Comprehensive Land Use Plan.

That certain series of documents identified as City of Lacey and Thurston County Land Use Plan for the Lacey Urban Growth Area, Housing Element for the City of Lacey and the Lacey Urban Growth Area, Environmental Protection and Resource Conservation Plan for the City of Lacey, City of Lacey Transportation Plan, City of Lacey Capital Facilities Plan, Utilities Element for the Lacey Comprehensive Plan, Comprehensive Plan for Outdoor Recreation, City of Lacey Water System Comprehensive Plan Update 2013, City of Lacey ~~2005~~ Wastewater Comprehensive Plan ~~Update~~, Lacey Urban Forest Management Plan, City of Lacey Woodland District Strategic Plan, City of Lacey Stormwater Comprehensive Plan, and Economic Development Element for the City of Lacey together with the Comprehensive Plan Downtown Element as supplemented by the City of Lacey Woodland District Guidelines and the Northeast Area Plan constitutes the Lacey Comprehensive Plan and all regulatory and zoning ordinances of the city shall be construed to be consistent with said plan as adopted or hereafter amended.

Section 7. SEVERABILITY. If any section, sentence, clause or phrase of this ordinance should be held to be invalid by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other section, sentence, clause or phrase of this ordinance.

Section 8. CORRECTIONS. The City Clerk and the codifiers of this ordinance are authorized to make necessary corrections to this ordinance including, but not limited to, the correction of scrivener's/clerical errors, references, ordinance numbering, section/subsection numbers and any references thereto.

Section 9. The Summary attached hereto is hereby approved for publication.

PASSED BY THE CITY COUNCIL OF THE CITY OF LACEY, WASHINGTON, at a regularly-called meeting thereof, held this 27th day of August, 2015.

CITY COUNCIL

By: _____
Mayor

Approved as to form:

_____
City Attorney

Attest:

_____
for City Clerk

SUMMARY FOR PUBLICATION

ORDINANCE NO 1474

CITY OF LACEY

The City Council of the City of Lacey, Washington, passed on August 27, 2015, Ordinance No. 1474, entitled "AN ORDINANCE ADOPTING MODIFICATIONS TO VARIOUS PARTS OF THE CITY'S COMPREHENSIVE PLAN, APPROVING CHANGES TO THE CITY'S COMPREHENSIVE PLAN AND ZONING MAPS, AMENDING TABLE 16T – 06 DIVISIONS F/G AND K AND SECTION 16.03.015 OF THE LACEY MUNICIPAL CODE, ADOPTING THE 2015 WASTEWATER COMPREHENSIVE PLAN UPDATE, AND APPROVING A SUMMARY FOR PUBLICATION."

The main points of the Ordinance are described as follows:

1. The Ordinance changes the zoning designation for three properties located on Marvin Rd. and Hogum Bay Rd. NE.

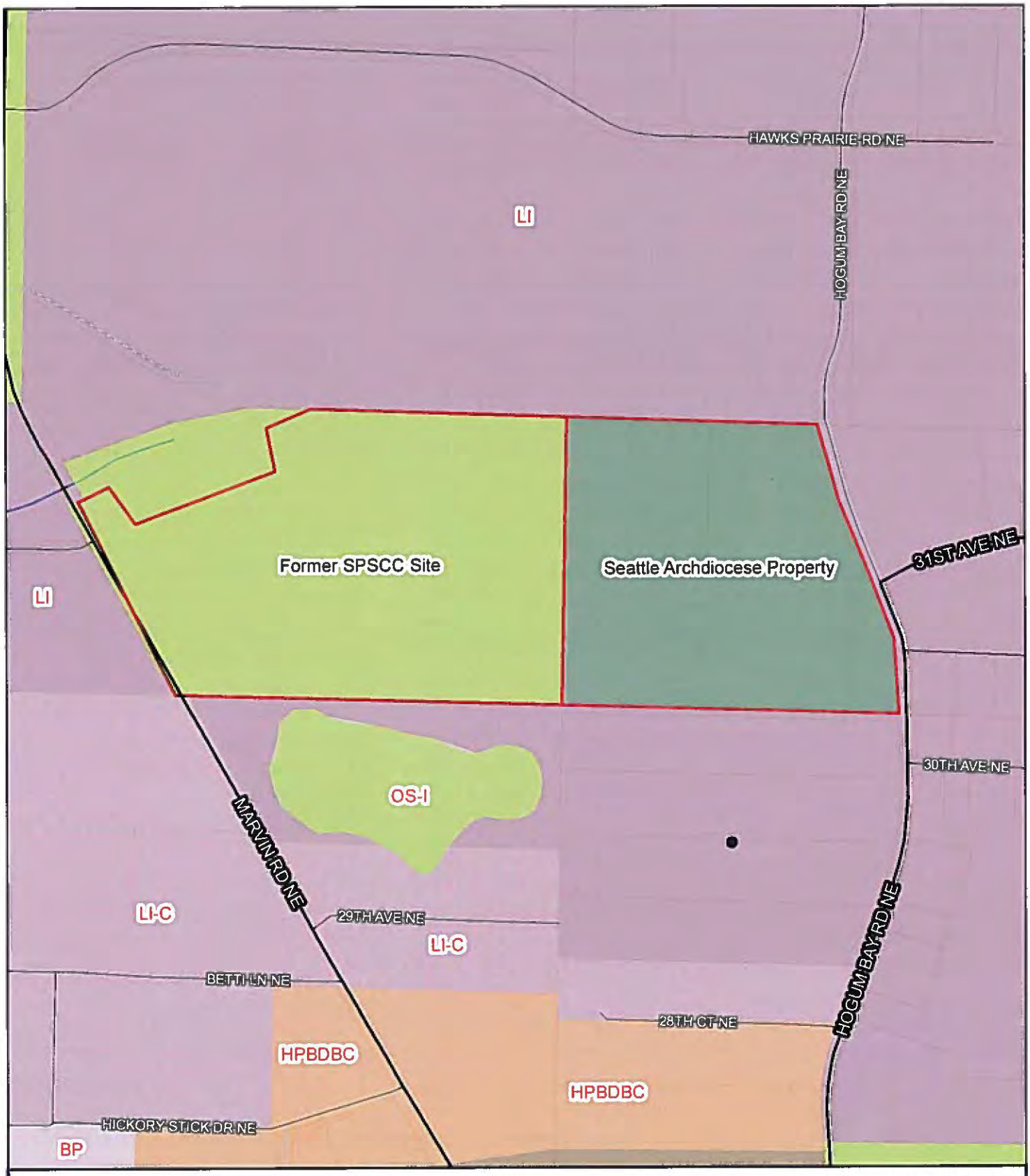
2. The Ordinance amends Table 16T – 06 of the Lacey Municipal Code.

3. The Ordinance adopts the 2015 Wastewater Comprehensive Plan Update.

4. The Ordinance approves this Summary for Publication.

A copy of the full text of this Ordinance will be mailed without charge to any person requesting the same from the City of Lacey.

Published: August 31, 2015.



Date: 1/6/2015

1 inch = 600 feet

SPSCC and Seattle Archdiocese Rezone
Existing Zoning

Document Path: K:\Users\randrews\8.5x11_2014_GC.mxd

TABLE 16T-06

GENERALIZED LAND USES IN THE CITY OF LACEY

CENTRAL BUSINESS DISTRICT (C.B.D.) AND ST. MARTIN'S UNIVERSITY ZONE

BY STANDARD INDUSTRIAL CLASSIFICATION CODES (S.I.C. CODE)

S.I.C. Codes are divided into 11 Divisions, which are listed A thru K. Under each division is a list (ing) of Major Groups(s), which are listed 01 thru 99. And listed below these are subclassifications of Auxiliary Establishments, which are usually 3 or 4 digit numbers. These correspond to major group numbers.

S.I.C. Codes are those according to the Standard Industrial Classification Manual, 1987, published by the Executive Office of the President, Office of Management and Budget, for the City of Lacey C.B.D.

The following is a list of abbreviations used on the tables:

P = Permitted Use

C = Conditional Use

A = Accessory Use

NEC = Not Elsewhere Classified

Bolded 2 Digit SIC Code = Entire Major Group

In using the following chart, the reader should also refer to notes at the end of the chart that provide specific requirements or qualifications for uses under specific categories.

' NOTE: If a business in Central Business District 4 or 5 becomes a non-conforming use under the revised listing, it shall be allowed to continue operation. Additionally, the said use shall be allowed to expand and enlarge through the conditional use permit process of Chapter 16.87 LMC provided that all other zoning code requirements can be satisfied.

CHART 16.25.020(1)

GENERALIZED LAND USES IN CBD ZONES

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DIVISION F/G. WHOLESALE & RETAIL TRADE (all uses subject to note 1)

SIC CODES	MAJOR GROUP/ESTABLISHMENTS	CBD 4	CBD 5	CBD 6	CBD 7	SMU
501	Motor Vehicles, Parts, & Supplies		P	P		
502	Furniture & Home Furnishings		P	P		
503	Lumber & Construction Materials		P			
504	Professional & Commercial Equipment		P	P		

SIC CODES	MAJOR GROUP/ESTABLISHMENTS	CBD 4	CBD 5	CBD 6	CBD 7	SMU
505	Metals & Minerals, Except Petroleum		P			
506	Electrical Goods		P	P		
507	Hardware, Plumbing, Heating Equipment		P	P		
508	Machinery, Equipment & Supplies		P	P	P	
509	Misc. Durable Goods		P	P	P	
511	Paper & Paper Products		P	P	P	
512	Drugs, Proprietaries & Sundries		P	P	P	
513	Apparel, Piece Goods, & Notions		P	P	P	
514	Groceries & Related Products		P	P	P	
518	Beer, wine & Distilled Beverages		P	P	P	
519	Misc. Nondurable Goods			P	P	
521	Lumber & Other Building Materials		P	P		
523	Paint, Glass & Wallpaper Stores		P	P		
525	Hardware		P	P		
526	Retail Nurseries & Garden Stores	P	P	P		
53	General Merchandise Stores	C	P	P	P	
54	Food Stores	C	P			
541	Grocery Stores	C	P	P		
542	Meat & Fish Markets	C	P	C		
551	New & Used Car Dealers		P			
553	Auto & Home Supply Stores		P	P		
554	Gasoline Service Stations	C	P	P		
555	Boat Dealers		P			
556	Recreational Vehicle Dealers		P			
557	Motorcycle Dealers		P			
559	Automotive Dealers, NEC		P			
56	Apparel & Accessory Stores	P	P	P	P	
57	Furniture & Homefurnishings Stores		P	P	P	
58	Eating & Drinking Places	P	P	P	P	P
58A	Fast Food Restaurants with Drive-thrum Windows and Espresso Stands		P			
591	Drug Stores & Proprietary Stores	C	P	P	P	
592	Liquor Stores	P	P	P		
593	Used Merchandise Stores		P	P		

SIC CODES	MAJOR GROUP/ESTABLISHMENTS	CBD 4	CBD 5	CBD 6	CBD 7	SMU
594	Misc. Shopping Goods Stores	P	P	P	P	
596	Nonstore Retailers	P	P	P		
598	Fuel Dealers		P			
599	Retail Stores, NEC	P	P	P	P	

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TABLE 16T-06

GENERALIZED LAND USES IN THE CITY OF LACEY

CENTRAL BUSINESS DISTRICT (C.B.D.) AND ST. MARTIN'S UNIVERSITY ZONE

BY STANDARD INDUSTRIAL CLASSIFICATION CODES (S.I.C. CODE)

S.I.C. Codes are divided into 11 Divisions, which are listed A thru K. Under each division is a list (ing) of Major Groups(s), which are listed 01 thru 99. And listed below these are subclassifications of Auxiliary Establishments, which are usually 3 or 4 digit numbers. These correspond to major group numbers.

S.I.C. Codes are those according to the Standard Industrial Classification Manual, 1987, published by the Executive Office of the President, Office of Management and Budget, for the City of Lacey C.B.D.

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In using the following chart, the reader should also refer to notes at the end of the chart that provide specific requirements or qualifications for uses under specific categories.

' NOTE: If a business in Central Business District 4 or 5 becomes a non-conforming use under the revised listing, it shall be allowed to continue operation. Additionally, the said use shall be allowed to expand and enlarge through the conditional use permit process of Chapter 16.87 LMC provided that all other zoning code requirements can be satisfied.

CHART 16.25.020(1)

GENERALIZED LAND USES IN CBD ZONES

DIVISION K. RESIDENTIAL (Not Listed in SIC Codes)

SIC CODES	MAJOR GROUP/ESTABLISHMENTS	CBD 4	CBD 5	CBD 6	CBD 7	SMU
	Single Family	P1				
	Multi Family (2-4 Units)	P2				
	Multi Family (5+ Units)	P2	P3	P	P2	
	Other Households		P3			

SIC CODES	MAJOR GROUP/ESTABLISHMENTS	CBD 4	CBD 5	CBD 6	CBD 7	SMU
	Other Residential					

...

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

June 26, 2015

Mr. Scott Egger, P.E.
Public Works Director
City of Lacey
420 College Street SE
Lacey, WA 98503-1238

Re: City of Lacey Wastewater Comprehensive Plan Update

Dear Mr. Egger:

Pursuant to RCW 90.48.110 and WAC 173-240-030, the above-referenced general sewer plan has been reviewed and is hereby approved. One copy of the cover page of the approved document is being returned for your records.

Sewage facilities within the planning area boundary shall be constructed according to the approved general sewer plan or amendments thereto. Engineering reports and plans and specifications for sewer line extensions, including pump stations, need not be submitted for approval. Prior to construction, you are required to submit a written description of the project and written assurance that the extension is in conformance with the general sewer plan. In the following situations Department of Ecology approval is necessary for sewer line extensions prior to construction:

a) The proposed sewers or pump stations involve installation of overflows or bypasses; or

b) The proposed sewers or pump stations discharge to an overloaded treatment, collection, or disposal facility.

If you have any questions concerning this approval, please contact Dave Dougherty, P.E. at (360) 407-6278 or david.dougherty@ecy.wa.gov.

Sincerely,

Richard Doenges
Southwest Region Manager

Water Quality Program

Enclosure

Acknowledgments

Wastewater Comprehensive Plan Update

April 2015

City Council

Cynthia Pratt – Deputy Mayor
Virgil Clarkson
Jeff Gadman
Lenny Greenstein
Jason Hearn
Michael Steadman

Mayor

Andy Ryder

Public Works Director

Scott Egger, P.E.

Prepared By:

BHC CONSULTANTS

This document was prepared under the direct supervision of the following Professional Engineer:

SAMUEL ADAM SCHUYLER
STATE OF WASHINGTON
39911
REGISTERED PROFESSIONAL ENGINEER
4-3-15

REVIEWED BY: APPROVED BY:
6/17/15 DATE 7/1/15

DEPARTMENT OF ECOLOGY
WATER QUALITY PROGRAM
SOUTHWEST REGIONAL OFFICE

Adam Schuyler, PE
Project Manager

PLANNING COMMISSION STAFF REPORT
November 4, 2014

SUBJECT: Public Hearing for Draft Wastewater Comprehensive Plan

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RECOMMENDATION: Hold a public hearing and make a formal recommendation on the proposed update to the Wastewater Comprehensive Plan to the City Council.

TO: Lacey Planning Commission

STAFF CONTACTS: Rick Walk, Director of Community Development
Ryan Andrews, Planning Manager RA
Brandon McAllister, Utilities Engineer BRM

ATTACHMENT(S): The full text of the Wastewater Comprehensive Plan is available here (towards the bottom of the page): http://www.ci.lacey.wa.us/city-government/reports-plans/currently-under-review

PRIOR COUNCIL/ COMMISSION/ COMMITTEE REVIEW: City Council Utilities Committee (05/13, 01/14, 06/14)
City Council Finance Committee (08/14)
Planning Commission (08/14)
Public Open House (10/14)

BACKGROUND:

The City operates the wastewater collection system serving Lacey and its Urban Growth Area. All wastewater is discharged to the LOTT Clean Water Alliance for treatment; as such, the City's system operates under the umbrella of LOTT's NPDES permit.

The Wastewater Comprehensive Plan, last updated in 2006, is the utility's long-range planning document. Its purpose is to provide documentation of the existing utility, provide guidance for future operation and expansion, and to ensure the utility's sustainability into the future. Topics addressed in the plan include utility service and extension policies, population and flow projections, analysis of existing facilities, documentation of operation and maintenance practices, capital improvement plan, and financial plan. The City does not need to directly address treatment as part of its Wastewater Comprehensive Plan (sometimes referred to as a General Sewer Plan) since LOTT provides the service. The plan's review and approval is required through the Department of Ecology.

Analyses in this plan utilize a combination of Lacey and LOTT flow monitoring data to establish current wastewater generation rates and baseline conditions. Future flow rates are then derived using population forecasts provided by TRPC, North Thurston Public Schools, and Lacey zoning. The existing collection system is then analyzed for its ability to accommodate future flows. Where deficiencies are found, improvements are recommended for inclusion in the Capital Improvement Plan. New infrastructure is sized to accommodate the current zoning of the area for which it serves.

As part of this plan, staff evaluated the relative cost of service per connection for various system alternatives. It was found that traditional lift stations have a relatively consistent fixed O&M cost regardless of size or number of connections served. This is in contrast to on-lot pressure systems where O&M costs are much more proportional to the number of connections served. This analysis led staff to recommend a minimum basin size for future lift stations based on a break-even point with on-lot pressure systems. To ensure that smaller basins can still be adequately served staff also recommended that individual grinder pumps be allowed as a substitute for lift stations when the basin size is sufficiently small. Individual STEP may also be considered when adjacent to existing STEP areas and where odor and corrosion can be controlled.

Other policy recommendations include the ownership and maintenance of individual grinder systems. Staff is currently proposing that the City own and maintain new installations of these systems in order to provide those customers an equal level of service as is provided to STEP customers.

In recent years, there has been growing concern regarding the number of septic systems located throughout urban Thurston County and their impact to ground and surface water quality. This plan recommends that Lacey continue to explore options for a regional solution and to participate in the "Septic Summit" led by LOTT.

The 6-year capital improvement program includes 28 projects totaling $22.8 million. A significant number of projects found in the CIP target operational improvements and preservation of existing infrastructure. These projects include upgrades and/or replacement of aging facilities, which minimizes long-term maintenance and operation expenses and reduces the potential for expensive emergency repairs. The proposed CIP follows Lacey's longstanding tradition that "growth pays for growth".

The accompanying financial plan is designed to fully fund the proposed CIP while maintaining current customer service levels and minimizing rate impacts. The financial plan includes one additional FTE for the operation and maintenance division to accommodate future growth of the wastewater collection system. A 5-year rate schedule has been developed to allow for smaller incremental rate adjustments and to provide predictability for existing customers. This plan 4.25% annual rate increases over the 5-year period, as well as, $5.4 million in bond revenue.

Current Status:

The Draft Wastewater Comprehensive Plan is currently available for public review. Following the public hearing, staff will address any remaining comments and prepare an agency review draft to be distributed to LOTT and the Department of Ecology. Once reviewed and approved

by DOE, the final plan will be referred to the Lacey City Council for adoption as part of the City's annual Comprehensive Plan updates in 2015.

RECOMMENDATION:

The Planning Commission will conduct a public hearing to take testimony on the update to the Wastewater Comprehensive Plan, analyze the testimony, and is requested to refer the Draft Wastewater Comprehensive Plan to the Lacey City Council for adoption as part the 2015 Comprehensive Plan updates.

GORDON THOMAS HONEYWELL

William T. Lynn
Direct: (253) 620-6416
E-mail: blynn@gth-law.com

October 31, 2014

Lacey Planning Commission
City of Lacey
420 College Street SE
Lacey, WA 98503

RE: Comprehensive Plan Update - Wastewater Comprehensive Plan

Dear Planning Commissioners:

We are writing this letter to comment on the draft Wastewater Comprehensive Plan, which the Commission will be reviewing on November 4th. We write on behalf of two different clients who have a single shared interest: How the City's Comprehensive Plan addresses sewer service to the basin in which their respective properties are located.

One of the clients, Three's Company, LLC, owns 18 acres located at 5224 15th Avenue NE. The other client, Caliber Company, Inc. owns a 15-acre parcel on the other side of 15th, east of the Three's Company property. These two owners have separate future development plans and separate engineers. The only common interest they have is in determining how sewer service will be provided to their respective properties.

Unlike other basins of the draft Plan, no clear provision is made for sewer service to this area. We believe that the only practical way to provide sewer service is through either a STEP system or grinder pumps, and that should be expressly stated in the Plan. The City has recently allowed grinder pumps to serve a development a short distance west of these parcels. An entire large development, Woodland Creek, was also converted to a STEP system from its individual septic systems. These actions do indicate that the City will accept these systems, at least in this basin. Notably, these actions diminish the number of potential participants in some other type of community sewer service improvements for the area. In essence, the only practicable alternative at this point is either a STEP system or grinder pumps.

We are happy to provide additional engineering and cost information as to these practical realities. The relatively short notice of this hearing opportunity did not permit a more detailed response.

We believe that the Wastewater Comprehensive Plan should specifically address the manner in which sewer service will be provided to this drainage basin. This basin is part of the urban growth area for which the City must have a Comprehensive Plan. That Plan must address the manner in which urban services will be practically and feasibly provided.

At this point, we simply want to go on record to state our concerns and our request that the provision of sewer service to this area be expressly described. We request that no action be taken at this time by the Planning Commission and that the hearing be continued. This would allow representatives of these two owners to get together with City staff and reach a clear understanding of how sewer service can be provided. That sewer solution should then be incorporated in the City's comprehensive planning. Thank you for your consideration.

Very truly yours,

William T. Lynn

WTL:fto
cc: Ryan Andrews, Planning Manager
Three's Company, LLC
Caliber Company, Inc.

MINUTES
Lacey Planning Commission Meeting
Tuesday, November 4, 2014 – 7:00 p.m.
Lacey City Hall Council Chambers, 420 College Street SE

Meeting was called to order at 7:00 p.m. by Gail Madden.

Planning Commission members present: Gail Madden, Mike Beehler, Carolyn Cox, Paul Enns, Cathy Murcia, Carolyn St. Claire, and Albert de Santis. Staff present: Ryan Andrews, Rick Walk, Brandon McAllister, Teri O'Neal, Scott Egger, Peter Brooks, and Leah Bender.

Gail Madden noted a quorum present.

Carolyn St. Claire made a motion, seconded by Carolyn Cox, to approve the agenda for tonight's meeting. The motion carried. Carolyn Cox made a motion, seconded by Paul Enns, to approve the meeting minutes of September 2, October 7, and October 21, 2014. The motion carried.

1. **Commission Member's Report:**
   - Paul Enns reported that he attended the North Thurston School District's tour of their upcoming projects.
   - Mike Beehler attended the opening of the Veteran's Service Office last week and thanked Rick Walk for extending the invitation to him.
   - Cathy Murcia said she attended the Veteran's Service Office opening as well and also attended the City budget presentation.
   - Gail Madden met with Debbie Gaffney of North Thurston School District and learned that there are 500 students registered as homeless.

2. **Director's Report:**
   - Rick Walk noted that the Council meeting schedule has adjusted to accommodate the holidays and that a public meeting will be held on November 13 instead of a worksession.

3. **Public Comments:**
   - Valerie Partridge addressed Planning Commission regarding the plans for the vactor facility in the pit facility on Martin Way. Ms. Partridge lives in The Park neighborhood adjacent to the site. Numerous trees will be removed and Ms. Partridge, as well as The Park HOA members and other residents, are very concerned about how this will affect the property values. The tree buffer also provides a sound barrier between the neighborhood and Martin Way, and acts as slope stabilization.
   - Rick Walk pointed out that the project is still in the site plan review process and the comment period is ending soon. He also noted that Public Works held an open house prior to notification of the project.

4. **Public Hearing:**
   Draft Wastewater Comprehensive Plan:
   - Ryan Andrews gave some background information and shared written comments submitted by William Lynn.
   - Brandon McAllister noted that the purpose of the Plan is to provide a long range plan for the City's wastewater system and is updated every six years.
   - Brandon gave a PowerPoint presentation which gave an overview summary of the Plan.
   - Robert Patrick with Patrick Harron & Associates addressed the Planning Commission. He represents Threes Company LLC, which owns property on 15th Avenue NE. Sewer service is not currently available at that location. The property owner is concerned about the expense they would incur to meet the conditions of hooking up to sewer service. The property owner asked that Planning Commission wait for one month before recommending the Plan to Council to allow them more time to come up with a better proposal.
   - There was a discussion about different systems and how they are chosen.
   - Staff noted that waiting to refer the Plan to Council will not be a problem.
   - **Carolyn Cox made a motion, seconded by Mike Beehler, to defer recommending to Council until the first meeting in December. All were in favor, the motion carried.**
   - Gail Madden closed the public hearing at 7:45 p.m.

5. **Old Business:**
   Sign Ordinance Update:
   - Ryan introduced Bob Bengford with Makers, the consultant hired by the City to assist with the sign ordinance amendment.
   - Ryan gave some background information and noted that since the initial kickoff at the March 20, 2014, Council meeting, there have been seven sign committee meetings and three public meetings.
   - Bob went over the issues with the existing code and introduced the proposed solutions.
   - There was a discussion about departures, which is a new feature of the ordinance. This would allow for administrative variances and would be an administrative review with a decision made by the Community Development Director.
   - The next step will be a public hearing to be held on November 18.
   - Rick thanked Bob, Makers, Ryan, and the Sign Committee for all the time and effort they've put into amending the ordinance.

6. **Communications and Announcements:**
   - Rick announced that the Washington State Transportation Commission will hold a meeting in two weeks to discuss the I-5 Corridor between Lakewood and Lacey. Council, Planning Commission, and Staff have been invited. Staff will give a presentation, and Planning Commissioners are encouraged to attend.
   - Gail thanked Mike for acting as Chair in her absence.

7. **Next meeting:** November 18, 2014.

8. **Adjournment:** 9:05 p.m.

PLANNING COMMISSION STAFF REPORT
December 2, 2014

SUBJECT: Draft Wastewater Comprehensive Plan

RECOMMENDATION: Make a formal recommendation on the proposed Wastewater Comprehensive Plan to the City Council.

TO: Lacey Planning Commission

STAFF CONTACTS: Rick Walk, Director of Community Development
Ryan Andrews, Planning Manager RA
Brandon McAllister, Utilities Engineer BRM

ATTACHMENT(S): Attachment "A" (Sewered Areas)
Attachment "B" (Zoning and Basin Boundary)

PRIOR COUNCIL/ COMMISSION/ COMMITTEE REVIEW: City Council Utilities Committee (05/13, 01/14, 06/14)
City Council Finance Committee (08/14)
Planning Commission (08/14)
Public Open House (10/14)
Public Hearing (11/14)

BACKGROUND:

On November 4, 2014 the Lacey Planning Commission held a public hearing regarding the Wastewater Comprehensive Plan. During the hearing, representatives of Three's Company LLC provided comment regarding the method by which they were to provide sewer service to their proposed residential development adjacent to 15th Ave NE. Their primary points were that the installation of a traditional gravity/pump station sewer collection system would be cost prohibitive and that other nearby properties had been allowed to utilize pressure sewer collection systems such as STEP and Grinder pumps. The Planning Commission granted Three's Company one month to provide further analysis before making a formal recommendation to the Lacey City Council. City staff has provided additional information to the representatives of Three's Company for use in their analysis, as requested.

STAFF ANALYSIS:

The Wastewater Comprehensive Plan is intended to be a planning tool and does not attempt to address sewer system design issues on a project specific level. Instead, the Wastewater Plan attempts to divide the entire sewer service area into smaller basins delineated primarily based on topography and existing infrastructure. This results in smaller areas that are expected to share common characteristics such as a common type of sewer service or a common discharge location. Because the intent is to provide a high-level overview of the entire utility, minor changes and deviations from the plan are to be expected when reviewed on a project specific level, Policy #13 provides developers the ability to request such deviations through the Public Works Department.

Three's Company correctly pointed out that two other projects in the area have been allowed to utilized either STEP or Grinder sewer systems, the location of these projects are shown in Attachment "A" and are identified as Burton Ray Gardens and Woodland Creek Estates. Burton Ray Gardens, approximately 30 single family homes, had obtained a written agreement some years ago from a prior Public Works Director. This agreement pre-dates the current gravity/pump station proposal for this basin and the City was obligated to honor the previous agreement even though sewer plans for this basin had since changed. Woodland Creek Estates is an existing development which was required to convert from septic systems to sewer due to public and environmental health concerns. During the design phase of this project several alternative sewer systems were considered and ultimately STEP was found to be the best alternative. A gravity/pump station collection system was ruled out due to elevation conflicts with the existing plumbing originating from the homes and because the potential pump station sites were too close to Woodland Creek.

During development of the Wastewater Plan staff analyzed the typical life-cycle costs of various types of sewer service. This analysis included costs for the initial installation, operation/maintenance, and the eventual repair/replacement over a 100 year period. The results showed that both STEP and Grinder collection systems are cost competitive when serving areas of approximately 150 residential service connections, when serving areas larger than 150 residential service connections it was found that the installation of a central pump station became more cost effective (these results can be found in section 4.3 of the Wastewater Plan). This led to the additional qualifiers found in Policy #13, where the various basins would be identified as either STEP or gravity. STEP basins would be located where existing STEP infrastructure is already in place. In all other areas, gravity would be the preferred method of sewer service, but where gravity is not feasible due to topography either a pump station or individual grinder pumps would be allowed depending on the 150 service connections mentioned previously. The final version of the Wastewater Plan will include a map that more clearly illustrates the distinction between STEP basins and gravity basins.

In 2007 Hatton Godat Pantier completed a sewer basin study in this area of 15th Ave NE, which serves as the basis for the current gravity/pump station concept. Their analysis showed that there was sufficient development potential in this basin to justify a pump station. Their estimates showed that as many as 900 equivalent dwelling units (EDU's) could potentially be served either directly or indirectly by a pump station in this area. In fact, the developer had actually started the project and installed a portion of the necessary sewer infrastructure prior to the recession when the project failed. Attachment "A" shows the parcels which are currently connected to sewer in the vicinity of 15th Ave NE, while Attachment "B" shows the current zoning for the same area. These two figures together suggest that there is still a

significant amount of development potential in this area, which staff believes can be more effectively served by a traditional gravity/pump station arrangement. When accounting for only undeveloped parcels in this area and assuming average densities for each zoning category it's likely that 450 – 600 additional EDU's will ultimately need access to sewer. Even if the entire area were to build-out at the minimum permissible densities, the estimated number of additional EDU's would be 250, easily exceeding the 150 EDU threshold.

The original infrastructure design included a gravity sewer main in 15th Ave NE with a maximum depth of roughly 25 ft. While installation of deep sewers, along with the associated roadway restoration can be a financial challenge; it's important to remember that each project along 15th Ave NE will also be responsible for roadway widening and frontage improvements that somewhat mitigate the restoration expense associated with the sewer installation. Additionally, the current infrastructure design was based on a specific development proposal at that time. Staff is willing to entertain alternative sewer alignments and pump station locations that may allow for reduced installation costs, provided that those alternatives are compatible with the land use goals in this area. The City also offers Latecomer Agreements as a way for developers to recoup a portion of their initial investment or ULID's as a means for financing the project over time.

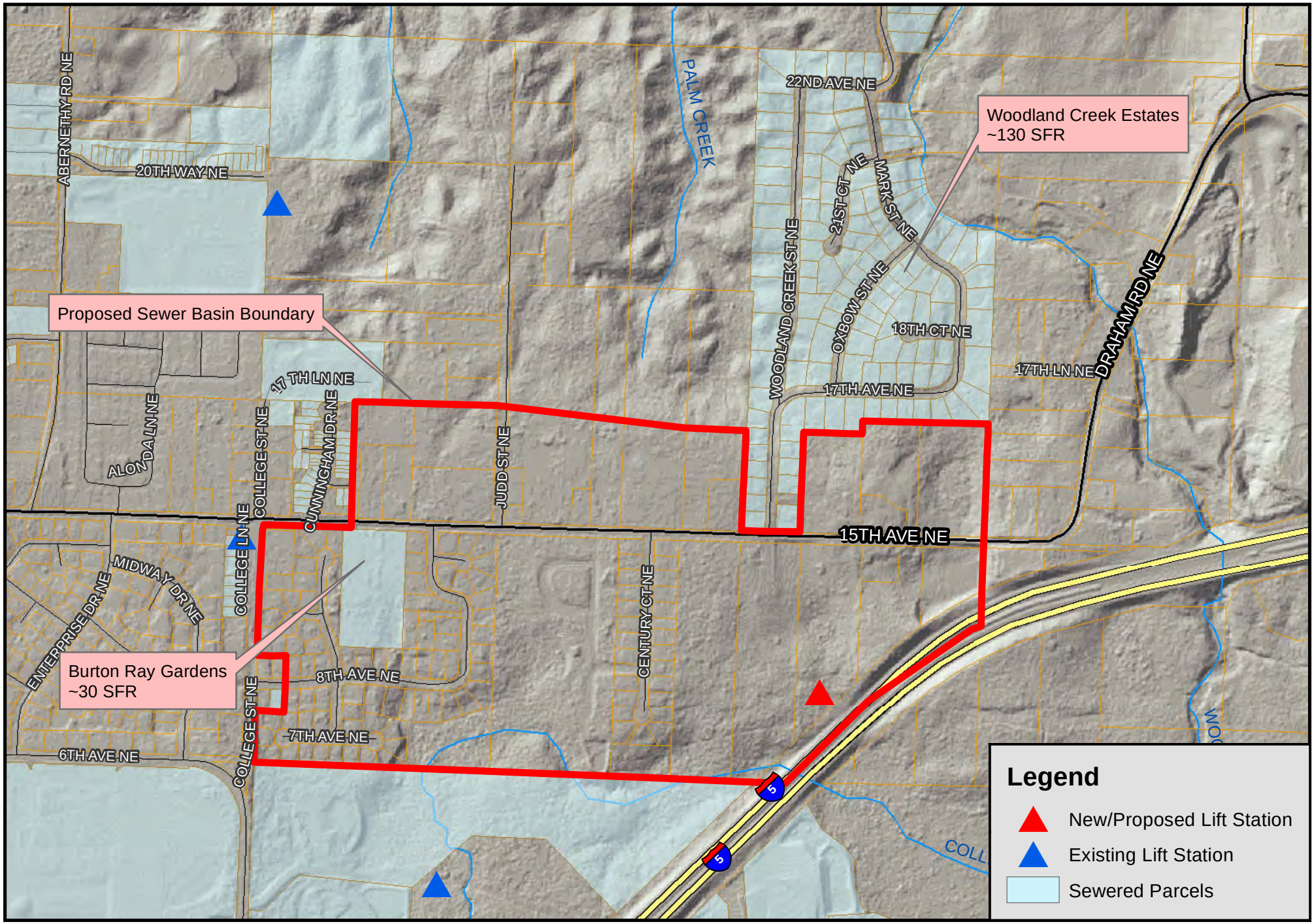
Even beyond the question of cost-effectiveness, there are additional operational and logistic concerns that lead staff to believe a gravity/pump station arrangement is a better alternative for this basin. By reviewing the zoning designations shown in Attachment "B" it becomes clear that the City's vision for the 15th Ave corridor includes high density housing options, including multi-family and townhome type structures. STEP sewer collection systems do not tend to fit well in these types of neighborhoods. STEP systems work like a septic system, except that they pump to a sewer system rather than a drain-field. This generally requires that a tank be installed in the front yard for each home. Low density residential housing typically allows enough front yard space to accommodate these tanks, but high density housing generally does not, making tank placement and maintenance access nearly impossible. Adopting STEP as a sewer alternative for this area would likely limit the densities achievable along this corridor. Grinder pump systems face a similar challenge, since they also utilize an on-lot pumping system. Grinder pump collection systems also require that a minimum line velocity be met to move solids in the waste stream, this limits the ability to size infrastructure for future growth in areas that may build-out slowly over time. Gravity and pump station collection systems are better suited for the types of housing normally found in high and moderate residential zoning areas. Gravity systems don't require the on-lot tanks that the other alternatives do, allowing for much higher densities and multi-family options. They are also better able to accommodate over-sizing of infrastructure, which allows growth to occur over time.

Staff believes that it's important to choose sewer alternatives based on a basin wide scale that will be able to accommodate the full range of land uses identified for an area. Given the topography, development potential, and the City's desire to promote multi-family housing options along the 15th Ave NE corridor; staff recommends a gravity/pump station sewer collection system as the best alternative for this basin.

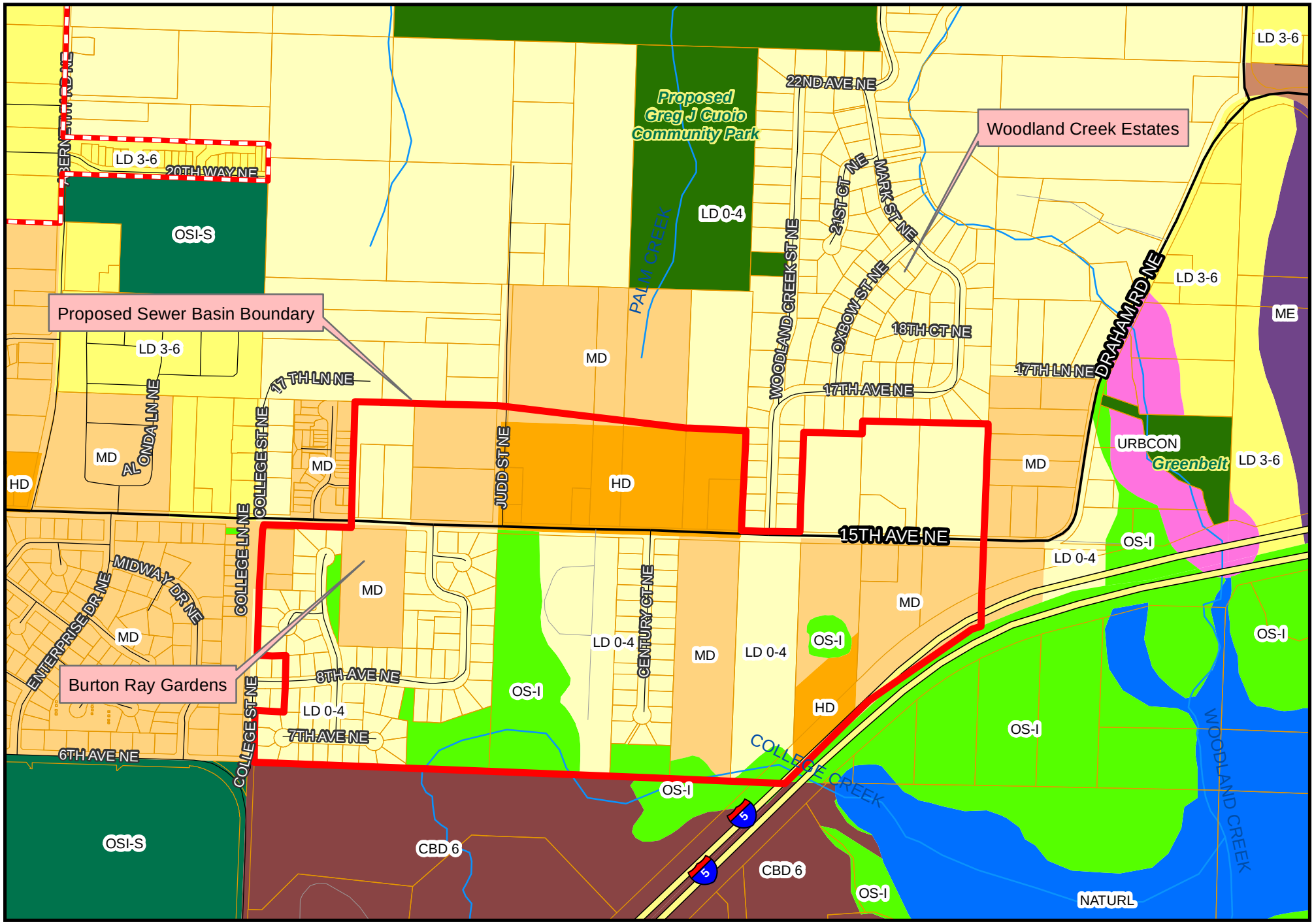
RECOMMENDATION:

The Planning Commission is asked to refer the Draft Wastewater Comprehensive Plan to the Lacey City Council for adoption as part the 2015 Comprehensive Plan updates.

Attachment "A" (Sewered Areas)



Attachment "B" (Zoning and Basin Boundary)



MINUTES
Lacey Planning Commission Meeting
Tuesday, December 2, 2014 – 7:00 p.m.
Lacey City Hall Council Chambers, 420 College Street SE

Meeting was called to order at 7:00 p.m. by Gail Madden.

Planning Commission members present: Gail Madden, Mike Beehler, Carolyn Cox, Paul Enns, Albert de Santis, and Carolyn St. Claire. Staff present: Ryan Andrews, Rick Walk, Christy Osborn, Brandon McAllister, Teri O'Neal, and Leah Bender.

Gail Madden noted a quorum present.

Paul Enns made a motion, seconded by Carolyn St. Claire, to approve the agenda for tonight's meeting. The motion carried. Carolyn Cox made a motion, seconded by Carolyn St. Claire, to approve the November 18, 2014, meeting minutes. The motion carried.

1. **Public Comments:** None.

2. **Commission Member's Report:** None.

3. **Director's Report:**
   - Rick Walk noted that the HVAC system is being updated during tonight's meeting.
   - Rick informed Planning Commission that the street tree ordinance will go before Council for a work session on January 15, 2015.
   - Rick noted that so far we have received six applications for the vacant Planning Commission position. Interviews will be set up in January.

4. **Public Hearing:**
   Wetland Buffer Rating System Revisions:
   - Christy Osborn explained that Department of Ecology has updated the state wetland ratings system, which requires the City of Lacey to update the wetland chapter of the Critical Areas Ordinance and amend the Shoreline Master Program.
   - Christy went over the changes and clarifications that were made.
   - Christy stated that the Land Use Committee reviewed the draft and made no changes. The Committee suggested that staff contact Olympia Master Builders to allow them an opportunity to comment. Christy forwarded the draft to OMB, they had no comment.
   - Christy noted that she received an email from Carolyn Cox expressing concern about the in lieu fee. Christy explained that the section only allows the City to set up an in lieu program and the establishment of any program would require a separate public process.
   - Carolyn Cox thanked staff for considering her comments and for clarifying the section. She stressed the importance of getting it right and noted that other jurisdictions have not done so and had problems arise later as a result.
   - Carolyn St. Claire asked about the removal of the state manual and asked if the City complies with Federal or State. Christy explained that the State manual was done away with and the amended chapter makes it clear that we comply with the Federal manual, as has been done for several years.
   - No public testimony was given.
   - **Mike Beehler made a motion, seconded by Carolyn Cox, to recommend the amendments to Council for adoption. All were in favor. The motion carried.**

5. **Old Business:**
   Wastewater Comprehensive Plan:
   - Ryan Andrews explained that a public hearing was held on November 4. The City received written comments from Bill Lynn, and Bob Patrick addressed Planning Commission, expressing the concerns of property owners in the area around 15th Avenue NE related to the extension of sewer to the area. The property owners were concerned that installing gravity sewer and lift station in the area would be cost prohibitive for future potential development. Planning Commission agreed to wait one month before making a recommendation to Council.
   - Brandon McAllister gave a summary of staff analysis and noted that the Wastewater Comp Plan is intended to be a planning tool and does not attempt to address sewer system design issues on a project specific level.

- Brandon noted that property owners of some existing developments have been allowed to use STEP or grinder pump systems as part of a previous agreement with the City and because of immediate public health concerns for properties adjacent to Woodland Creek.
- Staff has determined that based on the topography and zoning for the area, the best option is a gravity/pump station sewer collection system.
- Bill Lynn addressed Planning Commission. He represents 3's Company LLC and Caliber, and he and his clients appreciate that they were given more time, and hope that Planning Commission will consider their concerns. He explained that this project would be very cost prohibitive and very detrimental to his clients. Sewer connection costs would be so high that it would tie up projects for years. Mr. Lynn noted that latecomers and LID are not good options.
- Steve Hatton addressed Planning Commission. He noted that he had a client who owned property in that area. He suggested that the Comp Plan identify STEP as the preferred sewerage method because the previous client's properties have been divided into various ownerships and makes a gravity system less financially feasible because the capital costs would be borne by individual owners rather than just one larger ownership.
- Chris Cramer with Patrick Harron addressed Planning Commission. He explained that the cost for connections per lot would be estimated at $10,000 per lot and that it would make the cost so high that it would not be feasible to develop if the area developed out at the minimum density. He estimated that the cost of either STEP or grinder system would be estimated at about half of that cost.
- Ryan stated that even though the initial installation cost for STEP/grinder may be less expensive, the long term operations and maintenance cost would be higher and would be paid by the City through utility rates.
- Carolyn St. Claire pointed out that it is a fact of life that undeveloped areas will eventually be developed. She said Planning Commission should support the decision staff has made.
- Mike Beehler noted that the issues are beyond the scope of Planning Commission's knowledge and may not be appropriate for them to decide.
- Teri O'Neal reiterated that the Wastewater Comp Plan is a planning tool and not intended to address specific projects and the reason this is being considered is because of the comment letter we received. The Plan does not address this specific area in question nor does it address what type of system is appropriate.
- **Carolyn St. Claire made a motion, seconded by Mike Beehler, to recommend the Wastewater Comp Plan to Council. All were in favor. The motion carried.**
- Ryan pointed out that the Plan will go before Council in July along with other Comp Plan updates.

Sign Ordinance Update:

- Ryan Andrews noted that a public hearing was held on November 18. Planning Commission decided to give further consideration to the comment letter from the Wig Property Group. Ryan went through the draft ordinance and discussed changes that were made at the request of Wig Properties and Planning Commission.
- Rick noted that it has been suggested that the City develop, in conjunction with the Lacey Chamber and local businesses, a best practices document to have available at the front counter to aid business owners by discussing the challenges regarding the permit process, signage, location, etc.
- Carolyn St. Claire said the new ordinance is much better than the old one.
- Gail Madden commended Ryan for all the work he's done on the ordinance.
- Ryan noted that the Sign Ordinance Committee and the consultant did a great job.
- **Paul Enns made a motion, seconded by Carolyn Cox, to forward the Sign Ordinance to Council. All were in favor. The motion carried.**
- Carolyn Cox said Ryan did a great job addressing the Wig Property comments.

6. **Communications and Announcements:** Ryan informed Planning Commission that Peter Brooks will give a presentation regarding sewer and the Septic Summit in the near future.

7. **Next meeting:** December 16, 2014.

8. **Adjournment:** 8:50 p.m.

CITY OF LACEY

Wastewater Comprehensive Plan Update

April 2015

BHC CONSULTANTS

LACEY

Acknowledgments

Wastewater Comprehensive Plan Update

April 2015

City Council

Cynthia Pratt – Deputy Mayor
Virgil Clarkson
Jeff Gadman
Lenny Greenstein
Jason Hearn
Michael Steadman

Mayor

Andy Ryder

Public Works Director

Scott Egger, P.E.

Prepared By:

BHC CONSULTANTS

This document was prepared under the direct supervision of the following Professional Engineer:

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PROFESSIONAL ENGINEER

4-3-15

Adam Schuyler, PE
Project Manager

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Appendices

List of Abbreviations

AFSCME	American Federation of State, County and Municipal Employees
AMMS	Automated Maintenance Management System
BITP	Budd Inlet Treatment Plant
CCTV	Closed Circuit Television
CERB	Community Economic Revitalization Board
CIP	Capital Improvement Plan
City	City of Lacey
CMOM	Capacity Management, Operation, and Maintenance
DOE	Department of Ecology
DOH	Department of Health
DWF	Dry Weather Flow
EM	Emergency Maintenance
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERU	Equivalent Residential Unit
FOG	Fats, Oils, and Grease
FSM	Full Service Maintenance
FTE	Full Time Employee
GFC	General Facilities Charge
GIS	Graphical Information Systems
GMA	Growth Management Act
GO	General Obligation
gpcd	Gallons Per Capita Per Day
gpd	Gallons Per Day
gped	Gallons Per Employee Per Day
gpsd	Gallons Per Student Per Day
GSP	General Sewer Plan
HTE	
idm	Inch-Diameter Mile
I/I	Infiltration and Inflow
JBLM	Joint Base Lewis-McChord
LAMIRD	Limited Area of More Intense Rural Development
LCA	Latecomer's Agreement
L&I	Labor and Industries
LID	Local Improvement District
LOSS	Large On-Site Septic System
LOTT	Lacey-Olympia-Tumwater-Thurston County Clean Water Alliance
LS	Lift Station
mgd	Million Gallons per Day
MWPS	Martin Way Pump Station
MWRWP	Martin Way Reclaimed Water Plant
NEPA	National Environmental Protection Act
NPDES	National Pollutant Discharge Elimination System
OC	Odor Control
OCC	Operations Control Center
OCF	Odor Control Facilities
O&M	Operation and Maintenance

PACP	Pipeline Assessment and Certification Program
Plan	Wastewater Comprehensive Plan Update
PM	Preventative Maintenance
POTW	Publicly Owned Treatment Works
PUD	Public Utility District
PVC	Polyvinyl Chloride
PWB	Public Works Board
RAC	Regional Athletic Complex
RCW	Revised Code of Washington
RDII	Rain-Dependent Infiltration/Inflow
RM	Routine Maintenance
SCADA	Supervisory Control and Data Acquisition
SEPA	State Environmental Policy Act
SOERP	Sewer Overflow Emergency Response Plan
SP	Special Projects
SRF	System Reinvestment Funding
STEP	Septic Tank Effluent Pump
TCWRC	Thurston County Waste and Recovery Center
TDH	Total Dynamic Head
TRPC	Thurston Region Planning Council
UGA	Urban Growth Area
UGMA	Urban Growth Management Area
ULCA	Updated Land Capacity Analysis
ULID	Utility Local Improvement District
USEPA	United States Environmental Protection Agency
WAC	Washington Administrative Code
WEF	Water Environment Federation
WO	Work Order
WOW	Washington Operator Workshop
WWTP	Wastewater Treatment Plant

Executive Summary

E.1 Introduction (Chapter 1)

The City of Lacey's (City) Wastewater Comprehensive Plan Update (Plan) reviews the City's current sewage capacities, analyzes the impact of projected growth on the City's sewage collection and conveyance system, an proposes a Capital Improvement Program to alleviate system deficiencies. It also documents the utility's policies, operation and maintenance practices, and financial condition.

The City is located in north-central Thurston County directly east of the City of Olympia and approximately six miles west of Joint Base Lewis-McChord (JBLM). The location is shown on Figure 1-1. The City is bounded to the east by the Nisqually National Wildlife Refuge and unincorporated Thurston County. The northernmost portion of the City abuts the Puget Sound. The surrounding area is a combination of rural, suburban, and agricultural lands.

The City was incorporated in 1966 and is primarily residential with some commercial areas and industrial activity. The wastewater service area includes the City Limits and Urban Growth Area boundaries.

The City owns, operates and maintains existing wastewater collection and conveyance facilities that provide sewer service to the City's current service area of approximately 13,800 acres. The collection system consists of gravity sewers, pump stations, force mains, septic tank effluent pump (STEP) systems, and grinder pump systems; all of these facilities collect and convey wastewater to the Budd Inlet Treatment Plant (BITP) and the Martin Way Reclaimed Water Plant (MWRWP), which are owned and operated by the Lacey-Olympia-Tumwater-Thurston County Clean Water Alliance (LOTT). The City does not own any wastewater treatment facilities.

This Plan complies with the Washington State Department of Ecology (DOE) regulations for general sewer plan (Washington Administrative Code [WAC] 173-240-050).

E.2 Service Area Characteristics (Chapter 2)

The City has a number of lakes and creeks within the urban growth area (UGA) boundary. Of these, Woodland Creek appears on the Washington Department of Ecology's Water Quality Assessment list [303(d)] for impaired water bodies for fecal coliform, dissolved oxygen, instream flow, pH, and temperature.

The soils in the City consist primarily of glacial outwash and glacial till.

There are critical areas throughout the City which will limit development. Most of these areas are wetlands, floodplains, protected habitat for bald eagle and woodland duck, geologically sensitive areas, and aquifer protection areas. Several species of fish are also present, of which Chinook and Steelhead are federally listed as threatened. Chinook is also listed by Washington State as a candidate.

A majority of the City's water supply comes from 20 active wells. There is also a supply intertie with the City of Olympia and nine emergency interties with Olympia, Thurston County PUD, Pattison, and Meadows water systems.

E.3 Existing and Future Population Forecasts (Chapter 3)

The projected population for the City over the planning horizon of this Plan is presented in Table E-1. Employment and population data were provided by the Thurston Region Planning Council (TRPC). Student population was provided by school districts and individual private schools. Build-out projections are for modeling purposes only and were calculated assuming the highest density possible based on current zoning.

Table E-1 Population Forecasts for the City of Lacey and its Municipal UGA

Year	Population	Employment	Students
2010	75,611	29,073	17,503
2018	85,098	33,509	24,182
2032	104,064	41,271	39,026
Build-out	116,150	45,300	41,962

E.4 Regulations and Policies (Chapter 4)

The City manages its wastewater utility in accordance with established wastewater system policies. The policies provide a consistent framework for the design, operation, maintenance, and service of the wastewater system for appropriately implementing programs, designing new infrastructure, and serving additional customers. The policies defined in this plan pertain solely to the wastewater system; the City has additional land use, development, and finance policies that may specify additional requirements for development or extension of a wastewater service. The City's policies and criteria are summarized in Chapter 4, and include the following major categories:

- Compliance with Regulations and Contractual Agreements
- Utility Planning
- Stormwater Separation
- Fats, Oils, Grease and Pretreatment
- Community Septic Systems – Ownership and Maintenance
- Individual and Community Septic Systems – Connection to City Sewer System
- Reclaimed Water - Priority Uses
- Design Standards
- Construction standards
- Ownership and Maintenance – Gravity
- Ownership and Maintenance – STEP
- Ownership and Maintenance – Grinder Pumps
- Sewer Extensions

E.5 Existing Wastewater Facilities (Chapter 5)

There are approximately 743,000 feet of gravity sewers in the collection systems.

There are 47 lift stations within the City's sewer system; 20 are STEP stations and 27 are conventional lift stations. 18 lift stations have been built since the adoption of the 2005 Plan. The City owns approximately 80,000 feet of sewer force mains for conveying wastewater to the treatment plant or to downstream gravity conveyance piping.

The City has approximately 3,900 customers served by septic tank effluent pump (STEP) systems. The City owns approximately 275,000 feet of STEP main, and there is an additional 2,500 feet of privately owned STEP main.

The City's sewer system has been analyzed by a computer model in three main basins and 124 mini-basins. The Martin Way basin consists of all areas tributary to the LOTT owned Martin Way Pump Station. The Sleater Kinney North basin includes all areas downstream of the Martin Way Pump Station and upstream of the discharge point to the LOTT conveyance system, which corresponds to LOTT flow monitoring station L6. The Sleater Kinney South basin includes all areas tributary to LOTT flow monitoring station L7. These three basins account for the entire Urban Growth Area (UGA) boundary, and are further subdivided into mini-basins as shown on Figure C-1.

E.6 Wastewater Flow Characteristics (Chapter 6)

The unit flows used to model the City's collection system are presented in Table E-2.

Table E-2 Unit Flows

Year	Annual Average Residential Flow (gpcd)	Annual Average Commercial Flow (gped)	Average Annual Student Flow (gpsd)	Martin Way Peak Hour I/I (gpd/idm)	Sleater-Kinney Peak Hour I/I (gpd/idm)	Peak Day Factor	Peak Hour Factor
2012	65	24	10	953	5,106	1.52	2.22
2018	65	24	10	993	5,320	1.52	2.22
2032	65	24	10	1,086	5,821	1.52	2.22
Buildout	65	24	10	1,220	6,536	1.52	2.22

Abbreviations: gallons per capita per day (gpcd), gallons per employee per day (gped), gallons per student per day (gpsd), gallons per day (gpd), inch-diameter mile (idm)

E.7 Wastewater Conveyance Analysis (Chapter 7)

The existing wastewater conveyance system was analyzed using the InfoSWMM modeling platform. The projected populations and their distributions are the basis for establishing future system requirements. The model was developed using information from the City's GIS database, supplemented by selected as-built drawings, pump records, flow monitoring data, and LOTT flow monitoring and infiltration/inflow reports. The model was calibrated using flow monitoring data from the City and from LOTT for dry weather, average annual, peak day, and peak hour flow conditions.

The design capacity of the gravity mains is considered to be 80 percent depth (0.80 d/D ratio), which is equivalent to 87 percent of the hydraulic capacity. The maximum design capacity of STEP mains and force mains are exceeded when flow velocities are greater than 8 feet per second. The firm capacity of a lift station is defined as the capacity of the lift station with the largest pump out of service. When model simulation results exceed these design capacities in piping or in lift stations, they are identified as deficient and system improvements are identified to resolve them.

Where pipe sections were identified as requiring an upgrade, the proposed upgrade was sized to provide capacity equal to or greater than the estimated build-out flows according to the design criteria above.

At lift stations where the estimated peak hour flows were shown to exceed the current firm capacity, a suitable build out upgrade flow capacity was estimated and incorporated into the model for the improved system model runs. This enabled the impact of the increased flow on the downstream sewer network to be investigated. It is unlikely that the mechanical and electrical improvements to the lift stations will be sized for the build-out conditions.

Projected wastewater flows for the major basins are presented in Tables E-3 and E-4. Peaking factors were calculated from model output, and differ from those in Table E-2 which were calculated based on measured flow from the entire City sewer system. Changes in different model runs differ based on projected changes in population and infiltration and inflow.

Table E-3 Projected Wastewater Flows, Sleater Kinney South Basin

Year	Sewered Population	Average Annual Flow (mgd)	Peak Day		Peak Hour	
			Peaking Factor	Flow (mgd)	Peaking Factor	Flow (mgd)
2012	6,845	0.88	2.32	2.04	3.375	2.97
2018	7,204	0.97	2.26	2.19	3.26	3.16
2032	7,817	1.15	2.16	2.48	3.04	3.50
Build-Out	8,045	1.20	2.23	2.68	3.19	3.83

Abbreviation: million gallons per day (mgd)

Table E-4 Projected Wastewater Flows, Martin Way/Sleater Kinney North Basin

Year	Sewered Population	Average Annual Flow (mgd)	Peak Day		Peak Hour	
			Peaking Factor	Flow (mgd)	Peaking Factor	Flow (mgd)
2012	35,228	2.93	1.49	4.36	2.36	6.91
2018	48,559	3.72	1.40	5.22	2.17	8.06
2032	72,149	5.19	1.41	7.34	2.04	10.58
Build-Out	108,105	8.36	1.22	10.24	1.76	14.69

Abbreviation: million gallons per day (mgd)

E.8 Collection Facilities Improvements (Chapter 8)

The 6-year capital improvement projects as determined by model results and the City desired improvements are presented in Table E-5.

Table E-5 Opinion of Probable Project Costs, 6-Year CIP (2014-2019)

CIP No.	Project	Opinion of Probable Project Cost
1	Wastewater Comprehensive Plan Update (recurring)	$45,000
2	LS-25 and LS-31 Retrofit	$1,023,000
3	Steilacoom Road Lift Station	$3,650,000
4	Tanglewilde East ULID	$3,764,000(2)
5	College Street and Martin Way ULID	$750,000
6	STEP Main Air/Vac's	$224,000
7	LS-18	$690,000(1)
8	Lakeview Drive Gravity Main Phase 1	$500,000
9	LS-15 Generator/Flow Meter	$350,000
10	Avonlea Odor Control	$100,000
11	Train Depot	$62,000
12	Carpenter Road STEP Upgrades	$50,000
13	Lift Station 2 - Lift Station, Gravity, and Force Main Replacement	$1,610,000
14	Rumac St STEP Main	$1,000,000
15	Mullen Road Force Main	$500,000
16	College Street Repair	$100,000
17	Annual Sewer Line Replacement	$300,000
18	FOG/Fibrous Wipes Pilot Program	$50,000
19	Generator/Flow Meter LS-22, LS-23, LS-17, LS-20	$800,000
20	LS-49 Land Purchase	$120,000
21	LS-12 Abandonment	$200,000(3)
22	Sleater Kinney Gravity Main Improvements	$1,300,000
23	Lift Station Rehab (Phase 1)	$1,900,000
24	Lift Station Rehab (Phase 2)	$2,850,000
25	Lift Station and STEP System Flow Meters	$690,000(4)
26	Sewer Main Replacement (50th Ave)	$210,000
27	Chemical Storage Tank Replacement	$150,000
28	Sewer Main Replacement (34th Ave)	$60,000
	Total Opinion of Probable Project Cost	**$23,048,000**

Notes:
1) Costs for LS-18 only include construction costs. Other project costs were previously expended.
2) Tanglewilde East is expected to be financed using bonds, to be repaid with funds from the ULID.
3) LS-12 Abandonment includes land acquisition and allied costs. Construction will occur in 2020 and is not included in the 6-year CIP.
4) Lift Station and STEP System Flow Meters construction will continue into 2020. The 2020 construction costs are not included in the 6-year CIP.

E.9 Wastewater Reuse (Chapter 9)

LOTT treats and disposes of all of the City's sewage and produces reclaimed water at two treatment plants. The Class A reclaimed water produced by LOTT is available to the City and other partner jurisdictions, who then distribute the water to the end-user. This water may be used for irrigation, dual-plumbed buildings, environmental enhancement projects, and other non-potable uses.

The City will be diverting some of the reclaimed water to infiltrate at Woodland Creek Community Park off of Pacific Avenue to preserve stream flows in Woodland Creek and to serve as mitigation for additional water rights. The City has also planned to construct a reclaimed water distribution system, including a booster pump station and reservoir, which is tentatively planned to begin construction in 2021. This will provide access to reclaimed water along the City's Britton Parkway and future Main Street corridors.

The City has also installed reclaimed water piping in Marvin Road SE between I-5 and Union Mills Road SE. The pipe will eventually serve the Regional Athletic Complex (RAC), but is currently not in service. The pipe may be connected to the reclaimed water piping leaving the MWRWP, or to the City's future reclaimed water distribution system, when it becomes economically feasible to do so.

LOTT has long-range plans to build a reclaimed water satellite plant on Mullen Road near College Street. A 12-inch diameter reclaimed water main owned by LOTT has already been installed in Mullen Road between College Street SE and Forest Glen Drive SE.

E.10 Operations and Maintenance (Chapter 10)

The following recommendations are made in Chapter 10:

- Odor control costs are currently funded through the STEP budget; this cost should be shared between the STEP budget and the lift station budget.
- Single-wall odor control chemical storage tanks should be replaced.
- A second FOG pilot program should be conducted to confirm the preliminary findings of the first pilot program.
- An educational outreach program discouraging the flushing of fibrous wipes should be implemented.
- City Operations and Maintenance Department should implement the ability to develop non-standard reports with SunGard HTE software.
- Cross training of water and wastewater staff for common O&M activities.
- Internal performance measurement should be increased to help determine whether the utility's performance is improving or diminishing in areas of interest.

E.11 Financial Plan (Chapter 11)

The objective of the financial plan is to identify the total cost of providing wastewater service and to present a financial program that allows the wastewater utility to remain financially viable during the study period. The analysis considers the historical financial condition of the utility, the financial impact of executing the capital improvement plan (CIP), the sufficiency of utility revenues to meet current and future financial and policy obligations, and the affordability of rates.

A variety of potential capital funding resources are also described within this chapter. Local resources may include General Facilities Charges, Local Facilities Charges, and utility cash

reserves. External resources may include Department of Ecology grants and loans, Community Economic Revitalization Board grants and loans, Public Works Board loans, general obligation bonds and revenue bonds.

The results of the analysis indicate that rate increases are necessary to fund ongoing operating needs and the identified capital program. The Baseline scenario in Section 11.7 shows increases of 3.75 percent per year starting in 2015 going through 2019. Additional scenarios in Section 11.11 show rate increases ranging from 2.75 percent to 4.25 percent per year. The City has selected scenario #2 as its preferred alternative (4.25 percent per year) to ensure adequate funding for system reinvestment and to allow for an additional operation and maintenance FTE as the system expands over time. Annual rate adjustments of 4.25 percent would increase the current local sewer rate of $17.30 per month to $21.30 per month by 2019.

Table E-6 Local Sewer Rate Impacts

	2014	2015	2016	2017	2018	2019
Annual Increase (%)		4.25	4.25	4.25	4.25	4.25
Local Rate	$17.30	$18.04	$18.80	$19.60	$20.43	$21.30

Chapter 1 Introduction

The City of Lacey (City) is located in north-central Thurston County directly east of the City of Olympia and approximately six miles west of Joint Base Lewis-McChord (JBLM). The location is shown on Figure 1-1. The City is bounded to the east by the Nisqually National Wildlife Refuge and by unincorporated Thurston County. The northernmost portion of the City abuts the Puget Sound. The surrounding area is a combination of rural, suburban, and some agricultural lands.

The City was incorporated in 1966. The City is primarily residential with some commercial areas and industrial activity. The current population was estimated by the Washington State Office of Financial Management to be 42,393 in 2010.

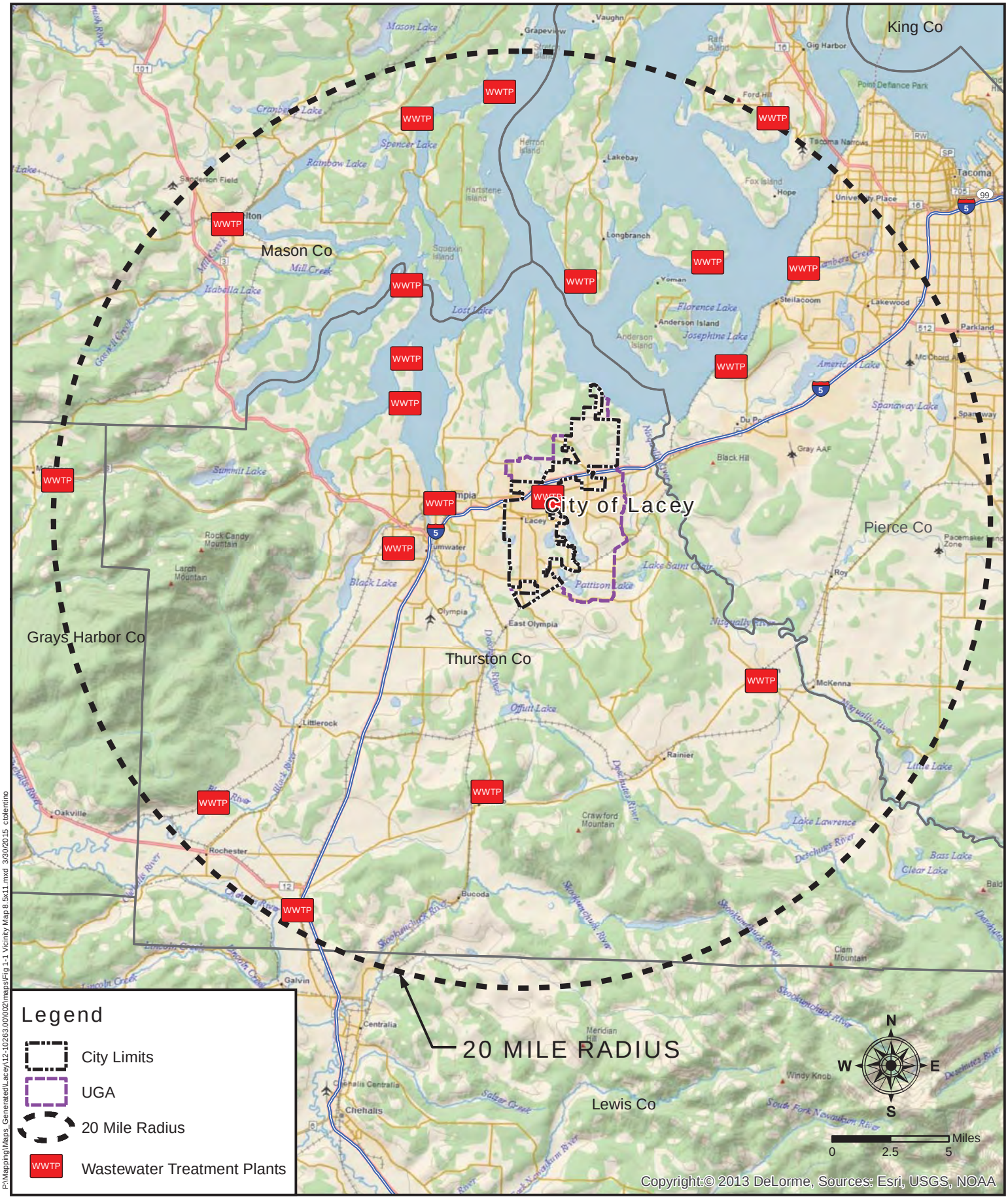
The City owns, operates and maintains existing wastewater collection and conveyance facilities that provide sewer service to the City's current service area of approximately 13,800 acres. The collection system consists of gravity sewers, pump stations, force mains, STEP systems, and grinder pump systems that convey wastewater to the Budd Inlet Treatment Plant (BITP) and the Martin Way Reclaimed Water Plant (MWRWP), which are owned and operated by the Lacey-Olympia-Tumwater-Thurston County Clean Water Alliance (LOTT). The City does not own any wastewater treatment facilities.

Over the next twenty years the population within the UGA is expected to grow to over 104,000 people. The City's sewer service area is expected to grow to approximately 21,200 acres. This Plan evaluates future facilities required to accommodate both existing and future wastewater collection and treatment needs.

1.1 Background

Recent documents reflecting planning efforts and projects related to the City's wastewater collection system include:

- *City of Lacey 2005 Wastewater Comprehensive Plan Update*, EarthTech, December 2005
- *Sanitary Sewer Study East Side of Woodland Creek Valley and Lacey Gateway*, Huitt-Zollars, May 2008
- *2009 Inflow and Infiltration and Flow Monitoring*, LOTT Clean Water Alliance, 2009
- *2010 Annual Capacity Reports*, LOTT Clean Water Alliance, October 2010
- *2011 Infiltration & Inflow and Flow Monitoring Report*, LOTT Clean Water Alliance, February 2012
- *Lift Station 9 Preliminary Design Report*, HDR, June 2010
- *Wastewater STEP Main Evaluation and System Plan*, AECOM, June 2011
- *Draft Woodland Creek Pollutant Reduction Plan*, Pacific Groundwater Group, December 2007
- *Current Conditions Report Woodland Creek Pollutant Load Reduction Project*, Pacific Groundwater Group, February 2007



P:\Mapping\Maps_Generated\Lacey\12-10263.001\002\maps\Fig 1-1 Vicinity Map 8.5x11.mxd 3/30/2015 ctolentino

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VICINITY MAP

WASTEWATER COMPREHENSIVE PLAN UPDATE

City of Lacey
April 2015

Figure 1-1

1.2 Purpose and Scope

This Wastewater Comprehensive Plan Update (Plan) is prepared for the City to fulfill the requirements of Chapter 173-240-050 of the Washington Administrative Code (WAC), Chapter 90.48 of the Revised Code of Washington (RCW), and RCW 36.70A (Growth Management Act). The Plan provides the City with a comprehensive guide for managing and operating the sewer system and coordinating expansions and upgrades to the infrastructure through buildout. The Plan serves as a guide for policy development and decision making processes for the City. The WAC requirements are outlined in Table 1-1.

Table 1-1 Comprehensive Sewer Plan Requirements per WAC 173-240-050

WAC 173-240-050 Reference Paragraph	Description of Requirement	Location in Document
3a	Purpose and need for proposed plan	Section 1.2
3b	Who owns, operates, and maintains system	Section 1.3
3c	Existing and proposed service boundaries	Figure 2-1
3d	Layout map showing boundaries; existing sewer facilities; proposed sewers; topography and elevations; streams, lakes; and other water bodies; water systems	Figure 2-1, Appendix C, Figure 8-1
3e	Population trends	Chapter 3
3f	Existing domestic and/or industrial wastewater facilities within 20 miles	Figure 1-1
3g	Infiltration and inflow problems	Section 6.3
3h	Treatment systems and adequacy of such treatment	Chapter 5
3i	Identify industrial wastewater sources	Chapter 6
3j	Discussion of public and private wells	Chapter 2
3k	Discussion of collection alternatives	Chapter 8
3l	Define construction cost and O&M costs	Chapters 8, 10, and Appendix H
3m	Compliance with water quality management plan	Section 2.2.3
3n	SEPA compliance	Appendix K

The Plan provides the public and regulatory agencies with information on the City's plans for sewer system extensions to areas designated as urban and provisions for reducing future water requirements by using reclaimed water for irrigation. This approach allows the City to continue providing high quality service to its customers while protecting environmental quality.

The Plan is based on projections for a six year period to 2018, a twenty year period to 2032, and a full buildout capacity scenario.

The existing and future capacities of the sewer system were evaluated based on current and anticipated future wastewater flow rates. Future wastewater flow rates are estimated from

existing flow data and population growth projected within the sewer service area by the Thurston Regional Planning Council (TRPC).

A capital improvement plan is provided that prioritizes improvements, estimates project costs, and outlines a plan for financing the capital improvements, as well as reviewing the existing sewer service rates and connection fee structure.

1.3 Ownership and Management

The City's wastewater utility is funded through wastewater rates and general facility charges. These revenues must provide for future capital improvements, and cover current operating expenses, maintenance of the system, replacement, and/or emergency repairs. Resources and staff are shared between the water and wastewater utilities.

Management and administration of the wastewater utility is provided by the Public Works Department through the Operations & Maintenance, Engineering, and Water Resources Divisions, and the City's Finance Department. This support includes repair and maintenance of the collection system, major improvements and development, engineering design and construction, administrative support, accounting and financial services, billing and collection. In addition, the Stormwater Operations Division provides spill response, which includes hazardous waste and other potential pollutants, when necessary.

The City has an interlocal agreement with LOTT to treat the City's sewage. LOTT is a non-profit organization with appointed elected officials representing the Cities of Lacey, Olympia, Tumwater, and Thurston County. LOTT owns and operates the BITP and the MWRWP, which provide treatment of all sewage in the City, except for on-site septic systems. A copy of the interlocal agreement between the City and LOTT is included in Appendix A.

1.4 Sewer History

Construction of the wastewater collection system began in the late 1960's. This system included a network of gravity pipes feeding the Sleater-Kinney Trunk and flowed by gravity to the LOTT interceptor. Lift Stations 2 and 3 were brought on line in 1970. They discharge into the Sleater-Kinney Trunk and serve the areas around Chambers Lake.

Seven other Lift Stations (1 and 4 through 9) and the Ruddell Road Trunk were constructed during the 1970's. They serve most areas south of Interstate Five (I-5) and west of the Lakes Area. Lift Stations 10 through 15 and the Martin Way Trunk were constructed during the 1980's. They serve the areas east of the Central Area and south of I-5. Lift Stations 16 through 23 were constructed between 1988 and 1999. Lift Station 52 replaced Lift Station 10 in 2012. Ownership of Lift Station 16 was transferred to LOTT in 1999, at the same time that LOTT became an independent entity. It is now known as the Martin Way Lift Station.

The *1989 Comprehensive Sanitary Sewer Plan* recommended the installation of septic tank effluent pumping (STEP) systems. This was a significant change to the collection system. Two major STEP transmission mains have been installed. One of the STEP mains is located along Carpenter Road, serving the areas between Hicks and Long Lakes, and one is located along Union Mills Road serving the areas east of Long Lake. In addition, several smaller developments in the southern portion of the City (the Lakepointe development being the largest) and in the Hawks Prairie Area (at the east end of 31st Avenue), are served by STEP systems.

Some of the newer developments discharging to these STEP mains include gravity sewers draining to a lift station with a shared STEP tank.

The BITP has historically been treating wastewater from the City. The original primary treatment facility was built by Olympia in 1951. Tumwater and the City then contracted with Olympia for treatment services in 1954 and 1969, respectively. Major improvements have included a secondary treatment upgrade in 1983 and a nitrogen removal and disinfection upgrade in 1994. Current planning policy states that the City will continue to send its wastewater to LOTT. LOTT was officially formed in 1999 by an interlocal agreement.

LOTT has constructed a satellite reclaimed water treatment facility on Martin Way. An additional future satellite reclaimed water facility is also being planned by LOTT near the intersection of College Street and Mullen Road.

More detailed information about the existing sewer system and reclaimed water system can be found in Chapters 5 and 9, respectively.

Chapter 2 Service Area Characteristics

This section describes the characteristics of the City's UGA that are used to assess existing wastewater services as well as future service needs.

2.1 Study Area

The City limits and Urban Growth Area (UGA) boundaries are presented in Figure 2-1. The City is bounded on the east by a large bluff which descends to the Nisqually National Wildlife Refuge, the northernmost tip of the City is on the Puget Sound, and Olympia lies to the west. The undeveloped areas within the UGA boundary include forested areas and some farmland, and there are several lakes in the southern half of the City.

2.2 Surrounding Vicinity Characteristics

2.2.1 Topography

The topography of the City may be characterized as moderately hilly and sloping generally to the north.

2.2.2 Water Resources

The primary water resources in the City are Long Lake, Hicks Lake, Pattison Lake, Woodland Creek, and groundwater. Some portions of the City drain toward McAllister Creek to the east and Chambers Lake to the west.

Woodland Creek appears on the Washington Department of Ecology's Water Quality Assessment list [303(d)] for impaired water bodies for fecal coliform, dissolved oxygen, instream flow, pH, and temperature.

2.2.3 Puget Sound Water Quality Management Plan

The Federal Water Pollution Control Act established the requirement for a Water Quality Management Plan. Resultantly, RCW 90.71 established the need of a Puget Sound Water Quality Management Plan. The stated objectives of this governance are to recover the health of the Puget Sound waters by the year 2020. This Comprehensive Sewer Plan is consistent with the intended goals of the Water Quality Management Plan.

2.2.4 Geology

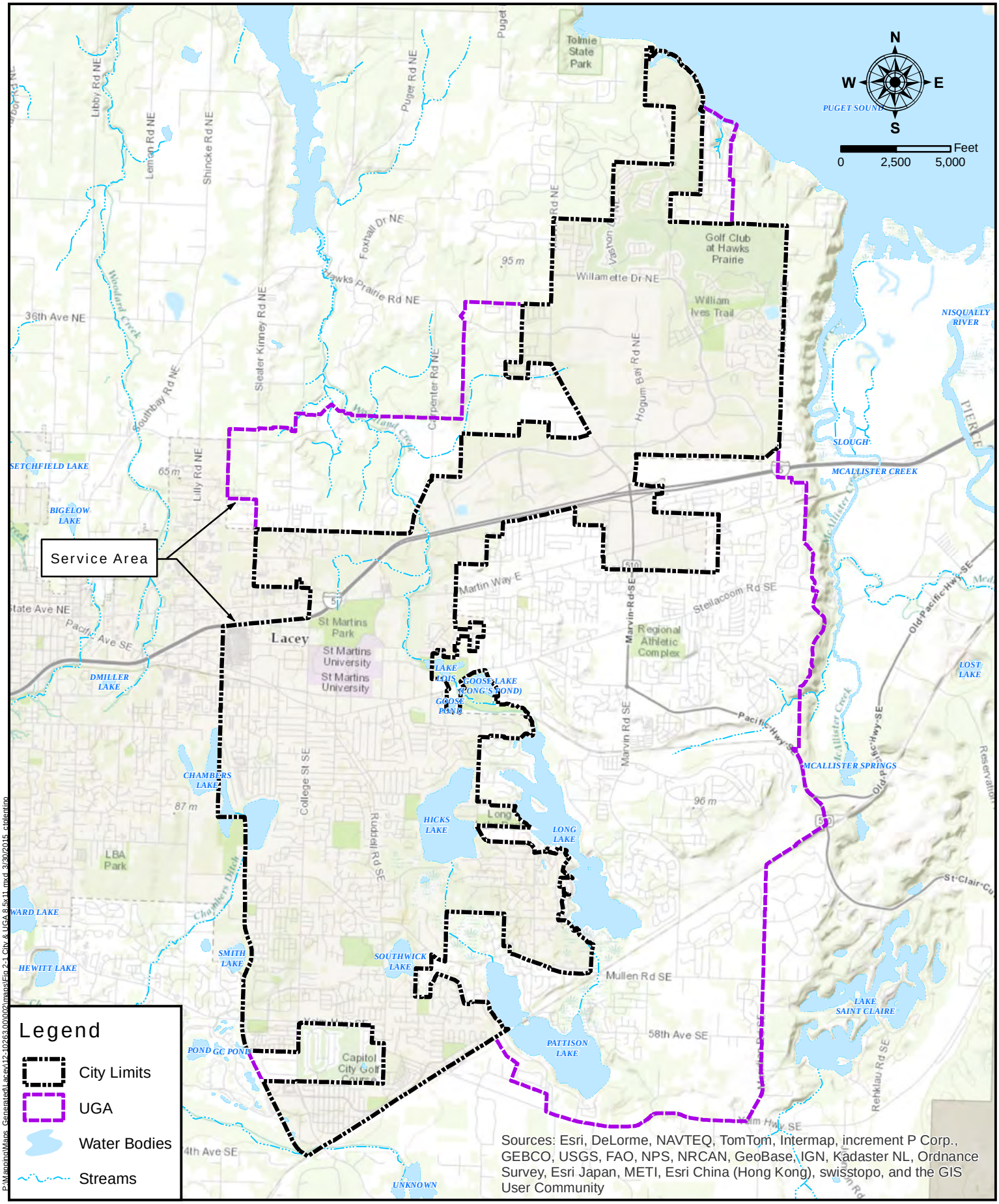
The soils in the City consist primarily of glacial outwash and glacial till.

The Everett Series is the most prevalent soil type in the City. It forms the soils located on outwash plains, terraces, and fans and occur on slopes ranging from 0 to 65 percent. These soils are glacial outwash, characterized as somewhat excessively drained, gravelly, gently undulating soil underlain by sand and gravel and found on terraces.

The Alderwood Series is the second most prevalent soil type in the City. The soil is moderately well drained and has a weakly consolidated to strongly consolidated substratum at a depth of 24 to 40 inches. Permeability is moderately rapid in the upper horizons but very slow in the consolidated substratum. These moderately well drained acidic forested soils formed in loamy glacial till and occur on rolling till plains and moraines.

2.2.5 Critical Areas

There are critical areas throughout the City which will limit development, as shown on Figure 2-2. Most of these areas are wetlands, floodplains, protected habitat for bald eagle and woodland duck, geologically sensitive areas, and aquifer protection areas.



Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community

P:\Mapping\Maps_Generated\Lacey\12-102630\0002\mxd\Fig 2-1 City & UGA 8.5x11.mxd 3/30/2015 ctdierdorp

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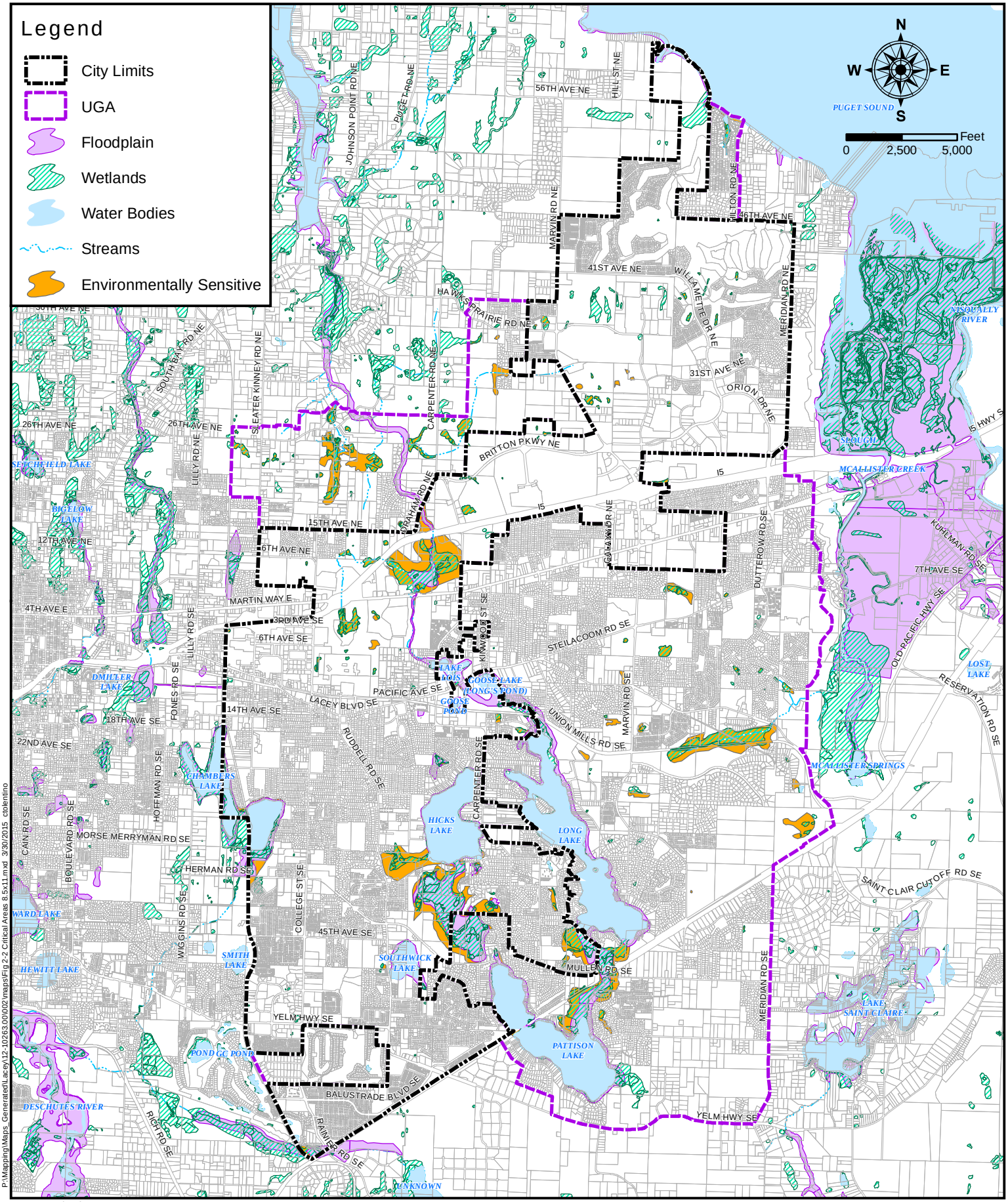
CITY & UGA MAP

WASTEWATER COMPREHENSIVE PLAN UPDATE

City of Lacey
April 2015

Figure 2-1



P:\Mapping\Maps_Generated\Lacey\12-10263.000002\maps\Fig 2-2 Critical Areas 8.5x11.mxd 3/30/2015 ctolentino

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CRITICAL AREAS
WASTEWATER COMPREHENSIVE PLAN UPDATE
City of Lacey
April 2015

Figure 2-2

2.2.6 Endangered Species Habitat

Several fish species are present in Woodland Creek and McAllister Creek. Known species and their endangered species status are listed in Table 2-1. Additionally, bald eagles and woodland ducks are listed species in the area, and they have protected habitat areas along Woodland Creek and adjacent to Hicks Lake, Long Lake, Southwick Lake, and Pattison Lake.

Table 2-1 Species Present

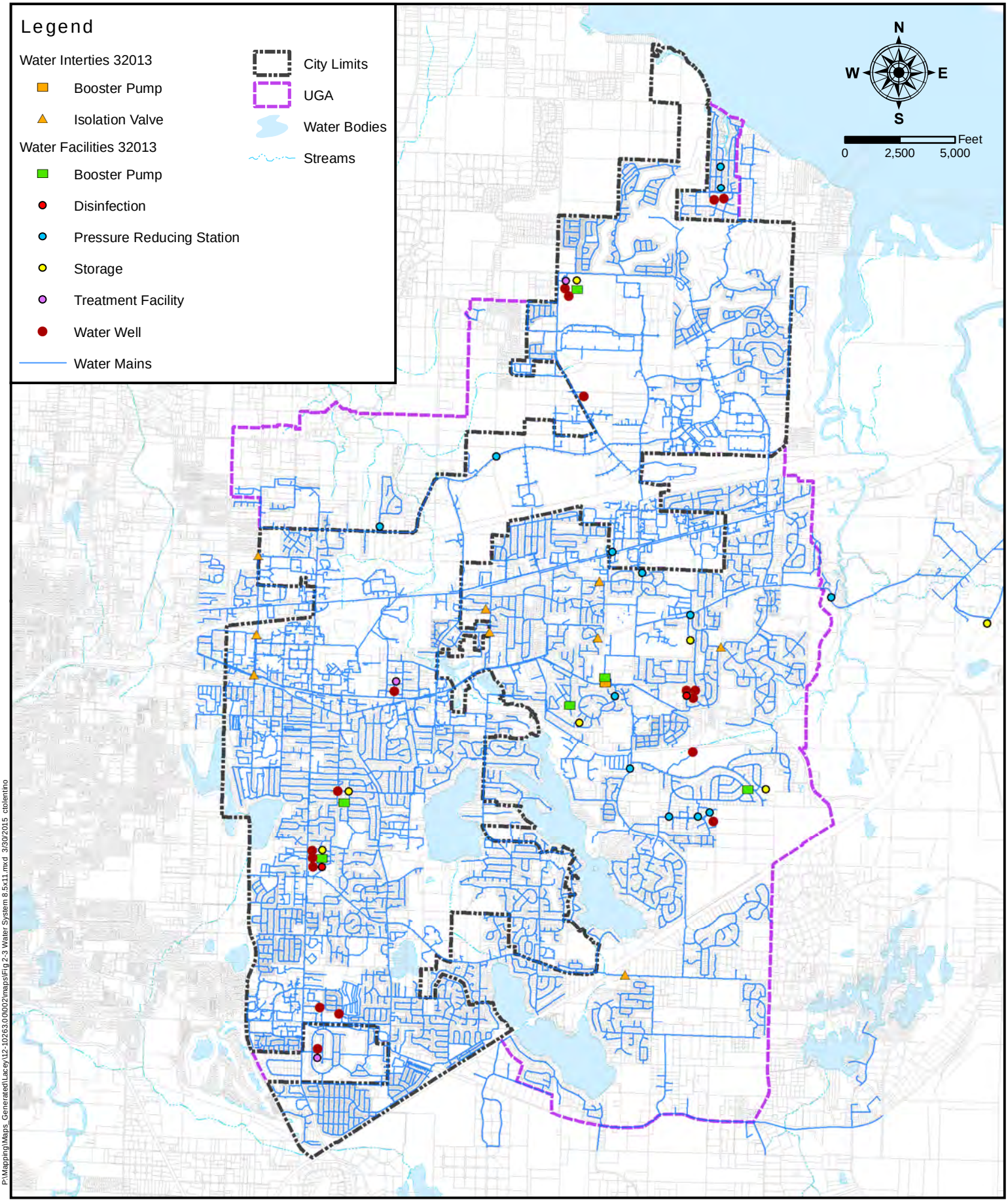
Species	Woodland Creek	McAllister Creek	State Status	Federal Status
Chinook	Yes	Yes	Candidate	Threatened
Coho	Yes	Yes	None	None
Chum	Yes	Yes	None	None
Pink	-	Yes	None	None
Sockeye	-	Yes	None	None
Steelhead	Yes	Yes	None	Threatened

2.3 Water Supply System

Information regarding the City's water system was taken from the *Draft City of Lacey Comprehensive Water Plan*, dated June 2011.

A majority of the City's water supply comes from 20 active wells. The location of wells, reservoirs, and main transmission lines are shown on Figure 2-3. The City also maintains a supply intertie with the City of Olympia and nine emergency interties with the Olympia, Thurston County PUD, Pattison, and Meadows water systems; however, the City would like to obtain new sources of water and phase out use of the Olympia intertie. The City currently operates seven storage facilities with a combined storage of 13.1 million gallons.

The water system consists of the following pressure zones: 188, 211, 224, 275, 337, 375, 400, 422, and 460.



P:\Mapping\Maps_Generated\Lacey\12-10263.00002\maps\Fig 2-3 Water System 8.5x11.mxd 3/30/2015 ctolentino

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WATER SYSTEM MAP

WASTEWATER COMPREHENSIVE PLAN UPDATE

City of Lacey
April 2015

Figure
2-3

2.4 Growth Management Act

The State of Washington adopted the Growth Management Act with the intent of concentrating most new development and population gains within the urban areas of the more populous and rapidly growing counties. State and local governments are required to define an urban growth area boundary within which urban services like sewers are provided, and any new parcels created outside that boundary must be at a very low density with sufficient acreage to support on-site sewage disposal systems conforming to Department of Health regulations.

Only two exceptions to the prohibitions of sewers outside the UGA are recognized under state law (per RCW 36.70A.110(4) and WAC 365-196-320(1)(c)):

- Public schools outside the UGA can be served by sewers, but are not required to be served.
- Areas of existing development outside the UGA where sufficient on-site sewage disposal systems have failed as to create a “severe public health hazard” can be served by sewers.

Sewers provided in either of these cases can be satellite systems limited to serving just the qualified and defined parcels, or a sewer extension can be ‘tight-lined’ to convey wastewater from the qualified and defined parcels into the UGA for connection to an existing sewer system.

2.5 Land Use and Zoning

The City boundaries and the boundary of the UGA are currently established as described in the *2003 City of Lacey and Thurston County Land Use Plan for the Lacey Urban Growth Area*.

Zoning in the City is shown on Figure 2-4.

- MGSA MCALLISTER GEOLOGICALLY SENSITIVE AREA
- LHN LACEY HISTORIC NEIGHBORHOOD
- LD 0-4 LOW DENSITY RESIDENTIAL 0-4
- LD 3-6LOW DENSITY RESIDENTIAL 3-6
- MD MODERATE DENSITY RESIDENTIAL
- HD HIGH DENSITY RESIDENTIAL
- MMDC MIXED USE MODERATE DENSITY
- MHDC MIXED USE HIGH DENSITY
- HPBDBC HAWKS PRAIRIE BUSINESS DISTRICT-BUSINESS/COMMERCIAL
- HPBD-C HAWKS PRAIRIE BUSINESS DISTRICT-COMMERCIAL
- NC NEIGHBORHOOD COMMERCIAL
- CCD COMMUNITY COMMERCIAL
- OC OFFICE COMMERCIAL
- WD WOODLAND DISTRICT
- CBD 4 CENTRAL BUSINESS DISTRICT 4
- CBD 5 CENTRAL BUSINESS DISTRICT 5
- CBD 6 CENTRAL BUSINESS DISTRICT 6
- CBD 7 CENTRAL BUSINESS DISTRICT 7
- CENTRAL BUSINESS DISTRICT 8
- GC GENERAL COMMERCIAL
- BP BUSINESS PARK
- LI-C LIGHT INDUSTRIAL COMMERCIAL
- LI LIGHT INDUSTRIAL
- ME MINERAL EXTRACTION
- C CEMETERY
- AG AGRICULTURE
- OS-I OPEN SPACE INSTITUTIONAL
- OSI-P OPEN SPACE PARK
- OSI-S OPEN SPACE SCHOOL
- V(U)C VILLAGE (URBAN) CENTER
- City Limits
- UGA
- Water Bodies
- Streams

N W E S

PUGET SOUND

0 2,500 5,000 Feet

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P:\Mapping\Maps_Generated\Lacey\12-10263.00\002\maps\Fig 2-4 Zoning 11x17.mxd 3/30/2015 ctolentino

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ZONING MAP

WASTEWATER COMPREHENSIVE PLAN UPDATE

City of Lacey
April 2015

Figure 2-4

Chapter 3 Existing & Future Population Forecasts

3.1 General

Population and employment forecasts for the City's service area have been independently developed by the Thurston Regional Planning Council (TRPC) for each mini-basin through 2035. TRPC is a regional council of governments in Thurston County, Washington, which carries out regionally focused plans and studies. TRPC provides regional statistics, trends, maps, and analyses such as population and employment forecasts. These forecasts are to be used for planning efforts that impact both regional and local growth.

TRPC population baseline estimates and forecasts are based on a dwelling unit database; this allows for parcel-level estimates that can easily be aggregated to mini-basin geographies. TRPC also maintains a database of total employment parcel-level estimates; while these data are confidential and suppressed at small-scale geographies, TRPC can release them if they are aggregated to larger geographies such as mini-basins.

3.2 Residential Population

Small Area Estimates, provided in TRPC's 2011 Profile, show that population in the City and Urban Growth Area (UGA) has grown an annual average of 2.7 percent since 1995. According to TRPC estimates, the 2010 population for the City and the UGA was 75,611. TRPC updated their population forecasts in Fall 2012 and provided draft forecasts in five-year increments, both for the total service area and for each mini-basin. Forecasts for target years 2018 and 2032 were calculated based on linear interpolation between the increments. Based on these data, the City and its surrounding UGA will increase by an average of 1,300 new residents per year through 2035.

A build-out population capacity was estimated; however, these numbers were calculated only for the purposes of modeling maximum sewer infrastructure capacity and are not intended to depict a maximum allowable population. TRPC calculates total capacity according to number of dwellings. A person per dwelling ratio, extracted from the 2035 population forecast, was applied to the capacity as expressed in dwellings to arrive at the build-out population capacity.

Table 3-1 provides a summary of the population forecasts for the City and its UGA through the planning horizon. Table B-1 in Appendix B provides current and forecast population for each mini-basin.

Table 3-1 Population Forecasts for the City of Lacey and its Municipal UGA

Year	Population	Source
2010	75,611	TRPC 2010 Estimates
2015	79,727	TRPC 2012 Draft Forecast to 2035
2018	85,098	Linear interpolation of between 2015 and 2020 data points from the TRPC 2012 Draft Forecast to 2035
2020	88,679	TRPC 2012 Draft Forecast to 2035
2030	101,582	TRPC 2012 Draft Forecast to 2035
2032	104,064	Linear interpolation of between 2030 and 2035 data points from the TRPC 2012 Draft Forecast to 2035
2035	107,788	TRPC 2012 Draft Forecast to 2035
Build-out	116,150	Theoretical estimate for modeling purposes only

3.3 Employment

Employment must be considered to accurately gauge the wastewater production from non-residential areas. According to TRPC estimates, the 2010 total employment for the City and the UGA was 29,073.

In 2007, TRPC forecast total employment out to the year 2030. TRPC advised delaying the 2030 employment forecast to 2035 to reflect current delays in employment growth due to the recent recession. TRPC's employment data include all sectors of employment, and thus are referred to as total employment. Forecasts for target years 2018 and 2032 were calculated based on a linear interpolation between reported employment in 2010 and the 2035 forecast. Based on these data, the City and its surrounding UGA will gain approximately 550 new jobs per year through 2035.

Build-out total employment capacity was estimated for the entire service area by applying the percentage of employment to population (40 percent, according to the 2035 forecast) to the build-out population capacity. The resultant percentage increase between the 2032 forecast total employment and build-out total employment capacity, approximately 27 percent, was applied to each mini-basin to estimate a theoretical build-out total employment capacity in each mini-basin. These numbers were calculated only for the purposes of modeling maximum sewer infrastructure capacity and are not intended to depict maximum allowable employment, either for the entire service area or for each mini-basin.

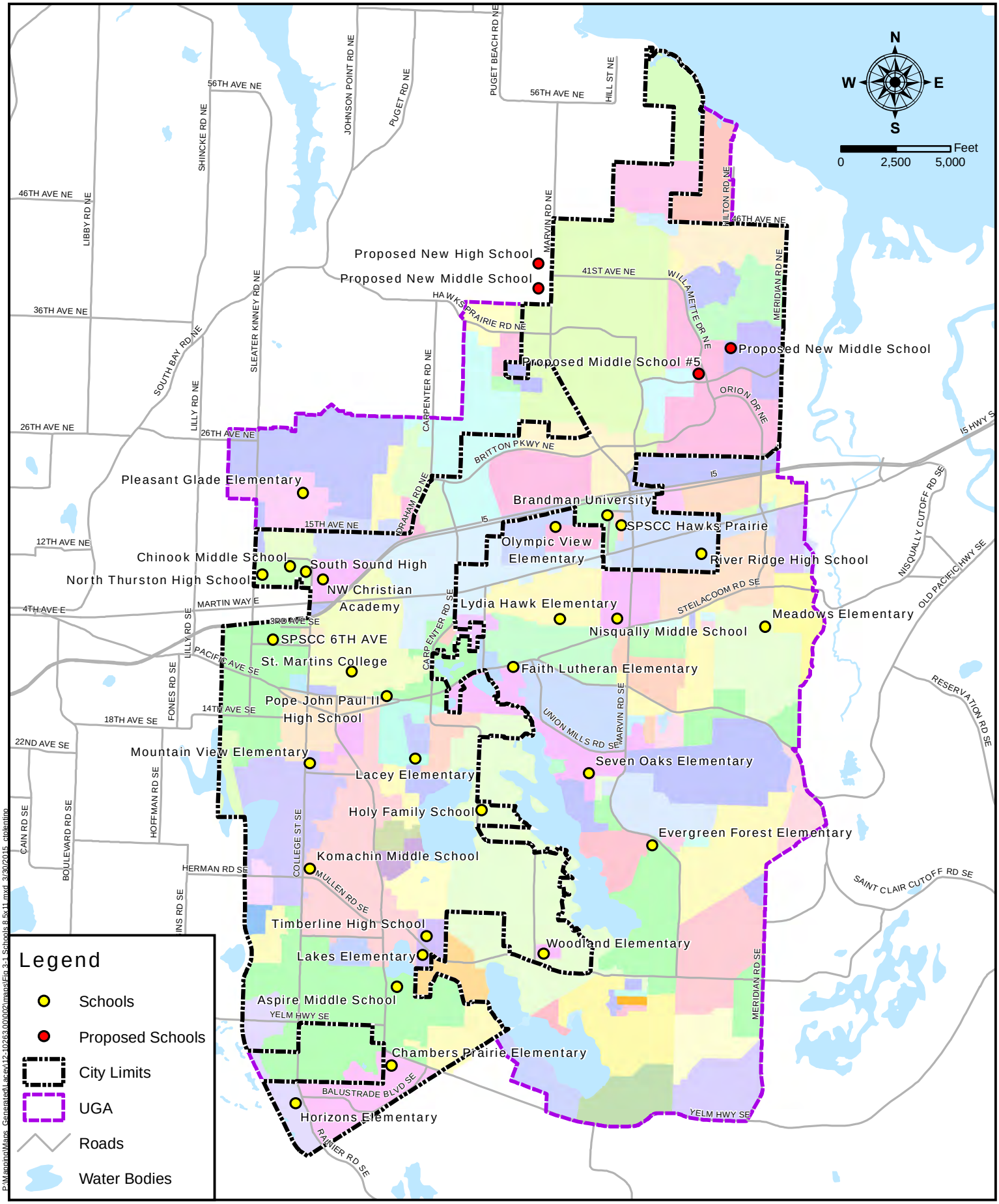
Table 3-2 provides a summary of the employment forecasts for the City and its UGA through the planning horizon. Table B-1 in Appendix B provides current and forecast employment for each mini-basin.

Table 3-2 Total Employment Forecasts for the City of Lacy and its Municipal UGA		
Year	**Total Employment**	**Source**
2010	29,073	TRPC 2010 Estimates
2018	33,509	Linear interpolation of TRPC 2007 Forecast to 2030 (adjusted to 2035)
2032	41,271	Linear interpolation of TRPC 2007 Forecast to 2030 (adjusted to 2035)
2035	42,935	TRPC 2007 Forecast to 2030, adjusted to 2035
Build-out	45,300	Theoretical estimate for modeling purposes only

3.4 Schools

The public and private schools within the City's service boundary represent concentrated locations of wastewater production. The locations of schools in relationship to the mini-basins are shown in Figure 3-1. Schools and school districts were contacted individually to discuss current enrollment figures and plans for growth. Public school districts are required to expand capacity to keep pace with population forecasts; their plans for expansion are based on a 25 year student forecast analysis and capital facilities plan. A large portion of the anticipated student growth in the City is also due to South Puget Sound Community College's plans to significantly expand the Lacey campus, growing from a current enrollment of around 2,200 students to over 10,000 by 2035. Summarized student enrollment and forecasts are shown in Table 3-3, and student forecasts for each mini-basin are shown in Table B-1 in Appendix B.

Table 3-3 Student Enrollment Forecasts for the City of Lacy and its Municipal UGA		
Year	**Students**	**Source**
2010	17,503	Conversations with individual schools and school districts.
2018	24,182	
2032	39,026	
Build-out	41,962	



P:\Mapping\Maps_Generated\Lacey\12-102630000\2\mxds\Fig 3-1 Schools 8.5x11.mxd 3/30/2015 ctolentino

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LACEY SCHOOLS
WASTEWATER COMPREHENSIVE PLAN UPDATE
City of Lacey
April 2015

Figure 3-1

3.5 Summary

Historical and projected population, employment, and student growth is presented in Figure 3-2.

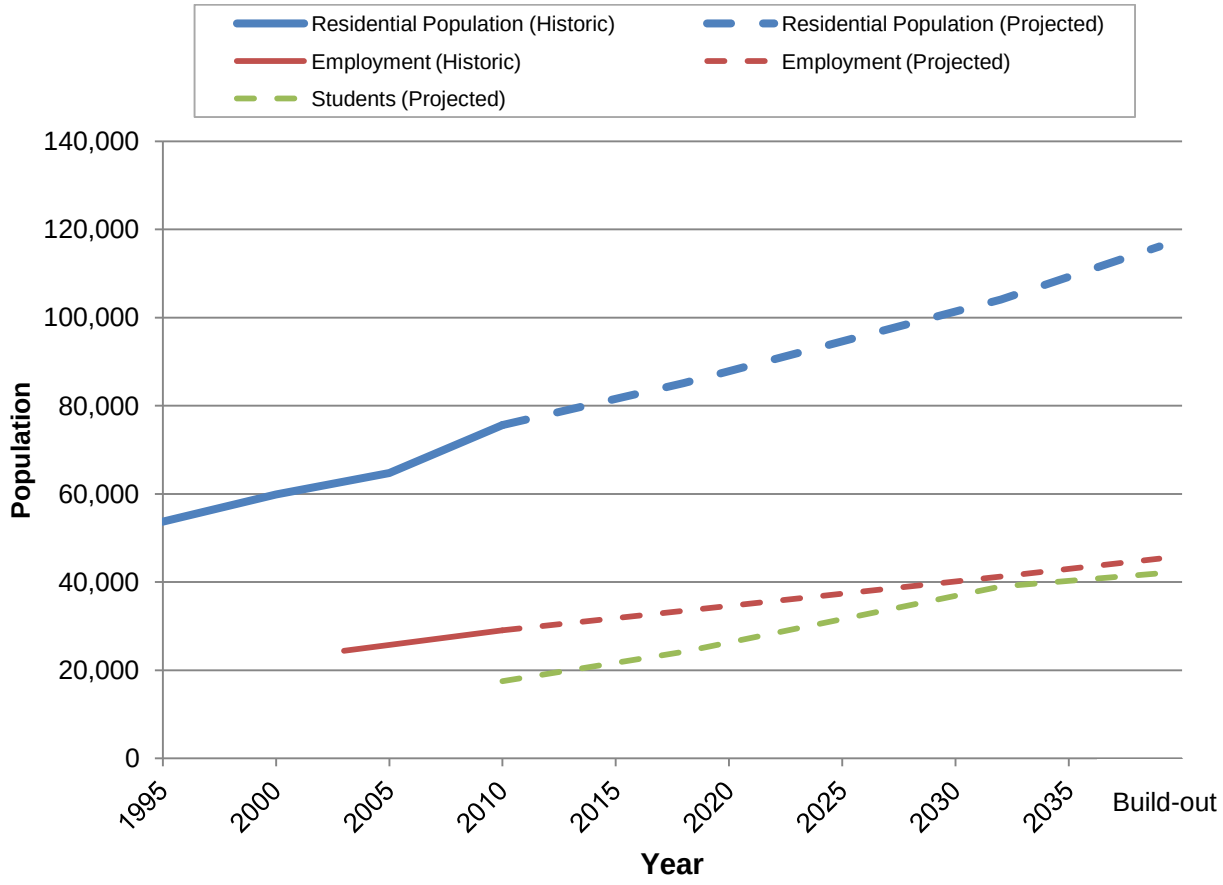

Figure 3-2 Historical and Projected Population, Employment, and Student Growth

Chapter 4 Regulations & Policies

4.1 Introduction

The City of Lacey manages its wastewater utility in accordance with established wastewater system policies. The policies provide a consistent framework for the design, operation, maintenance, and service of the wastewater system for appropriately implementing programs, designing new infrastructure, and serving additional customers. The policies defined in this plan pertain solely to the wastewater system; the City has additional land use, development, and finance policies that may specify additional requirements for development or extension of a wastewater service.

4.2 Policies

The City of Lacey follows the guidelines and standards required in the Department of Ecology's Criteria for Sewage Works Design, which is also often referred as the "Orange Book". These criteria are intended to ensure that the design of sewage collection and conveyance is consistent with public health and water quality objectives of the State of Washington. It should be noted that the Orange Book establishes minimum requirements and limiting factors used by DOE and the Department of Health in determining the approvals of these facilities.

Though the Orange Book establishes a baseline, it does not, nor was it intended to, capture all policies for a municipality.

This section addresses those other non-technical policies that the City now wishes to formalize. The following 12 policies will help guide wastewater governance for the City. These policies include:

1. Compliance with Regulations and Contractual Agreements
2. Utility Planning
3. Stormwater Separation
4. Fats, Oils, Grease and Pretreatment
5. Community Septic Systems – Ownership and Maintenance
6. Individual and Community Septic Systems – Connection to City Sewer System
7. Reclaimed Water - Priority Uses
8. Design and Construction Standards
9. Ownership and Maintenance – Gravity
10. Ownership and Maintenance – STEP
11. Ownership and Maintenance – Grinder Pumps
12. Sewer Extensions

As new circumstances arise, it may be necessary to expand or modify these policies, which may be done as an addendum to this document. Additional financial policies are included in Chapter 11.

POLICY NO. 1 – COMPLIANCE WITH REGULATIONS AND CONTRACTUAL AGREEMENTS

ISSUE

Many regulations impact the design, construction, ownership, and maintenance of a Publicly Owned Treatment Works (POTW). This includes those system facilities under the direct control of the City of Lacey and those facilities for which the City of Lacey has entered into a contractual obligation with LOTT. This includes, but is not necessarily limited to, the collection system, conveyance facilities such as interceptors and pump stations, force mains, metering facilities, odor control facilities, treatment plants, and the disposal of sanitary wastewater.

POLICY

The City of Lacey shall comply with all applicable federal, state and local regulations and honor their contractual obligation with LOTT as related to the ownership and maintenance of a sanitary wastewater system.

ADDITIONAL DETAILS AND EXPLANATIONS

Compliance with the following regulations and contracts shall include, but not be limited to, the following:

- State Environmental Protection Act (SEPA) – WAC 197-11
- National Environmental Protection Act (NEPA)
- Growth Management Act (GMA)
- Clean Water Act
- LOTT Interlocal Agreement – dated November 5, 1999 and RCW 39.34
- Clean Air Act
- Department of Ecology – RCW 173-240
- Department of Health

POTENTIAL CITY OF LACEY IMPACTS

- The City of Lacey is statutorily required to adhere to local, state, and federal regulations.
- Failure to comply could result in a financial fine or penalty and a court-mandated compliance schedule
- Cost of statutory compliance

POTENTIAL RATEPAYER IMPACTS

- No direct impacts to ratepayers

POLICY NO. 2 – UTILITY PLANNING

ISSUE

As a partner in LOTT, the City of Lacey has an obligation to provide to LOTT the expected building activity within its jurisdiction for the following calendar year. These values will be based on the Thurston County Regional Planning Council's forecast of population and employment (See Article IV, Section 4.3.b). The forecasted population and employment and the resulting wastewater flows is to be submitted to LOTT for review and comment. The frequency of the planning documents (General Sewer Plan - GSP) is not stipulated in the LOTT agreement.

POLICY

The City of Lacey shall plan for and provide service to the City of Lacey and the City of Lacey Urban Growth Area consistent with the local land use designations and population forecasts.

ADDITIONAL DETAILS AND EXPLANATIONS

- The Growth Management Act initially passed in 1990, stipulates that urban type services (such as sanitary sewers) cannot be extended into areas outside the Urban Growth Area boundaries, except under certain circumstances such as:
  - Documented Health Hazards in existing development areas
  - Protection of basic health and safety and the environment (Thurston County Comprehensive Plan, VII. Goals, Objectives and Policies, goal 1, objective A, policy 11)
  - Services are financially supportable at rural densities and do not encourage urban development (Thurston County Comprehensive Plan, VII. Goals, Objectives and Policies, goal 1, objective B, policy 7)
- The Growth Management Board assigns population and employment projections for each UGA. The City of Lacey will use these values in determining expected growth within their UGA
- These population and employment values will be included in a General Sewer Plan (WAC 173-240-050)
- Development occurring in unincorporated urban growth areas shall conform to City of Lacey design and construction standards
- The City of Lacey scheduled updates to the GSP every 8 years to coincide with mandated updates to the Comprehensive Plan
- The GSP will be prepared and submitted to the Department of Ecology and to LOTT for review and comment
- The GSP will also be submitted to neighboring cities and stakeholders for comment

POTENTIAL CITY OF LACEY IMPACTS

- Solicit and contract for planning services to prepare the GSP
- Review and distribution of the GSP to neighboring cities
- Distribution to LOTT and Department of Ecology
- Identify City of Lacey employee who is fully familiar with the assumptions, methodology and conclusions reached in the GSP. This person should be familiar with the hydraulic model and should be able to evaluate new development proposals and their impact on the collection, conveyance and treatment elements of the system

POTENTIAL RATEPAYER IMPACTS

- The costs of GSP updates would be borne by the ratepayers
- New development will be responsible for capital improvements associated with increased flows and Facility Charges

POLICY NO. 3 – STORMWATER SEPARATION

ISSUE

Direct connection of stormwater collection systems to the sanitary sewer system reduces the capacity of the sewer system and increases surcharging potential of the pipe, which can contribute to sewer deterioration and increase the potential for pipeline collapse. Some agencies allow surface water runoff collected from areas subject to high pollutant loading to discharge to the sanitary sewer. Numerous connections of this type can overload the City of Lacey sanitary sewer collection system.

POLICY

No storm drainage connections shall be made to the sanitary sewer system unless approved by the City of Lacey, and only under special and unusual circumstances. The discharges shall be defined by discharge permit, contract or other such document.

ADDITIONAL DETAILS AND EXPLANATIONS

- Stormwater shall be defined as any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt
- The discharge of stormwater into a POTW system consumes capacity, dilutes the influent concentrations and potentially jeopardizes the integrity of the system
- The LOTT agreement addresses the prohibition against discharging stormwater into the LOTT system. This language states:
  - Stormwater, groundwater, rainwater, street drainage, subsurface drainage, yard drainage, roof drainage or unpolluted water, including, but not limited to, non-contact cooling water, or blow-down from cooling towers or evaporation coolers, shall not be discharges through direct or indirect connection to any sanitary sewer
  - With the approval of the LOTT Plant Manager, the Participant may, but shall not be required to, permit such discharge when no reasonable alternative method of disposal is available
  - If a permit is granted for the discharge of such water into a sanitary sewer, the user shall pay the applicable charges and fees and meet such other conditions from time to time by the Participant

POTENTIAL CITY OF LACEY IMPACTS

- Provisions will need to be addressed for water quality treatment from surface water collection areas subject to high pollutant loading that the City of Lacey may have previously connected to the sanitary sewer system
- Requests to connect storm water collection areas to the sanitary sewer system will have to be reviewed for conformance with the special circumstances developed by the City of Lacey
- Special fee structures may be adopted for connection of storm drainage sources to the sanitary sewer system

POTENTIAL RATEPAYER IMPACTS

- No impact
- Development required to make provisions to handle all stormwater

POLICY NO. 4 – FATS, OILS, GREASE (FOG) AND PRETREATMENT

ISSUE

As a partner in LOTT, the City of Lacey has an obligation to meet certain FOG and pretreatment standards. The intent of these limitations is to protect the ability of the POTW to properly treat the wastewater entering the plant. The objective is to prevent the introduction of pollutants to the plant that would interfere with its operations or may cause the wastewater to be inadequately treated. The purpose of the FOG and pretreatment standards is also to ensure the quality of the produced sludge and to protect the POTW personnel who may be affected by the wastewater and sludge.

POLICY

The City of Lacey shall discharge wastewater to LOTT that complies with the LOTT/City of Lacey agreement dated November 1999 and in accordance with 40 CFR, Part 403. Grease interceptors and traps shall be designed and installed in accordance with the City of Lacey's FOG policy and shall apply to all commercial wastewater customers that have food handling and preparation services or otherwise generate fats, oils and grease. The City of Lacey's Pretreatment Regulations were adopted by Resolution No. 1306 in 2008.

ADDITIONAL DETAILS AND EXPLANATIONS

Compliance with the following pretreatment standards (refer to the November 5, 1999 LOTT agreement and LMC 13.10.010) shall include, but not be limited to, the following:

- Fats, Oils and Grease, < 300 mg/l
- Hydrocarbon Based Oils and Grease, <50 mg/l
- pH must be between 6.0 and 9.0
- Concentrations of dissolved solids limitations
- Concentrations of inert suspended solids limitations
- Heavy metal discharge limitations
- Excess Strength limits, > 300 mg/l BOD, > 300 mg/l TSS
- Temperature limitations
- Prohibited discharges
  - Explosive substances
  - Solid or viscous substances
  - Noxious or malodorous liquids
  - Objectionable color such as dyes, tanning solutions
  - Pesticides
  - Infectious wastes
  - Radioactive wastes
- Compliance reporting per 40 CFR 403.6 (c).

POTENTIAL CITY OF LACEY IMPACTS

- Review of quarterly inspection reports
- Though the City of Lacey has the provision to levy fines against those that do not comply with the provisions of the FOG policy, the City of Lacey's stance is to encourage compliance rather than imposing fines
- City of Lacey employee or contractor to support the FOG program and to work with commercial users on an as needed basis

POTENTIAL RATEPAYER IMPACTS

- Costs associated with the installation and maintenance of the grease interceptor are borne by the customer
- Disposal costs of collected grease

POLICY NO. 5 – COMMUNITY SEPTIC SYSTEMS – OWNERSHIP AND MAINTENANCE

ISSUE

Community septic systems have been installed to provide temporary sewer service within the UGA of the City of Lacey. These systems may serve dozens or hundreds of single family units. Typically the ownership and maintenance requirements for these systems rest with the Homeowners Associations. Installation of new community on-site systems within the City of Lacey's UGA is discouraged.

POLICY

The City of Lacey will not approve or otherwise accept ownership/responsibility for any new large on-site or community septic systems.

ADDITIONAL DETAILS AND EXPLANATIONS

- Review and approval authority for on-site sewage systems is divided between the local health jurisdiction, Department of Health (DOH) and the Department of Ecology (DOE), based on the design flow capacities and method of treatment
- Local health jurisdictions have responsibility for the review and approval of on-site systems up to a maximum design capacity of 3,500 gpd
- Review and approval for systems with flows between 3,500 and 14,500 gpd (excluding mechanical treatment systems) is the responsibility of DOH
- Mechanical treatment systems that exceed 3,500 gpd and systems with a design flow greater than 14,500 gpd are the responsibility of DOE
- Where possible, the City of Lacey should encourage the extension of and connection to the public sewer service to any existing community on-site system for the protection of the aquifer and receiving waters
- The City of Lacey and Thurston County should work towards a joint resolution to prohibit the installation of new systems within city limits and the UGA

POTENTIAL CITY OF LACEY IMPACTS

- If the public sewer system is extended to serve the community systems, the City of Lacey may incur costs associated with upgrading existing infrastructure
- Such General Facilities might be over sized lines and pump stations to accommodate a service area larger than the community on-site parcels
- If no over sizing of the General Facilities is necessary to serve the community on-site parcels, the proponent should be financially responsible for all costs and connection charges
- The City of Lacey may be asked to facilitate and administer a late-comers agreement for those parcels that benefit from and connect to the sewer extension if done by a single party. If there are multiple parties involved in a sewer extension, a ULID is the preferred funding mechanism.

POTENTIAL RATEPAYER IMPACTS

- No impact
- Development required to make provisions to manage all community on-site systems

POLICY NO. 6 – INDIVIDUAL AND COMMUNITY SEPTIC SYSTEMS – CONNECTION TO CITY OF LACEY SEWER SYSTEM

ISSUE

Functioning individual and community septic systems exist within the UGA of the City of Lacey. These systems may serve single family and dozens or hundreds of single family units. The operation and maintenance of these systems is the responsibility of the homeowner or Homeowner's Associations. Inadequately designed and/or functioning septic systems may not be properly treating the wastewater and consequently, may be contaminating groundwater or receiving waters. What incentives can and should the City of Lacey offer to encourage abandonment of the septic system and connection to the City of Lacey's public sewer system? Should the City of Lacey offer financial assistance to help facilitate connection?

POLICY

The City of Lacey will consider the following measures to help facilitate abandonment of septic systems and connection to the City of Lacey's sewer system.

- Assist in and administer the formation of a LID/ULID
- Administer Latecomer's Agreement for those parcels benefiting from the sewer extension when only one party is involved
- Make a financial contribution to oversized General Facilities when the oversizing benefits the sewer system in excess of the required extension
- Consider extending the sewers as a City of Lacey project with assessments due at certain triggering events

ADDITIONAL DETAILS AND EXPLANATIONS

- Triggering events that would require payment of the assessment may include:
  - Sale of property
  - Application for a building permit
  - Mortgage refinance
  - Zoning change
  - Failure of the existing septic system that prompts repair or modification of the septic system
  - Customer initiated request
- The construction costs to extend the side sewers from the edge of R/W to the house connection could be included in the financing incentive package
- New structures on parcels where the property line is within 200 feet of the City of Lacey's sewer system shall be mandated to connect. This connection requirement shall apply to both the new structure and any existing structures on the parcel.

POTENTIAL CITY OF LACEY IMPACTS

- City of Lacey's credit is extended to private benefit
- Regional improvement to the water quality
- Increase in customer basis
- Delayed cash flow
- Additional administrative costs to facilitate and administer a late-comers agreement for those parcels that benefit from and connect to the sewer extension when only one party is involved

POTENTIAL RATEPAYER IMPACTS

- No impact
- Development required to make provisions to manage all community on-site systems

POLICY NO. 7 – RECLAIMED WATER – PRIORITY USES

ISSUE

The regulations governing General Sewer Plans require that a feasibility evaluation be conducted for the use of reclaimed water. Using reclaimed water can minimize water rights impacts, significantly reduce the irrigational demands on the water supply system and avert the need of more potable water infrastructure, production, and transmission. The City of Lacey is committed to promoting the use of reclaimed water. How should the City of Lacey best promote the use of reclaimed water?

POLICY

The City of Lacey will define a reclaimed water service area and establish the following conditions for implementation of a reclaimed water utility:

- All new construction in the reclaimed water service area will be required to install/extend reclaimed water lines through the project site
- New construction in the reclaimed water service area is required to connect irrigation services to the reclaimed water line, these lines will be charged with potable water if reclaimed water is not immediately available
- Reclaimed water line extensions shall be installed in accordance with City of Lacey design and construction standards
- The City of Lacey's available reclaimed water will first be used for water rights mitigation, second for irrigational demands and thirdly, for other non-potable uses as approved by the City of Lacey and LOTT's NPDES permit
- The cost of using reclaimed water shall be 30 percent lower than potable water on a per unit basis

ADDITIONAL DETAILS AND EXPLANATIONS

- Triggering events that would require the installation of a reclaimed water system might include:
  - Application for a building permit for new construction or division of land
  - Application for a building permit of an addition or modification to an existing structure on a case by case basis
  - The extension of a sewer or water line to serve a parcel(s). This would apply to both gravity and pressure line extensions
  - As mandated by future City of Lacey policy
- Invoicing for reclaimed water usage will be done by the City of Lacey and may be included with the potable water invoice

POTENTIAL CITY OF LACEY IMPACTS

- Reduction in potable water consumption
- Added administrative costs to read reclaimed water meters and create a billing for said use
- Positive mitigate water rights limitations
- Provide cash flow for this utility
- Using reclaimed water is viewed as an environmentally conscientious stewardship
- Prepare a Comprehensive Reclaimed Water Plan

POTENTIAL RATEPAYER IMPACTS

- No direct impact
- Development required to make provisions to accommodate reclaimed water usage

POLICY NO. 8 – DESIGN AND CONSTRUCTION STANDARDS

ISSUE

The City of Lacey wishes to achieve maximum uniformity in planning, engineering, and construction practices within the City of Lacey. By establishing these standards, the City of Lacey is setting the minimum acceptable standard, but these standards are not a substitute for good engineering judgment. More stringent designs may be required to address special conditions or environmental constraints. Deviation from these minimum standards will be evaluated by the City of Lacey.

POLICY

The City of Lacey has defined design and construction standards for utilities and infrastructure in the City of Lacey. These standards are included in *City of Lacey Development Guidelines and Public Works Standards,* dated September 2009*.* Chapter 7 in that document addresses the standards for the wastewater utility. This chapter is included in Appendix

ADDITIONAL DETAILS AND EXPLANATIONS

- Design and construction standards are to adhere to the Department of Ecology's orange book: *Criteria for Sewage Works Design*
- Design and Construction standards will follow provisions in the latest edition of the *Washington State Department of Transportation, Standard Specifications for Road, Bridge, and Municipal Construction*

POTENTIAL CITY OF LACEY IMPACTS

- Modifications to the City of Lacey's Design and Construction Standards will need to be updated periodically to reflect changes or additions to these standards

POTENTIAL RATEPAYER IMPACTS

- No direct impact
- Development required to incorporate the City of Lacey's Development Standards

POLICY NO. 9 – OWNERSHIP AND MAINTENANCE - GRAVITY

ISSUE
Various cities and special service districts delineate the ownership and maintenance requirements differently. Some entities assume ownership of all infrastructure that is within the rights-of-way or easements. Other agencies retain ownership that only includes the main and perhaps the tee fitting.

POLICY
The City of Lacey shall own and maintain all sanitary sewer mains located within the public right-of-way. Customers are responsible for the sewers from the structure to the main including the portion in a right-of-way or easement.

ADDITIONAL DETAILS AND EXPLANATIONS

- For all new construction a clean out or manhole shall be installed at the right-of-way or easement line
- Property owners will be encouraged to contact the City of Lacey in the event of a blockage. If the blockage is found to be in that portion of the sewer that is publicly owned, the City of Lacey will assume responsibility to clear the blockage. If the blockage is found to be in the private lateral or sewer, the responsibilities will be the property owners
- All laterals shall be a minimum of 6-inches in diameter from the main to the edge of the right-of-way or easement and shall include a clean-out

POTENTIAL CITY OF LACEY IMPACTS

- No impacts

POTENTIAL RATEPAYER IMPACTS

- No direct impact
- Property owners will be required to maintain the side sewer
- New development will be required to install a clean out or manhole at every service

POLICY NO. 10 – OWNERSHIP AND MAINTENANCE - STEP

ISSUE
Various cities and special service districts delineate the ownership and maintenance requirements differently. Some entities assume ownership of all infrastructure that is within the rights-of-way or easements. Other agencies retain ownership that only includes the main and perhaps the tee fitting. Similarly, ownership and maintenance of a STEP system has an added element associated with the STEP pump, tank, and force main.

POLICY
The City of Lacey shall own and maintain the force main, pressure service line, STEP tank, pumping equipment and control panel. This policy of ownership and maintenance is applicable for all STEP customers. The property owner is responsible for ownership and maintenance of the sewer lateral from the structure to the STEP tank.

ADDITIONAL DETAILS AND EXPLANATIONS

- Scheduling and pumping out of the septic tank, whether in a community-wide STEP system or an individual STEP assembly, shall be the responsibility of the City of Lacey
- If modifications to the electrical system of the home or dwellings from which sewage is being pumped need to be made to accommodate the pumping equipment, the cost of that modification will be borne by the property owner
- Right-of-entry to service the pumping equipment will be granted by the property owner to the City of Lacey in perpetuity or until an alternative service scheme is implemented
- Isolation valving is to be installed at the edge of right-of-way (or easement)
- The customer has a duty to notify the City of Lacey of any alarms or system failures.

POTENTIAL CITY OF LACEY IMPACTS

- No impacts

POTENTIAL RATEPAYER IMPACTS

- No direct impact

POLICY NO. 11 – OWNERSHIP AND MAINTENANCE – GRINDER PUMPS

ISSUE

Various cities and special service districts delineate the ownership and maintenance requirements differently. The ownership and maintenance of a grinder pump system has some unique requirements that merit a specific policy.

POLICY

The City of Lacey shall own and maintain the force main, pressure service line, grinder pump and sump, and control panel. This policy of ownership and maintenance is applicable for all new installations beginning January 1, 2015. Existing installations must meet certain equipment requirements, grant a maintenance easement to the City of Lacey and agree to a waiver of liability prior to the City of Lacey's acceptance of ownership and maintenance responsibilities.

ADDITIONAL DETAILS AND EXPLANATIONS

- Customer has a duty to report any alarms or system failures to the City of Lacey
- Customer is responsible for ownership and maintenance of the lateral from the structure to the grinder pump
- City of Lacey ownership and maintenance obligation is conditional on the execution of maintenance easement (right-of-entry) and a hold harmless agreement
- If the right-of-entry and hold harmless agreements have not been executed, then City of Lacey ownership and maintenance obligations will end at the service connection valve box which is typically located at the edge of the right-of-way
- If modifications to the electrical system of the home or dwellings from which sewage is being pumped need to be made to accommodate the pumping equipment, the cost of that modification will be borne by the property owner
- Isolation valving is to be installed in a service connection valve box located at the edge of right-of-way (or easement)

POTENTIAL CITY OF LACEY IMPACTS

- City of Lacey must carry an inventory of spare parts
- City of Lacey must respond to service calls

POTENTIAL RATEPAYER IMPACTS

- No direct impact

POLICY NO. 12 – SEWER EXTENSIONS

ISSUE

As new development is anticipated, a critical element is the availability of sanitary sewers. The protocol of implementing the extension of the sewer system should be clearly delineated. The type of collection system and the routing and sizing of the piping system are unique to each of the sewer basins.

POLICY

The City of Lacey will delineate the sewer basin(s) in which the development will be located and define the method by which the development will be served. The developer will configure the proposed piping systems to be consistent with the City of Lacey's delineation and method of sewering the area. A letter of sewer availability will be issued by the City of Lacey at the time of application by the developer which will identify the routing and the type of sewer extension and the fees and charges associated with the extension. Any requested deviation from the direction given by the City of Lacey shall be made in writing to the Public Works Department with an explanation and substantiation of the request.

ADDITIONAL DETAILS AND EXPLANATIONS

- Basin Delineation
  - Delineations are based on topography, existing infrastructure, zoning, and an area's ability to drain or discharge to a common location
  - Where a proposed project boarders or falls within more than one basin, the basin boundaries may be reviewed along with the specific project proposal
  - Basins are identified as either STEP or Gravity and should utilize the corresponding type of sewer collection system
- STEP Systems Extensions
  - STEP sewer extensions will only be allowed in basins that have been identified as STEP basins
  - Similarly, sewer systems other than STEP will not be allowed in STEP basins
  - Deviations from the sewer service scheme presented in the Wastewater Comprehensive Plan Update may require an evaluation using the City of Lacey's hydraulic model, the cost of which will be borne by the developer
  - High volume users may require multiple tanks
  - Tanks larger than 8,000 gallons will not be permitted except for industrial users and as approved by the Public Works Director
  - The point of discharge of a STEP system shall be evaluated for odor and corrosion potential. Appropriate measures shall be taken to control or abate any such impacts
  - The minimum size for a STEP main is 2-inch diameter
  - Pressure mains shall be designed to not exceed a maximum flow velocity of 8 feet per second
- Gravity System Extensions
  - Gravity system sewer extensions will only be allowed in basins that have been identified as gravity basins
  - Similarly, sewer systems other than gravity will not be allowed in a gravity basins to the maximum extent possible
  - Grinder pump systems may be permitted on a case by case basis where gravity service is not feasible and where the utilization of a grinder pump system will not impede the extension of the gravity system
  - Gravity collection and local pump stations serving 150 ERUs or more will be allowed in a gravity basin
  - Grinder systems may be allowed into areas serving fewer than 150 ERUs or where multiple lift stations would be required to serve fewer than 150 ERUs

  - The minimum size for a gravity main is 8 inches
  - The maximum flow depth in a gravity main shall not exceed 80% of the pipe diameter
- Sewer extensions shall be sized to accommodate maximum wastewater flows anticipated over the life of the facilities, including upstream tributary flows
- When the installation of facilities benefits the development and other properties, the developer may enter into a Latecomer's Agreement (LCA) to recoup costs from the other benefitting properties
- When the City of Lacey requires oversizing of the facilities beyond that which is necessary to serve the proposal and which does not benefit surrounding or adjacent parcels, then the City of Lacey may enter into an agreement with the developer for reimbursement through GFC credits
- Temporary wastewater facilities will only be allowed as part of a phased development plan and only when accompanied by a formal development agreement that clearly identifies the phasing and sequencing, a timeline when the phases will be constructed, the infrastructure associated with each phase and identification of the proponent who has responsibility to complete all phases
- All temporary facilities shall be constructed in conformance to the City of Lacey's current standards. The Public Works Director shall have full discretion in the decision to allow temporary facilities and may require a financial surety for the completion of the phased infrastructure

POTENTIAL CITY OF LACEY IMPACTS

- City of Lacey will administer the LCA
- City of Lacey may potentially make a contribution toward the General Facilities

POTENTIAL RATEPAYER IMPACTS

- No direct impact
- Developers will be financially impacted to install the comprehensive infrastructure

4.3 Operation and Maintenance Costs

In developing the comprehensive plan for sewers in the City, a comparison of the cost of the various service schemes was developed and which is presented in Table 4-1.

Table 4-1 Cost of Service

Type of Service	Number of ERU's					Cost/ERU (Annual)	Average Monthly Cost per ERU
	2009	2010	2011	2012	4-Year Average		
Gravity Only	6,755	6,824	6,854	6,910	6,836	$103.39	$8.62
Gravity, One LS	6,194	6,376	6,505	6,725	6,450	$151.70	$12.64
Gravity, Two LS	2,384	2,497	2,543	2,558	2,496	$200.01	$16.67
Individual STEP	2,301	2,317	2,373	2,401	2,348	$220.61	$18.38
Individual STEP, One LS	658	658	658	658	658	$268.92	$22.41
Individual STEP, Two LS	67	68	68	68	68	$317.23	$26.44
Community STEP	756	866	1,012	1,051	921	$386.79	$32.23
Total	19,115	19,606	20,013	20,371	19,776	$164.69	$13.72

The intent of this comparison was to quantify the cost of service. Not surprising the least expensive service is gravity and the most expensive is an individual STEP / Lift Station combined system. This comparative ranking of service schemes was instructive and helped define the type of service each basin was to follow.

A present worth lifecycle analysis was performed to compare the relative lifecycle costs of lift stations, grinder pumps, and STEP systems. The analysis is presented graphically in Figures 4-1 through 4-4. The costs are relative and are therefore not shown. The results of this analysis were used in developing Policy 12.

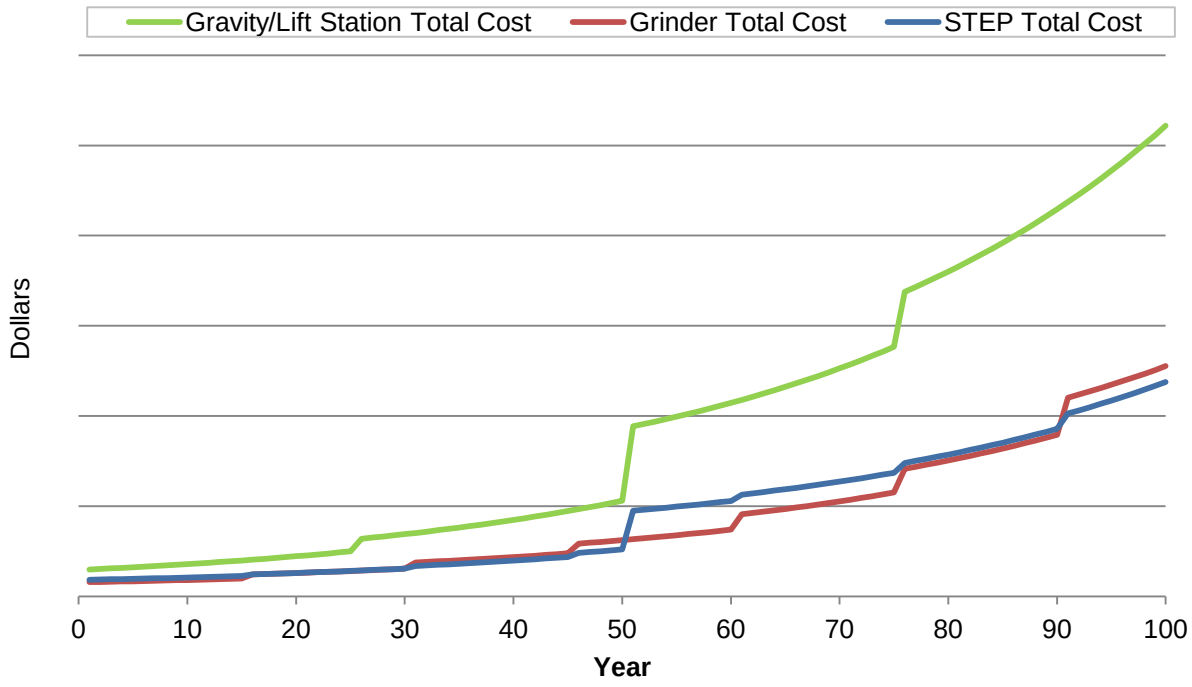

Figure 4-1 Service Cost Comparison, 50 Connections

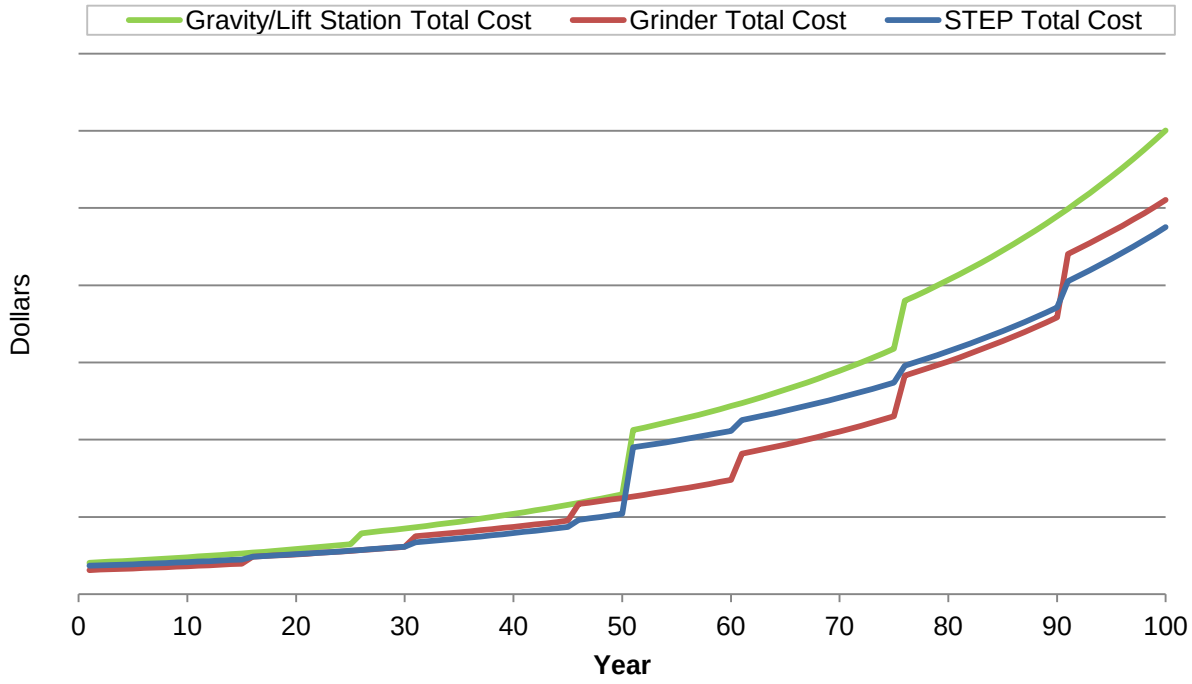

Figure 4-2 Service Cost Comparison, 100 Connections

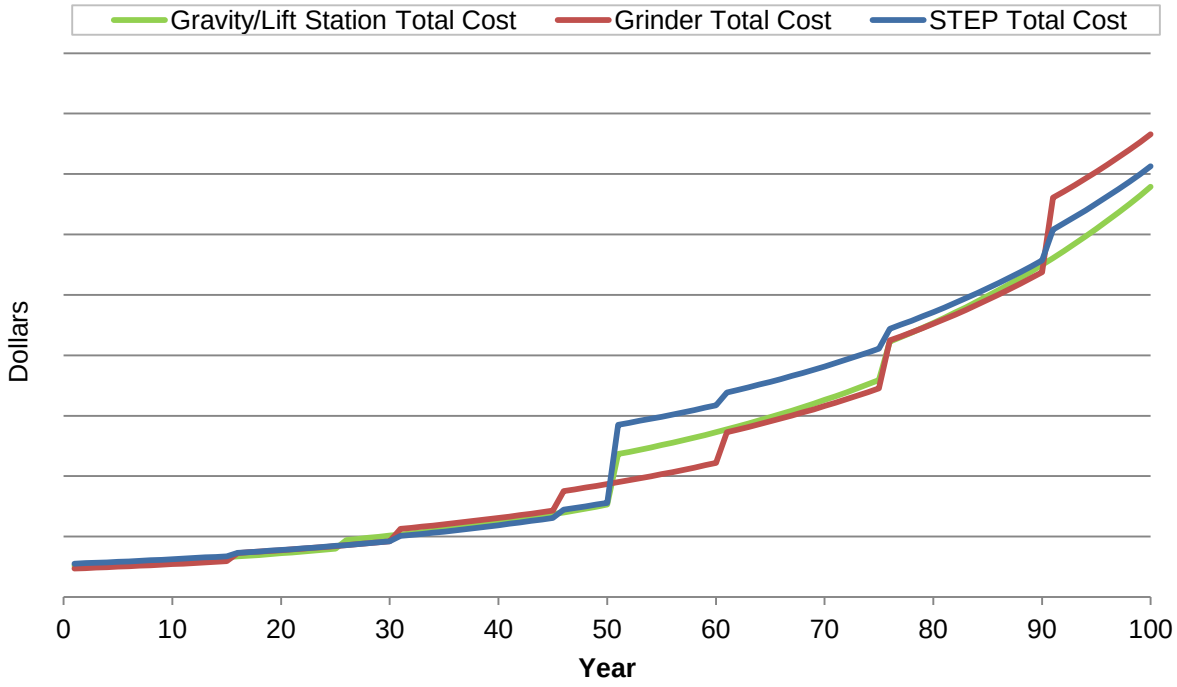

Figure 4-3 Service Cost Comparison, 150 Connections

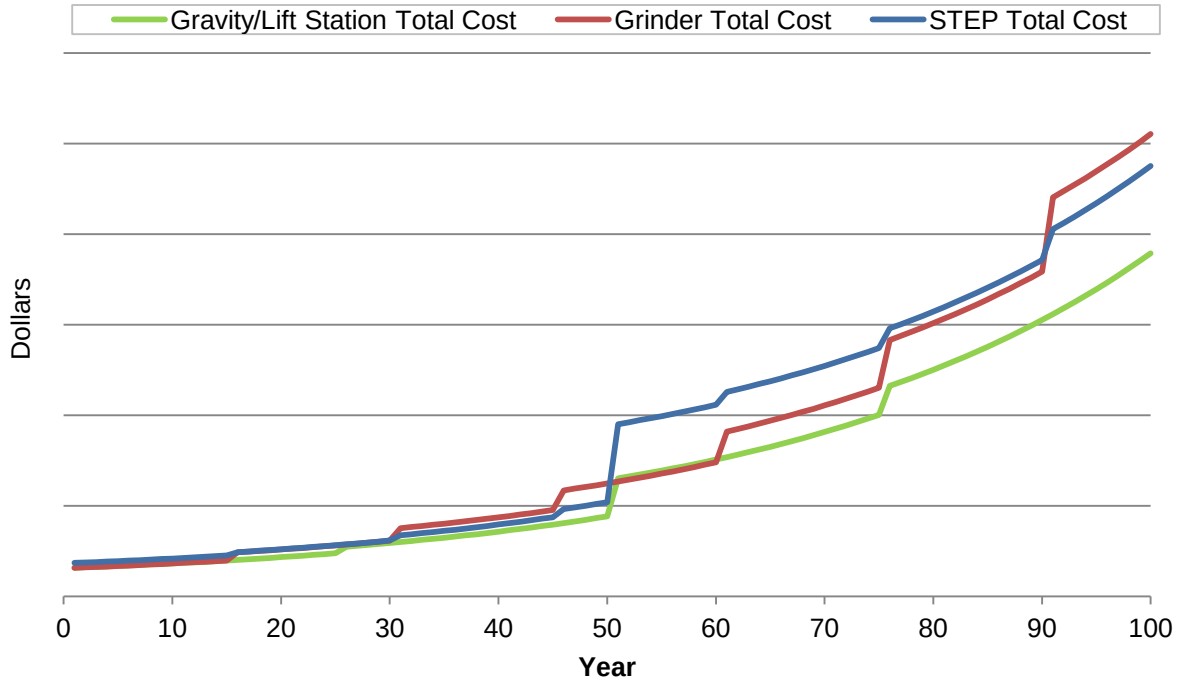

Figure 4-4 Service Cost Comparison, 200 Connections

Chapter 5 Existing Wastewater Facilities

5.1 Introduction

The City's sewer system was first installed in the late 1960's. It now serves 33 square miles of residential, commercial, and industrial customers within the UGA boundary. The sewer system is separate from the stormwater system, and consists of gravity sewers, lift stations, septic tank effluent pump systems (STEP), grinder pump systems, and on-site septic systems. The collection system conveys sewage to the Budd Inlet Treatment Plant (BITP) and the Martin Way Reclaimed Water Plant (MWRWP), both owned and operated by LOTT.

5.2 Sewer Drainage Basins and Mini-Basins

Primary basins are divided based on their ultimate discharge point to LOTT. The Martin Way basin consists of the area upstream of the Martin Way Pump Station (MWPS). The Sleater Kinney North basin consists of the area downstream of the MWPS and upstream of the connection to the LOTT sewer system. The Sleater Kinney South basin consists of the western portion of the City south of I-5.

A mini-basin is defined as an area from which the collection system drains to a specified discharge point. Delineations of mini-basins are based on existing sewer service and topography. Each portion of the system contributing to a pump station is delineated as a separate mini-basin for this analysis. Mini-basins were subdivided with assistance from the City.

The sewer system is presented as a schematic on Figure 5-1, and is shown as a map on Figures 5-2 and 5-3. A large basin map is included in Appendix C.

5.3 Wastewater Treatment

The City does not operate and maintain a wastewater treatment plant. All of the City's sewage is conveyed to the BITP and MWRWP for treatment and disposal. The agreement between the City and LOTT is included as Appendix A.

5.4 Collection and Conveyance Facilities

5.4.1 Gravity Sewer

Gravity sewer pipes in the City's collection system range in size up to 30-inch in diameter. The City owns over 743,000 feet of gravity pipe in the collection system, 74 percent of which is 8-inch diameter. Most of the sewer pipe is PVC and has a low infiltration and inflow (I/I) rate. There are a few sections of pipe with an adverse slope. The sections with adverse slopes should be replaced to reduce deposition of solids and to reduce cleaning requirements.

The sewer pipe inventory is summarized in Table 5-1; pipe lengths are approximated from GIS data provided by the City. Appendix D includes the slope, diameter, and capacity of the hydraulically modeled trunk sewer segments.

In addition to the City owned gravity sewer pipes, there are also LOTT owned and privately owned gravity pipes within the UGA boundary. These pipes are maintained by the owners, with the exception of the Martin Way gravity main, which is owned by LOTT and maintained by the City. The City currently provides line cleaning and televising services for the Martin Way line at

LOTT's request (see Interlocal Agreement included in Appendix A). These pipes are summarized in Tables 5-2 and 5-3 respectively.

FILE NAME (UPDATED BY)	PLOT DATE & TIME
S:\CAD\LACEY\12-10263 COMP PLAN\DWGS\F12-102630_FIG 5-1_EXIST.DWG (PLS)	MAR 30 2015 15:31:40

XREFS: NONE

LEGEND

- City of Lacey Gravity Main
- City of Lacey Force Main
- City of Lacey STEP Main
- LS No. — City of Lacey Lift Station
- LS No. — Mini-Basin
- LOTT Gravity Main
- LOTT Force Main
- LS No. — LOTT Lift Station

LS 43 → LS 43
LS 51 → LS 51
C, F, 19C, 19B, 19A → LS 19
B, G, H, J → K
LANDFILL → LANDFILL
LS 15 → GALAXY
LS 49 → LS 49 → MARTIN WAY
LS 32 → MARTIN WAY EAST
LS 35 → MARTIN WAY EAST
LS 50 → LS 50
LS 42 → LS 42
LS 47 → LS 47
LS 48 → LS 48
LS 31 → LS 31
LS 34 → LS 29 → LS 26 → LS 28 → LS 36
LS 38 → X
LS 25 → LS 25
McALLISTER PARK
MARTIN WAY LS
TO MARTIN WAY RECLAIMED WATER PLANT
DESMOND
LS 11 → LS 52 → LS 12 → U
UNION MILLS
LS 24 → UNION MILLS
CLEARBROOK
HOMANN → LS 14
LANCASTER → LS 44
CARPENTER
LS 45 → LS 33 → LS 41 → LS 40 → LS 46 → LS 30

SLEATER-KINNEY NORTH BASIN

LS 23 → LS 23
LS 27 → LS 27 → WOODLAND CREEK
OLYMPIA
N
TO BUDD INLET TP (LOTT)
LS 17 → LS 17

SLEATER-KINNEY SOUTH BASIN

TO BUDD INLET TP (LOTT)
R
LS 8 → LS 8
LS 2 → LS 2
LS 21 → LS 21
LS 3
PACIFIC
LS 39 → LS 39
AVONLEA

MARTIN WAY BASIN

LACEY
ALDER
RUDDELL
LS 4 → LS 4
LS 22 → LS 22
LS 18 → LS 18
LS 9 → LS 9
LS 20 → LS 20
LS 5 → LS 5
LS 6 → LS 6
LS 37 → LS 37
LAKE POINTE
NT PS

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Existing Sewer Schematic
Wastewater Comprehensive Plan Update
City of Lacey
April 2015

Figure
5-1

Legend

Lift Stations
- City of Lacey LS
- LOTT LS
- Private LS

Force Main
- City of Lacey FM
- LOTT FM
- Private FM

Sewer Main
- City of Lacey Sewer Main
- LOTT Sewer Main
- Private Sewer Main

STEP System
- City of Lacey STEP System
- Private STEP System
- WWTP

Base Layers
- City Limits
- UGA
- Basins
- Parcels

N W E S

0 2,500 5,000 Feet

MARTIN WAY BASIN

SLEATER KINNEY NORTH BASIN

SLEATER KINNEY SOUTH BASIN

GIS Data: City of Lacey.
This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

P:\Mapping\Maps_Generated\Lacey\12-10263.00\002\maps\Fig 5-2 Basins & Minibasins 11x17.mxd 3/30/2015 ctolentino

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BASINS & MINI-BASINS
WASTEWATER COMPREHENSIVE PLAN UPDATE
City of Lacey
April 2015

Figure 5-2

Legend

Lift Stations
- City of Lacey LS
- LOTT LS
- Private LS

Force Main
- City of Lacey FM
- LOTT FM
- Private FM

Sewer Main
- City of Lacey Sewer Main
- LOTT Sewer Main
- Private Sewer Main

STEP System
- City of Lacey STEP System
- Private STEP System

Base Layers
- City Limits
- UGA
- Basins
- Parcels
- Water Bodies

Service Type Basin
- Gravity Sewer (Gravity/Lift Station/Grinder)
- STEP Sewer
- Gravity & STEP Sewer
- Future Gravity Sewer (Gravity/Lift Station/Grinder)
- Future STEP Sewer

N W E S

PUGET SOUND

0 2,500 5,000 Feet

MARTIN WAY BASIN

SLEATER KINNEY NORTH BASIN

SLEATER KINNEY SOUTH BASIN

GIS Data: City of Lacey.
This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

P:\Mapping\Maps_Generated\Lacey\12-10263.00\002\maps\Fig 5-3 Sewer Srvc Type 11x17.mxd 3/30/2015 ctolentino

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SEWER SERVICE TYPE
WASTEWATER COMPREHENSIVE PLAN UPDATE
City of Lacey
April 2015

Figure 5-3

Table 5-1 City Owned Gravity Pipe Inventory	
Pipe Diameter (inches)	**Total Length (feet)**
Unknown	700
4	1,800
6	11,800
8	551,900
10	56,000
12	53,700
15	21,300
18	10,300
21	6,600
24	16,200
27	10,600
30	1,800
Total Length	**743,100**

Table 5-2 LOTT Owned Gravity Pipe Inventory	
Pipe Diameter (inches)	**Total Length (feet)**
8	300
15	1,900
18	3,200
20	800
24	3,900
27	100
Total Length	**10,200**

Table 5-3 Privately Owned Gravity Pipe Inventory	
Pipe Diameter (inches)	**Total Length (feet)**
Unknown	3,200
4	1,700
6	13,300
8	46,600
10	1,700
12	600
Total Length	**67,100**

5.4.2 Lift Stations

There were 47 lift stations within the City's sewer system at the end of 2012. 20 are STEP stations and 27 are conventional lift stations. Of these, 13 are stations that have been built since the adoption of the 2005 Plan. Table 5-4 shows general lift station information. More detailed data is included in Appendix E.

On-site emergency generators have been installed at all but 14 of the lift stations. The remaining 14 lift stations that do not have on-site emergency generators are provided with pig tails to attach portable generators. The City's goal is to replace the pig tails with on-site generators at all of the remaining lift stations.

All lift stations and the water system are connected to the City's supervisory control and data acquisition (SCADA). The City's entire SCADA system was historically handled through a single repeater located on the Union Mills reservoir until 2013. Poor communication sometimes occured due to obstructed lines of sight between the lift stations and the repeater. The repeater also had difficulty handling all of the lift stations and communication was slowed and/or interrupted due to the volume of traffic. The City has just recently completed the process of increasing the reliability of the SCADA system by installing multiple radio repeater sites. This will prevent overloading of a single facility, and improve communication lines of sight throughout the City. This work removed the existing Union Mills repeater and replaced it with three repeaters located at the Hawks Prairie, Judd Hill, and McAllister reservoirs. The City's SCADA system collects and stores operational information that is used by engineering and operations staff. Operations staff are able to receive and respond to various alarms from their mobile devices.

Vacuum Prime stations were prevalent for a short time in the late 70's to early 80's. Wet pit/dry pit stations were common from the late 60's to early 90's. Submersible stations have been the City's preference since the mid 90's and the City has made efforts to retrofit several of its vacuum prime stations with submersible pumps due to the poor reliability and unavailability of parts for many of the vacuum prime stations.

The City began allowing community STEP stations in the early 2000's as STEP sewer was extended to the east. Some of these stations were designed to eventually be converted to solid-handling submersible pump stations as STEP was viewed as a temporary solution for some areas, particularly along Steilacoom Road. The City has since stopped approving community STEP systems due to maintenance and liability concerns related to the large debris tanks.

Table 5-4 City Owned Lift Stations

Lift Station	Location	Capacity (gpm)	No. of Pumps	Pump HP	Mini-Basins Served	STEP[(1)]	Generator[(1)]
LS-2	2408 Westlake Dr.S.E.	140	2	3.8	LS-2		Yes
LS-3	2404 Golf Club Rd.S.E.	1100	2	25	LS-2, LS-3, LS-39, Avonlea		Yes
LS-4	5900 25th Ave S.E.	175	2	5	LS-4		
LS-5	3607 Ryan St. S.E.	150	2	5	LS-5		
LS-6	5611 32nd Ct. S.E.	210	2	5	LS-6		Yes
LS-8	590 College St.S.E.	100	2	2	LS-8		
LS-9	4901 Ruddell Rd.S.E.	2050	3	35	LS-9, LS-18, LS-22, LS-37, Lake Pointe		Yes
LS-11	6480 Glen Ct.S.E.	100	2	5	LS-11		
LS-12	6617 5th Ct.S.E.	100	2	2	LS-12		
LS-14	1807 Diamond Lp.S.E.	175	2	15	LS-14		Yes
LS-15	1210 Galaxy Dr. N.E.	100-130	2	3	LS-15		
LS-17	480 College St.N.E.	165	2	25	LS-17		
LS-18	4530 Yelm Hwy.S.E.	250	2	5	LS-18		Yes
LS-19	2691 Willamette Dr.S.E.	340	2	15	LS-19A, LS-19B, LS-19C, C, F		Yes
LS-20	5011 47th Ave.S.E.	100	2	5	LS-20		
LS-21	4526 Pacific Ave.S.E.	300	2	5	LS-21		
LS-22	4401 45th Ave.S.E.	360	2	7.5	LS-22		
LS-23	1922 Abernathy N.E.	180	2	23	LS-23		
LS-24	2201 Mayes Rd	56	2	3	LS-24	Yes	
LS-25	1450 Marvin Rd.S.E.	300	2	5	LS-25	Yes	Yes
LS-26	801 Avalon Ct SE	28	2	1	LS-26	Yes	Yes
LS-27	951 College Ln NE	30	2	1.5	LS-27	Yes	
LS-28	800 Pine Crest Dr S.E.	34	2	1.5	LS-28	Yes	Yes
LS-29	8502 8th Ct SE	50	2	1	LS-29	Yes	Yes
LS-30	8500 55th Ct SE	50	2	3	LS-30	Yes	Yes
LS-31	8519 Sweetbrier Lp S.E.	238	2	7.5	LS-31	Yes	Yes

Table 5-4 City Owned Lift Stations

Lift Station	Location	Capacity (gpm)	No. of Pumps	Pump HP	Mini-Basins Served	STEP(1)	Generator(1)
LS-32	9300 Martin Way NE	240	2	5.5	LS-32		Yes
LS-33	4901 Mullen Heights Dr SE	34	2	3	LS-33	Yes	Yes
LS-34	800 Torden Ln S.E.	350	2	15	LS-34		Yes
LS-35	9420 Fagan Ct NE	290	2	5	LS-35		Yes
LS-36	836 Rowland Dr SE	50	2	1	LS-36	Yes	Yes
LS-37	5601 Lintel Ln SE	1249	2	69.7	LS-37		Yes
LS-38	8341 Steilacoom Rd SE	59	2	5	LS-38	Yes	
LS-39	4201 37th Ave SE	300	2	7.5	LS-39		Yes
LS-40	8231 54th Ave SE	50	2	3	LS-40	Yes	Yes
LS-41	8201 55th Ave SE	50	2	3	LS-41	Yes	Yes
LS-42	8524 28th Way SE	63	2	1.5	LS-42	Yes	Yes
LS-43	8320 Vashon Dr NE	550	2	20	LS-43		Yes
LS-44	2414 Pleasanton Ct SE	50	2	3	LS-44	Yes	Yes
LS-45	4630 carpenter Rd. SE	30	3	1.5	LS-45	Yes	Yes
LS-46	5421 Caleb Ct. SE	35	2	3	LS-46	Yes	Yes
LS-47	8514 15th Ave SE	50	2	0.75	LS-47	Yes	Yes
LS-48	1516 Farina Loop SE	50	4	1.5	LS-48	Yes	Yes
LS-49	2365 Shady Glen Ct NE	800	2	60	LS-49		Yes
LS-50	2920 Accalla Dr SE	50	2	1.5	LS-50	Yes	Yes
LS-51	3099 Eagle Lp NE	135	2	7.5	LS-51		Yes
LS-52	6035 7th Ave SE	450	2	14.1	LS-11, LS-12, LS-52		Yes

Notes:
(1) A blank cell indicates 'No'.

5.4.3 Force Mains

The City owns approximately 80,000 feet of sewer force mains for conveying wastewater to the treatment plant or to downstream gravity conveyance piping. Pipe lengths are approximated from GIS data provided by the City. The force mains are summarized in Table 5-5 below, and are shown in the map in Appendix C.

There are also LOTT owned and privately owned force mains located in the City. These are summarized in Tables 5-6 and 5-7 respectively.

Table 5-5 City Owned Force Mains

Diameter (inches)	Length (ft)
1.25	100
1.5	400
2	2,400
3	200
4	16,700
6	20,000
8	13,300
10	13,800
12	6,600
14	2,200
18	4,200
Total Length	**80,000**

Table 5-6 LOTT Force Mains

Diameter (inches)	Length (ft)
4	2,200
12	2,300
18	7,800
Total Length	**12,200**

Table 5-7 Private Force Mains	
Diameter (inches)	**Length (ft)**
2	600
3	700
4	7,600
Total Length	**8,800**

5.4.4 STEP Systems

The City has approximately 3,900 customers served by septic tank effluent pump (STEP) systems. These operate like an on-site septic system by collecting sewage into a septic tank, and settling out solids. However, instead of discharging the effluent to a drain field, it is instead pumped into a force main which ultimately discharges to gravity conveyance piping. The septic tanks do need periodical cleaning to remove grease and accumulated solids.

There are two types of STEP systems in the City. The first type has individual septic tanks located on individual parcels, and the effluent from the tank is pumped into a shared main. The other type has a community tank which collects sewage by gravity from surrounding parcels, with the effluent then being pumped into a force main. The community STEP systems have been installed in areas that are too far from the existing sewer system to be economically feasible to serve via a gravity sewer and in areas where zoning densities made it challenging to accommodate individual STEP systems.

Several of the City's community STEP systems were installed as a temporary method of providing sewer service in areas where the infrastructure needed to provide gravity service had not yet been installed. These systems were designed to easily bypass the community STEP system and to connect directly to a future gravity main. Unfortunately many of these installations have become somewhat permanent. Since the City relies heavily on developer funded projects to expand its collection system, the more of these temporary systems that are built the less likely it is that a gravity system will be extended to these areas without a City funded project. Maintenance crews have also noted that regular cleaning of the large 20,000 - 50,000 gallon debris tanks can be a very difficult task. For these reasons the City has decided to no longer approve community STEP systems unless no other alternative exists. The City would like to look at options for eliminating as many of these stations as feasible.

The STEP mains vary in size from 1-inch to 16-inches. The City owns approximately 275,000 feet of STEP main, and there is an additional 2,500 feet of privately owned STEP main. These mains are summarized in Tables 5-8 and 5-9.

5.4.5 Individual Grinder Pumps

The City has approximately 100 customers served by individual grinder pump systems. These systems consist of a relatively small pump basin where the customer’s waste stream is ground to a slurry and pumped through small diameter force mains to the gravity system. These systems are best used in gravity basins where individual or small groups of customers are unable to discharge directly to the gravity system because of their local topography. Grinder systems do not tend to develop significant odor problems due to the reduced residence time of the waste stream, provided that force main lengths are relatively short and properly sized.

However, the deposition of solids is a concern if scouring velocities are not reached on a regular basis. Grinder systems fill a similar role to that of STEP systems, where grinder systems tend to be better suited to smaller basin sizes with shorter distances to a gravity out fall, and STEP systems are better suited to larger basins that have a longer distance to the gravity out fall, require more flexibility in the sizing of force mains, and can take advantage of centralized odor control facilities. Historically, the City has chosen to limit the use of grinder systems and has only approved their use on a case by case basis. Past practice has been that grinder systems are privately owned and maintained, whereas STEP systems are typically owned and maintained by the City. This stance has led to several cases of poorly performing installations, particularly in custom built commercial applications. The City is considering revising its policies relating to grinder systems, which is discussed in Chapter 4.

Table 5-8 City Owned STEP Mains

Diameter (inches)	Length (ft)
1	1,600
1.15	100
1.25	200
1.5	800
2	129,600
2.5	2,000
3	23,600
4	45,500
6	29,400
8	25,500
10	5,100
14	5,800
16	5,900
Total Length	**275,200**

Table 5-9 Privately Owned STEP Mains

Diameter (inches)	Length (ft)
2	1,100
3	800
4	700
Total Length	**2,500**

5.5 Odor Control Facilities

The City has 8 active odor control facilities to mitigate odor complaints and reduce corrosion associated with sewer gases. Bioxide® is injected directly into STEP force mains at 5 locations. There are 3 active soil biofilter air-scrubbing/aeration systems. There are also 6 inactive odor control facilities. A summary of the odor control facilities is listed in Table 5-10.

Table 5-10 Odor Control Facilities

Facility Number	Address	Type	Active/Inactive
1	6620 Carpenter Road SE	Chemical Injection	Active
2	9165 31st Avenue NE	Chemical Injection	Active
3	6100 Stockton Street SE	Chemical Injection	Active
4	5800 Rumac Street SE	Chemical Injection	Active
6	4905 Ruddell Road SE	Soil Filter Bed	Active
8	6120 Thornbury Court SE	Aeration/Soil Filter Bed	Active
10	4031 Campus Green Drive NE	Aeration/Soil Filter Bed	Active
12	4119 Ingleside Loop SE	Chemical Injection	Active
5	Nelson Street SE	Soil Filter Bed	Inactive
7	3065 Hogum Bay Road NE	Soil Filter Bed	Inactive
9	6200 61st Avenue SE	Soil Filter Bed	Inactive
11	800 Torden Lane SE	Chemical Injection	Inactive
13	8320 Vashon Drive NE	Chemical Injection	Inactive
14	2365 Shady Glen Court SE	Chemical Injection	Inactive

Historically residents in areas where sewer force mains discharge into manholes have registered more frequent odor complaints. City staff takes all complaints very seriously and strive to respond and address all odor issues. The odor complaints are concentrated near manholes where STEP effluent is discharged into downstream gravity systems. Odors are typically caused by the formation of hydrogen sulfide in sewers. Hydrogen sulfide is formed when wastewater is deprived of oxygen for an extended period of time. This is especially prevalent with STEP systems. Maintenance crews monitor hydrogen sulfide levels at force main outfalls to gage the effectiveness of the City's odor control facilities. When released into the atmosphere in manholes and partially full sewer lines, the hydrogen sulfide combines with water vapor to form sulfuric acid, which is corrosive to concrete.

Hydrogen sulfide is a colorless, inflammable compound with the characteristic odor of rotten eggs. In addition to the odor problems, it can and does cause corrosion problems in the collection system downstream of the STEP system discharges. Concrete facilities and metal appurtenances are primarily impacted. Since most of the newer sewer piping is constructed of PVC, most of the degradation is observed in concrete manhole structures. The 1999 Plan listed a partial inventory of manholes that were evaluated for corrosion problems caused by low dissolved oxygen levels and the formation of hydrogen sulfide. Field investigations of manholes were not conducted for the 2005 Plan Update. Since then, the City has rehabilitated several deteriorated manholes and sections of concrete pipe along the Sleater Kinney corridor. The City televises pipes in suspect areas on a regular basis to monitor for corrosion and other potential issues. The use of Bioxide® has reduced hydrogen sulfide levels and is expected to reduce future corrosion as a result.

5.6 On-Site Septic Systems

There are approximately 10,200 on-site septic systems within the UGA boundary. There are ongoing discussions with LOTT, Olympia, Tumwater, and Thurston County to convert septic systems to sewer to reduce groundwater contamination. In particular, Woodland Creek water quality is suspected to have been negatively impacted by failing septic systems in the area.

In the "Current Conditions Report Woodland Creek Pollutant Load Reduction Project" dated February 2007, the Woodland Creek Estates and Covington septic systems are identified as contributing to high fecal coliform loads to Woodland Creek. These septic systems are in the process of being converted to STEP systems to reduce fecal coliform loading. The STEP piping has already been installed and services are in the process of being connected. Work should be completed by 2014.

Tanglewilde and Thompson Place are also suspected of contributing to poor water quality due to the density of the neighborhoods and soils with high infiltration rates.

Future septic system to sewer conversion is expected to occur at a rate of 2% per year, or approximately 200 septic systems per year on average. All new development, which is estimated to be all future population growth, occurring within the City limits is assumed to connect to the sewer system. Figure 5-4 shows the septic systems within the City.

Existing septic systems that have failed or otherwise require significant upgrades/repairs and have access to a public sewer within 200 feet of the property are required to connect to the public sewer system at that time. If the public sewer is located more than 200 feet away from the property, then the owner may repair the existing septic system, provided there are no other environmental or public health considerations that would prohibit the use of a septic system in that location.

Legend

Lift Stations
- City of Lacey LS
- LOTT LS
- Private LS

Force Main
- City of Lacey FM
- LOTT FM
- Private FM

Sewer Main
- City of Lacey Sewer Main
- LOTT Sewer Main
- Private Sewer Main

STEP System
- City of Lacey STEP System
- Private STEP System
- WWTP

Base Layers
- City Limits
- UGA
- Basins
- Minibasins
- Parcels
- Septic Tank Parcels

N W E S

0 2,500 5,000 Feet

MARTIN WAY BASIN

SLEATER KINNEY NORTH BASIN

SLEATER KINNEY SOUTH BASIN

GIS Data: City of Lacey.
Septic Tank Parcels: Thurston County
This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

P:\Mapping\Maps_Generated\Lacey\12-10263.00\002\maps\Fig 5-4 Septic Tank Locations 11x17.mxd 3/30/2015 ctolentino

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SEPTIC TANK LOCATIONS

WASTEWATER COMPREHENSIVE PLAN UPDATE
City of Lacey
April 2015

Figure 5-4

Chapter 6 Wastewater Flow Characteristics

Wastewater flow data recorded at various locations in the City's wastewater collection system for the years of 2007 through 2011 are analyzed to determine current wastewater flow characteristics such as unit flows, I/I rates, and peaking factors.

LOTT has developed the following reports used in preparing this chapter:

- *2010 Flows and Loadings Report*, LOTT, October 2010
- *2010 Inflow & Infiltration and Flow Monitoring Report*, LOTT, October 2010
- *2011 Inflow & Infiltration and Flow Monitoring Report*, LOTT, February 2012

6.1 Existing Wastewater Flows

LOTT has eight wastewater flow monitoring stations throughout the City, and the City has two. Flow monitoring station L7 measures flow from the Sleater-Kinney South basin. The Martin Way Pump Station measures flows from the Martin Way basin, and measures the flows diverted to the Martin Way Reclaimed Water Plant. Flow monitoring station L6 measures the flow from the Martin Way and Sleater-Kinney North basins which ultimately discharge to the Budd Inlet Treatment Plant. These flow meters allow for the measuring of all sewer flows in the Lacey sewer system. The flow monitoring stations are shown on Figure 6-1.

6.1.1 Annual Average Day Flow

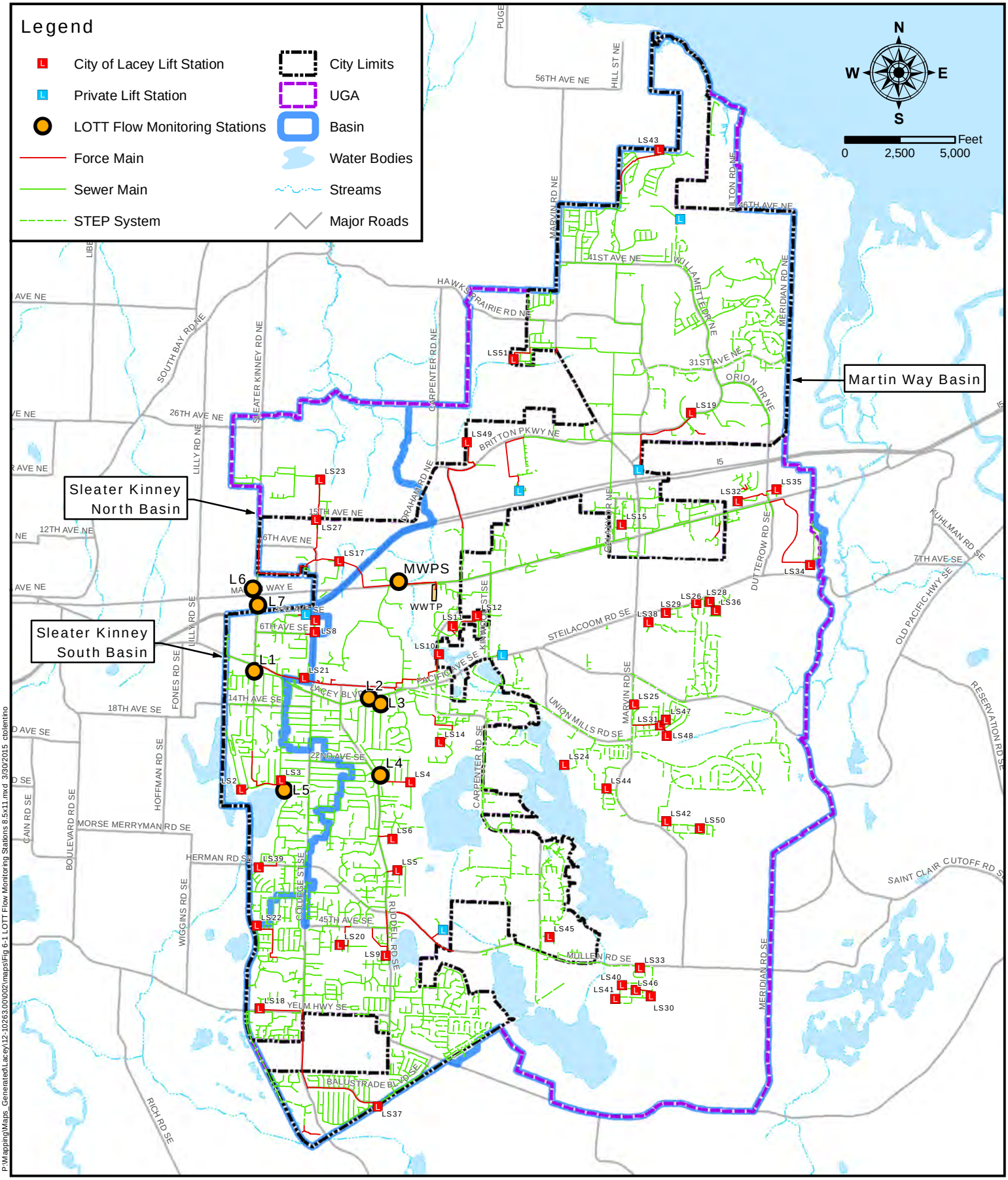
Table 6-1 summarizes annual average wastewater flow characteristics recorded at LOTT's flow monitoring stations L6 and L7 from 2007 through 2011. A population/residential connections ratio of 2.96 was derived from 2009 data from the *2010 Flows and Loadings Report* and included in Table 6-1. The average household size in the City is 2.47 people/unit.

Table 6-1 includes flow from residential, commercial, institutional, and inflow and infiltration. 85 gpcd is comparable to other communities in the Puget Sound region.

Table 6-1 Annual Average Flow Characteristics

Year	L6 Flow (mgd)	L7 Flow (mgd)	MWRWP Flow (mgd)	Total Flow (mgd)	Residential Connections	Sewered Population[1]	Per Capita Flow (gpcd)
2007	1.67	0.91	0.64	3.22	12,690	37,556	86
2008	1.74	0.81	0.61	3.16	13,211	39,098	81
2009	1.70	0.77	0.99	3.46	13,643	40,376	86
2010	1.69	0.85	1.04	3.58	14,039	41,548	86
2011	2.13	0.99	0.65	3.77	14,868	44,001	86
Average	**1.79**	**0.87**	**0.79**	**3.44**	**N/A**	**N/A**	**85**

(1) Sewered population was calculated using number of residential connections and the ratio of 2009 sewered population (obtained from LOTT) to residential connections.



P:\Mapping\Maps_Generated\Lacey\12-10263.00\002\maps\Fig 6-1 LOTT Flow Monitoring Stations 8.5x11.mxd 3/30/2015 ctolentino

GIS Data: City of Lacey.
This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

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LOTT FLOW MONITORING STATIONS

WASTEWATER COMPREHENSIVE PLAN UPDATE

City of Lacey
April 2015

Figure

6-1

6.1.2 Monthly Average Day Flow

Table 6-2 summarizes the monthly average flow measured at L6 and L7 over the five year period from 2007 through 2011.

Table 6-2 Monthly Average Daily Flow Summary

Month/Year	Flow (mgd)				
	2007	2008	2009	2010	2011
January	3.28	3.46	3.83	3.61	4.01
February	3.18	3.34	3.42	3.67	3.84
March	3.12	3.56	3.45	3.68	4.15
April	2.75	3.46	3.47	3.68	4.01
May	2.50	3.29	3.50	3.58	3.82
June	2.57	3.32	3.29	3.61	3.73
July	2.47	3.25	3.30	3.54	3.52
August	2.39	3.13	2.95	3.28	3.41
September	2.44	2.31	3.32	3.57	3.39
October	3.11	2.30	3.17	3.40	3.41
November	3.18	3.14	3.41	3.81	3.53
December	3.60	3.17	3.53	3.95	3.52
Annual Average	**2.88**	**3.14**	**3.39**	**3.62**	**3.69**

6.1.3 Peak Month and Peak Day Flow

Peak month and peak day flows recorded at the LOTT flow monitoring stations L6 and L7 from 2007 through 2011 are summarized in Table 6-3.

Table 6-3 Peak Flows

Year	Peak Month (mgd)	Month	Peak Day (mgd)	Day
2007	3.60	December	6.08	December 2
2008	3.56	March	4.25	July 1
2009	3.83	January	5.70	January 7
2010	3.95	December	5.07	December 12
2011	4.15	March	4.95	January 16
Average	**3.82**		**5.21**	

6.2 Domestic Wastewater

An estimate of the existing domestic wastewater flow component is derived in the following paragraphs.

6.2.1 Water Use Data

An analysis relating water use to wastewater flows was included in Table 10 of the *2010 Flows and Loading Report* in order to develop unit base sewer flows for the City. Basins 1, 2, 3, and 4, shown on Figure 7 of the same report, represent The City. The report is included as Appendix F. Water usage quantities were collected from the City for 2009 for sewered customers only. Baseline sewer flow was calculated using water use during winter months, when irrigation is minimal and most of the water is assumed to enter the sewer system.

Commercial and residential flows were analyzed separately to develop per capita and per employee base flow rates. The base flow was compared to summer sewer records to calibrate the sewer per capita rates. Table 6-4 lists the flows per LOTT's basins. Basins 1, 2, and 3 are approximately the same as the Martin Way basin; Basin 4 is similar to the Sleater-Kinney basin. Table 6-5 lists typical per connection wastewater generation rates

Table 6-4 Wastewater Generation Rates (2009)

LOTT Basin	Population		Drinking Water Consumption			Adjusted WW Generation Rate		Base Flow (gpd)
	Sewered Population	Sewered Employees	Total (gpd)	Residential (gpd)	Employee (gpd)	Residential (gpcd)	Employee (gped)	
1	8,006	7,346	781,111	505,792	275,319	63	38	781,695
2	5,285	729	383,712	364,793	18,919	69	26	383,288
3	19,358	3,622	1,349,432	1,285,784	63,647	66	18	1,349,262
4	5,554	8,368	504,345	372,280	132,064	67	16	504,305
Total	**38,203**	**20,065**	**3,018,600**	**2,528,649**	**489,949**	**66**	**24**	**3,018,550**

Table 6-5 Typical Per Connection Wastewater Generation Rates

Connection Type	Per Capita Sewer Rate (gpcd)	Population/Connection	Flow Rate/Connection (gpd)
Residential	66	2.47	163
Commercial	24	30.79	739

6.2.2 Student Wastewater Flows

Wastewater generated by students will be calculated per the Department of Ecology's *Criteria for Sewage Works Design* (Orange Book). The Orange Book has separate per capita flow rates for schools with showers, schools without showers, and community colleges, ranging from 10-16 gpd/student. For the purposes of this analysis, 10 gpd/student will be used.

6.2.3 Peaking Factors

Peaking factors are the ratio of the peak flow to the average annual flow. Peak month, peak day, and peak hour peaking factors are presented in Tables 6-6, 6-7, and 6-8 respectively.

Table 6-6 Peak Month Flow Peaking Factors

Year	Annual Average Flow (mgd)	Peak Month Flow (mgd)	Peak Month Peaking Factor
2007	3.22	3.60	1.12
2008	3.16	3.56	1.13
2009	3.46	3.83	1.11
2010	3.58	3.95	1.10
2011	3.77	4.15	1.10
Average	**3.44**	**3.82**	**1.11**

An average peak month flow peaking factor of 1.11 was derived for total wastewater flow.

Table 6-7 presents the derivation for the peaking factor for peak day flow.

Table 6-7 Peak Day Flow Peaking Factors

Year	Annual Average (mgd)	Peak Day (mgd)	Peak Day Peaking Factor
2007	3.22	6.08	1.89
2008	3.16	4.25	1.34
2009	3.46	5.70	1.65
2010	3.58	5.07	1.42
2011	3.77	4.95	1.31
Average	**3.44**	**5.21**	**1.52**

A peak day peaking factor of 1.52 was derived for total wastewater flow.

Table 6-8 presents the derivation for the peaking factor for peak hour flow on a City-wide scale.

Table 6-8 Peak Hour Flow Peaking Factors

Year	Annual Average (mgd)	Peak Hour (mgd)	Peak Hour Peaking Factor
2007	3.22	8.71	2.70
2008	3.16	6.63	2.10
2009	3.46	7.97	2.30
2010	3.58	7.74	2.16
2011	3.77	6.99	1.85
Average	**3.44**	**7.61**	**2.22**

A peak hour peaking factor of 2.22 was derived for total wastewater flow.

6.2.4 Diurnal Curves

Typically, sewer flows are lowest at night and highest during the morning and evening. This distribution of flow throughout the day is described by a diurnal curve. These curves are used by the computer model to simulate flow variations throughout the time period being modeled. The curves should also be in general agreement with the peaking factors developed above. The maximum factor on the diurnal curve is approximately 1.51. Multiplying this by the peak day peaking factor of 1.52 results in a peak hour peaking factor of 2.30. This is in close agreement with the Table 6-7 Peak Hour Peaking factor of 2.22.

Diurnal curves for the City's two main basins were developed by Brown and Caldwell as part of LOTT's *2010 Inflow & Infiltration and Flow Monitoring Report,* and are shown on Figure 6-2. This curve has been divided by the average daily flow rate to normalize it. The difference between the two diurnal curves likely has to do with higher infiltration rates in the Sleater Kinney basin.

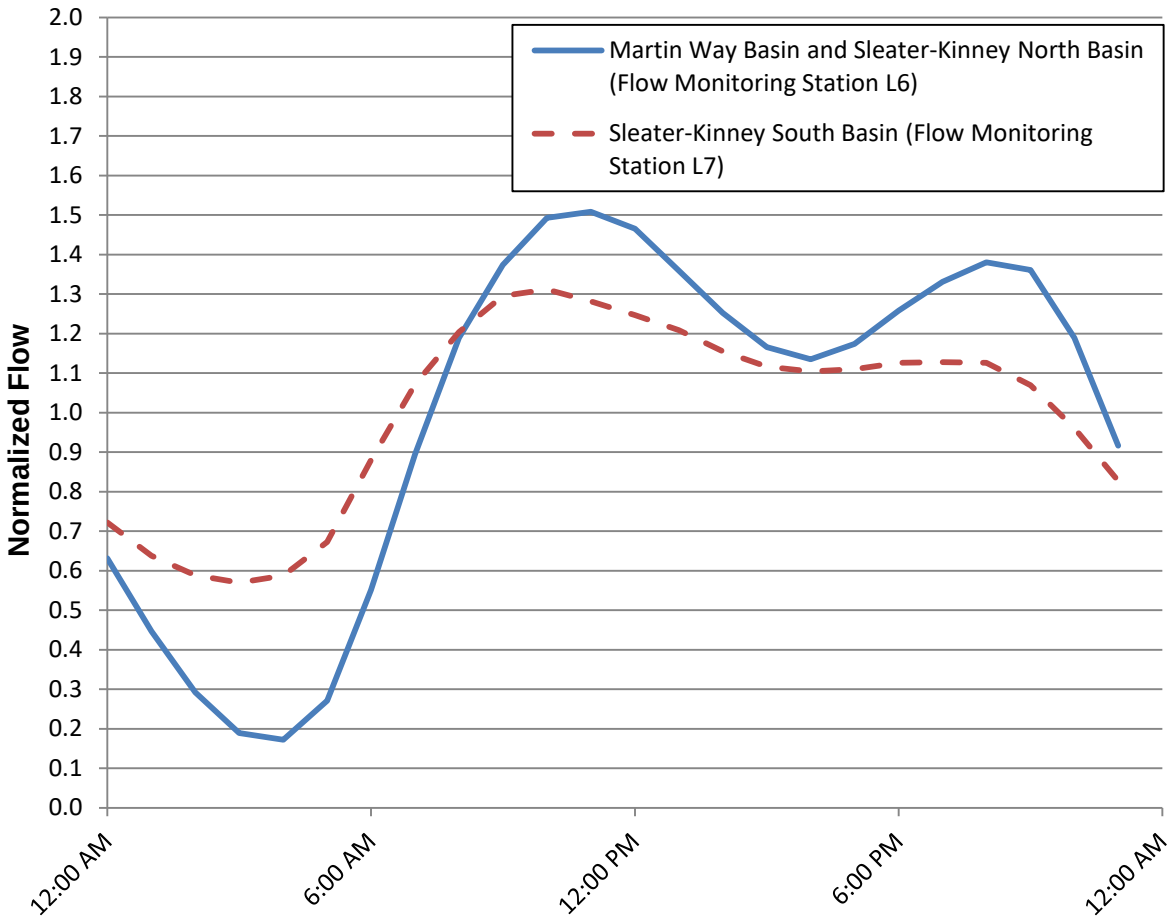

Figure 6-2 Diurnal Curves

6.3 Infiltration and Inflow Analysis

Infiltration and inflow (I/I) is the wastewater component consisting of stormwater surface runoff entering the sewer system and infiltration from storm-saturated ground conditions. Inflow is runoff entering the sewer directly, typically from storm sewer connections, basement sump pumps, roof drains and submerged manholes. Infiltration occurs as groundwater leaks into the sewer system through cracked or broken pipes and manholes, or through loose joints and connections.

The City's sewer system is fairly new in comparison with other systems in the area. As a result, most of the system has a low I/I rate.

6.3.1 LOTT I/I Study

LOTT performs an I/I study on seven year cycles such that at the end of each cycle, its entire service area is analyzed. The most recent report analyzing I/I in the City is the *2011 Inflow & Infiltration and Flow Monitoring Report* (I/I Study) prepared by LOTT and Brown and Caldwell.

The study analyzed seven flow monitoring stations in the City and compared them with population and water use data throughout the year to determine baseline sewer flows and to analyze rates of I/I.

All of the City's wastewater flows through two flow monitoring stations: the Martin Way basin through monitoring station L6, and the Sleater-Kinney basin through monitoring station L7. The difference between the average of monitored flow and water consumption in the Martin Way basin is 1 percent; however, the difference in the Sleater-Kinney basin is 25 percent, implying a high rate of I/I.

The I/I Study calculated the I/I rate in the following ways:

- Per ERU
- Per inch/diameter/mile
- Peak hour flow/base flow ratio

All of these factors were divided by a benchmark value and averaged in the benchmark ratio, so that a value of 1 or lower signifies low I/I and a value higher than 1 signifies high I/I. These parameters for the City are shown on Table 6-9.

Table 6-9 Summary of I/I Statistics

Basin	I/I per ERU (gpd/ERU)			I/I per inch-diameter/mile (gpd/idm)			Peak Hour I/I / Base Flow	Benchmark Ratio
	Average Annual	Peak Day	Peak Hour	Average Annual	Peak Day	Peak Hour		
Martin Way	8	66	103	75	607	953	1.6	0.4
Sleater-Kinney	72	279	383	965	3,715	5,106	3.0	2.5
Benchmark	20	150	250	200	1,500	2,400	2.5	1.0

6.3.2 DOE Infiltration and Inflow Thresholds

The EPA publication 'Infiltration/Inflow – I/I Analysis and Project Certification' dated May 1985 was reissued by the Department of Ecology as Ecology Publication No. 97-03. This publication established the following thresholds for possibly excessive dry weather infiltration and inflow:

- If average dry weather flow is less than 120 gpcd, infiltration is non-excessive.
- If average wet weather flow is less than 275 gpcd, inflow is non-excessive.

LOTT performed an I&I analysis in their 2011 Inflow & Infiltration and Flow Monitoring Report. The average dry weather and wet weather flows are calculated from data in that report and shown in Table 6-10.

Table 6-10 Dry and Wet Weather Flows		
Basin	**Dry Weather Flow (gpcd)**	**Wet Weather Flow (gpcd)**
Martin Way	77	81
Sleater Kinney	127	176
City of Lacey	**85**	**97**
EPA/DOE Excessive I/I Criteria	120	275

The City as a whole has low rates of I/I; however, there is evidence that the Sleater-Kinney basin has high rates of infiltration.

6.3.3 Future Infiltration and Inflow Rates

Based on the *Regional Needs Assessment Report,* (March 1, 2005, prepared by King County), as sewer systems age I/I will increase at a rate of approximately 7 percent per decade up to a maximum of 28 percent.

The purpose of analyzing buildout conditions is to ensure that new pipe installed will have sufficient capacity through the end of its useful life. Therefore, the 28 percent maximum increase of I/I will be used when modeling the buildout conditions to properly size pipes. This assumes that no repairs or upgrades are made to reduce I/I, and so will result in a conservative evaluation of capacity. When specific projects are being considered, a pre-design report should be prepared to more thoroughly analyze pipe sizing criteria for specific project conditions.

6.4 High Strength Sewage Flows

LOTT has an industrial pre-treatment program to prevent the introduction of pollutants that could interfere with treatment plant processes, impact receiving water or biosolids quality, and/or threaten workers' safety. The program is mandated by the Department of Ecology as part of LOTT's National Pollutant Discharge Elimination System (NPDES) Permit.

There are three high strength sewage customers in the City. These customers are:

- Thurston County Waste and Recovery Center (TCWRC, formerly known as the Hawks Prairie Landfill)
- Nutriom
- International Paper

LOTT monitors flows from TCWRC, Nutriom, and International Paper. These flows are summarized in Table 6-11 and were provided by the City.

Table 6-11 High Strength Sewage Flow Producers

Month	Year	TCWRC (gallons/month)	Nutriom (gallons/month)	International Paper (gallons/month)
January	2010	128,678	47,610	51,507
February	2010	116,120	73,117	52,599
March	2010	130,159	44,095	60,334
April	2010	121,931	30,324	56,452
May	2010	130,025	48,485	40,946
June	2010	125,559	89,610	45,172
July	2010	126,113	79,138	25,694
August	2010	117,264	101,646	34,588
September	2010	140,781	108,602	33,675
October	2010	126,786	12,447	40,557
November	2010	250,071	43,145	43,952
December	2010	476,207	40,048	38,612
January	2011	432,441	48,590	56,122
February	2011	213,614	81,218	59,406
March	2011	441,761	103,613	67,447
April	2011	227,953	112,185	71,853
May	2011	93,171	124,632	66,669
June	2011	100,696	124,011	59,683
July	2011	40,968	113,868	66,310
August	2011	13,958	121,692	73,124
September	2011	8,879	38,126	50,325
October	2011	11,684	17,930	51,522
November	2011	264,710	65,248	48,777
December	2011	316,890	15,282	56,826
January	2012	355,801	87,217	57,641
February	2012	256,684	125,245	60,319
March	2012	278,383	126,315	80,283
April	2012	266,423	96,051	37,041
May	2012	264,635	75,840	70,462
June	2012	233,271	81,472	67,327
July	2012	48,874	50,400	74,433
Maximum Month	-	476,207	126,315	80,283

The highest monthly flow at TCWRC during this time period was in December 2010. The TCWRC average daily flow of the maximum month for December 2010 was 15,400 gpd. The leachate is treated in an aerated leachate lagoon prior to discharge to the City's sewer system. Discharge limits can be found in the Wastewater Discharge Permit No. LA-004, located in Appendix G.

The highest monthly flow at Nutriom during this time period was in March 2012. The Nutriom average daily flow of the maximum month for March 2012 was 4,100 gpd. Industrial flow is discharged to the City's sewer system from a high strength storage tank. Discharge limits can be found in the Wastewater Discharge Permit No. MIU-LA-002, located in Appendix G.

The highest monthly flow at International Paper during this time period was in March 2012. The International Paper average daily flow of the maximum month for March 2012 was 2,600 gpd. Industrial flow is discharged to the City's sewer system from a treated water storage tank. Discharge limits can be found in the Wastewater Discharge Permit No. LA-003, located in Appendix G.

6.5 Unit Flows

The unit flows presented in Table 6-12 will be used to model the existing and future system. This assumes that I/I rates will increase as described in Section 6.3.3. This is a conservative assumption, because as sewers in the Sleater-Kinney basin known to have high infiltration are replaced and rehabilitated the I/I rate will likely reduce. New sewers with improved materials and construction methods typically have lower I/I rates. It's important to note that these peaking factors were derived for use on a City-wide scale and may not be appropriate for use when evaluating mini-basins or sub-areas.

Table 6-12 Unit Flows

Year	Annual Average Residential Flow (gpcd)	Annual Average Commercial Flow (gpcd)	Average Annual Student Flow (gpcd)	Martin Way Peak Hour I/I (gpd/idm)	Sleater-Kinney Peak Hour I/I (gpd/idm)	Peak Day Factor	Peak Hour Factor
2012	65	24	10	953	5,106	1.52	2.22
2018	65	24	10	993	5,320	1.52	2.22
2032	65	24	10	1,086	5,821	1.52	2.22
Buildout	65	24	10	1,220	6,536	1.52	2.22

Chapter 7 Wastewater Conveyance Analysis

Analysis of the City's wastewater conveyance system is a critical component in determining the suitability of the existing infrastructure and its ability to accommodate growth in the future. This chapter provides the analysis necessary for strategic, long-term infrastructure planning and development of the Capital Improvement Plan (CIP). The City's conveyance system was analyzed using an "all-pipes" hydraulic model that accurately simulates the entire wastewater collection system. This is in contrast to the City's previous wastewater plans, which only included "skeletonized" models, simulating only trunk and interceptor gravity mains. This allows for a more thorough representation of the conveyance system with more accurate loading of the projected flows developed in Chapter 6, and the simultaneous analysis of both gravity and pressure systems. The system was analyzed for existing conditions (2012), a 6-year planning horizon (2018), a 20-year planning horizon (2032), and the theoretical build-out conditions.

7.1 Study Area

The study area includes the City's entire wastewater collection network and is bounded by the City's Urban Growth Management Area (UGMA). Some LOTT owned and operated facilities have been included in areas where their performance impacts the Lacey system and where they are necessary for model calibration.

Due to the size of the City's collection system, the system was split into two hydraulically separate study areas for modeling based on where flows are discharged to LOTT's system:

- Sleater Kinney: The Sleater Kinney South Basin serves the western portion of the City, south of Martin Way and north of 45th Ave SE, the eastern boundary meanders loosely along the College St corridor. This basin discharges from the south into the LOTT owned interceptor in Martin Way at its intersection with Sleater Kinney Rd.
- Martin Way: This area includes both the Sleater Kinney North and Martin Way Basin Systems that serve the remainder of the City. The Martin Way Basin is the City's largest basin serving the entire eastern half of the city and drains to LOTT's Martin Way Pump Station. The Sleater Kinney North Basin includes the area north of Martin Way and west of Draham Road. Flows not treated at the Martin Way Reclaimed Water Plant combine with the flows from the Sleater Kinney North Basin before discharging to LOTT's system near the intersection of Sleater Kinney Road and Kasey Keller Drive.

The City's existing sewer system and mini-basin delineation is shown on Figure 7-1.

7.2 Model Software

InfoSWMM 12.0 by Innovyze was the hydraulic modeling software selected by the City to model the City sewer system. InfoSWMM 12.0 is a dynamic hydraulic model that utilizes the EPA SWMM 5.0 computer program for the hydraulic analysis calculations. The model is designed specifically for modeling urban sanitary and combined sewer systems. The current version operates within an ArcGIS (ArcMap) platform.

Legend

Lift Stations
- City of Lacey LS
- LOTT LS
- Private LS

Force Main
- City of Lacey FM
- LOTT FM
- Private FM

Sewer Main
- City of Lacey Sewer Main
- LOTT Sewer Main
- Private Sewer Main

STEP System
- City of Lacey STEP System
- Private STEP System
- WWTP

Base Layers
- City Limits
- UGA
- Parcels

Basins
- Martin Way
- Sleater Kinney North
- Sleater Kinney South

N W E S

PUGET SOUND

0 2,500 5,000 Feet

MARTIN WAY BASIN

SLEATER KINNEY NORTH BASIN

SLEATER KINNEY SOUTH BASIN

GIS Data: City of Lacey.
This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

P:\Mapping\Maps_Generated\Lacey\12-10263.00\002\maps\Fig 7-1 Basins 11x17.mxd 3/30/2015 ctolentino

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BASINS MAP
WASTEWATER COMPREHENSIVE PLAN UPDATE
City of Lacey
April 2015

Figure 7-1

7.3 Model Development

7.3.1 Existing Sewer System

The following information was used in developing the hydraulic model of the existing sewer collection system:

- GIS information provided by the City, including the following information:
  - Pipe
    - Gravity sewers
    - Force mains
    - STEP mains
  - Manholes
  - Lift stations
- As-built drawings and anecdotal information (e.g. areas with inverse pipe slopes) from the City
- Previously developed hydraulic models representing portions of the collection system (e.g. Pump Station 9, HYDRA and STEP system models)
- Lift station data sheets

Additional detail on the existing sewer system is included in Chapter 5.

7.3.2 Gravity Sewers

Gravity sewers make up the majority of the City's wastewater collection system. The City's entire collection system, including pipes, manholes, and other hydraulically significant features were imported into the model from the GIS database provided by the City. Sewer lines ending in clean-outs or similar features were typically omitted to reduce the size of the model to below the 4,000 pipe limit of the City's current software license, and to increase performance. Flows from these areas were loaded to the next available downstream node. Engineering judgment was used to ensure the accuracy of the model was retained.
All gravity pipes are connected at manholes, which are represented as nodes in the model. Sewer flow is loaded directly to these nodes to simulate service connections, inflow, and infiltration. The resulting model was compared against the City's previous models and inconsistencies where investigated. Record drawings were used to evaluate pipe invert elevations in areas where abnormal or adverse grades were present.

7.3.3 STEP Sewers

Careful consideration was given to determining the best approach to modeling the complex hydraulics of the STEP systems. A standard, representative STEP pump curve and associated storage basin (septic tank) depth-volume relationship were developed, which all modeled STEP pumps could reference during model simulation. A single STEP pump and tank in the model represented clusters of individual houses. The number of individual houses comprising a typical cluster was determined by engineering judgment, validated by performing trial simulations in the model. The goal of identifying an appropriate number of houses for a typical cluster was guided by including enough pumps in a basin to appropriately simulate both the flow and the pressure conditions that occur in the actual system, while avoiding model logistical and performance issues of including too many STEP pumps in the model.

Basin X, located in the east central portion of the sewer system in the Martin Way Basin, is an example of the resulting model representation of a STEP basin. A total of 38 pumps are used in

the model to represent the estimated 453 individual residential STEP pumps in this basin. These 38 pumps represent about 8 percent of the total STEP pumps in that basin. The model is configured such that these 38 pumps pump all of the flow produced in the entire basin. Therefore, the smaller number of pumps in the model operate for longer periods of time, depending on the number of homes each pump represents, and the resulting pressurization and overall system flow is representative of the system. Figure 7-2 illustrates the model's representation of the Basin X STEP system. The ratio of 8 percent of modeled versus actual STEP pumps varies somewhat between STEP basins, but is the general goal for model simulation of STEP basins. This method accurately represents flows and pressures within the sewer pipes, with a smaller number of pumps cycling more frequently. This method also maintains the randomness of pump cycles normally found in STEP systems.

7.3.3.1 Sleater Kinney South Basin

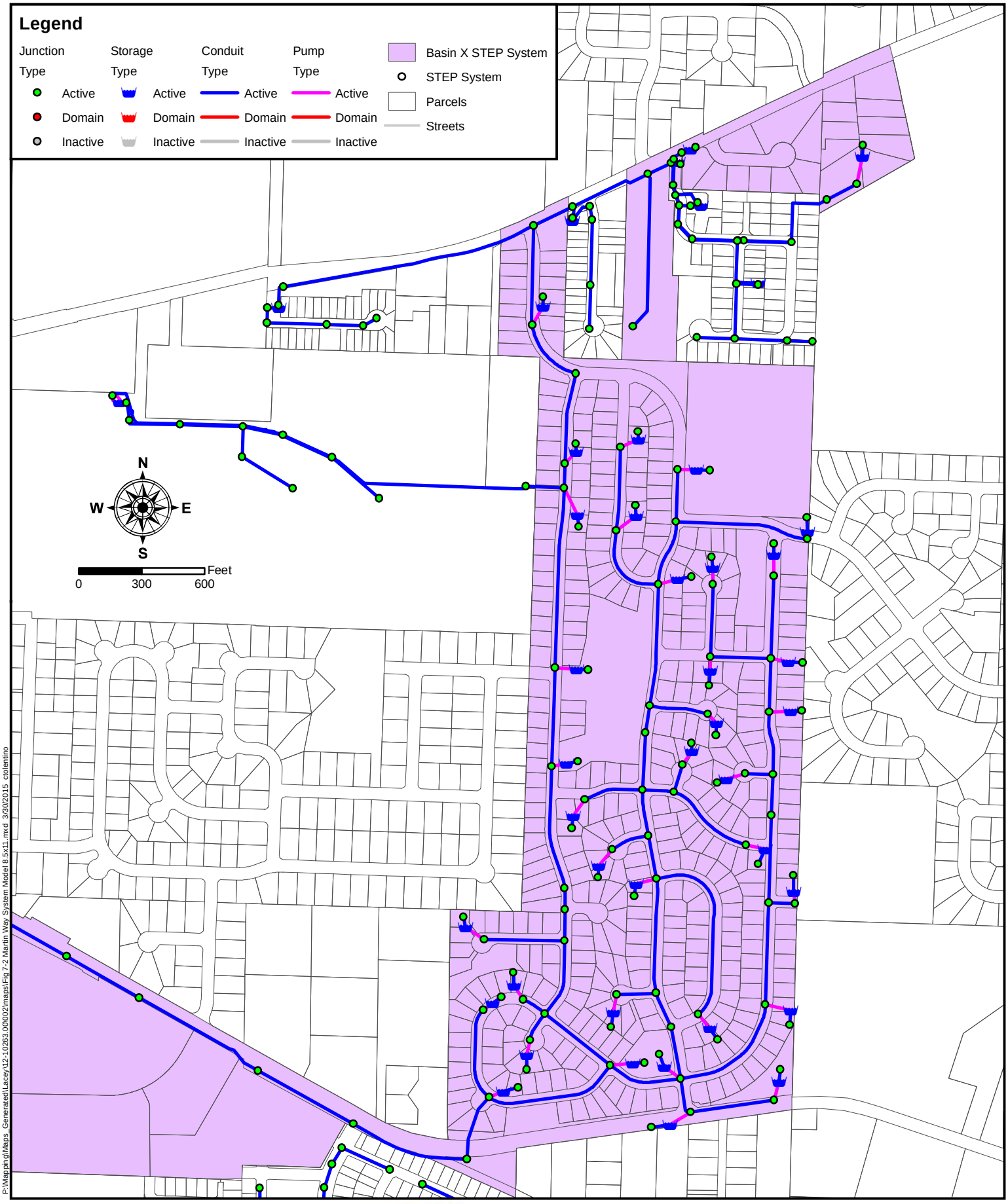
The Sleater Kinney South Basin includes a STEP system in the Avonlea mini-basin, as shown in Figure 5-2. Because the STEP system discharges directly into a gravity sewer, the pressure from the STEP system has no impact elsewhere in the sewer system. Therefore, the STEP mini-basin was modeled by directly loading flow into nodes connected to a pressurized force main, in lieu of modeling the pumps. Flow is injected directly into nodes and creates sufficient head for the flow to travel through the STEP main. This method did not fully capture the pressure fluctuations in the STEP piping, but did accurately model the flows from the basin. Because of the limited size and growth potential of the Avonlea STEP area is was not necessary to fully simulate the STEP Pumps' interaction to evaluate the adequacy of this particular basin.

7.3.3.2 Martin Way Basin

The Martin Way Basin model includes much larger and more complicated STEP systems in multiple basins. The STEP systems convey flow over rolling terrain and also incorporate community STEP lift stations that pump flow collected from local gravity systems. STEP system pressures vary significantly with time, depending on the number of individual STEP pumps that are operating at a time. These individual pumps are capable of operating at high pressures and when the majority of them are on at the same time, increased pressure in this system can cause the community STEP lift stations to back up on their pump curves and significantly reduce pumping capacity. The STEP system is modeled as a fully pressurized system, however the rolling terrain can create areas where air becomes trapped in the system. Trapped air has been observed in Lacey's STEP system and can create artificially high pressures. Since it is not possible to accurately model the effect of air in the system, this model is presented with the assumption that air release valves have been installed in the appropriate locations and that air is not allowed to accumulate in the system.

7.3.4 Lift Stations

Lift stations were imported to the model from the GIS database provided by the City. Pump curves were added to accurately represent pump operation. This is particularly important in those areas where lift stations are interconnected with the STEP systems and the resulting pressure fluctuates so that the interaction between pumps can be simulated. Wet wells are modeled based on lift station data sheets maintained by O&M staff. Depth to volume relationships and pump on/off set points are also added to increase accuracy. Modeled pumping rates were compared against factory pump curve data when available to ensure model accuracy and that the model out-puts were within a range of reasonably expected values.



P:\MappingMaps_Generated\Lacey\L2-10263.00\002\maps\Fig 7-2 Martin Way System Model 8.5x11.mxd 3/30/2015 ctolentino

GIS Data: City of Lacey.
This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

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Martin Way Existing Collection System Model
Representation of Basin "X" STEP System
Wastewater Comprehensive Plan Update
City of Lacey
April 2015

Figure
7-2

7.4 Model Loading

Meaningful modeling results can only be obtained if the quantity of flows and the location where they enter the system in the model reflect actual conditions. Wastewater flow consists of two separate elements: sanitary sewer flow and infiltration and inflow (I/I). Sanitary sewer flow is typically referred to as Dry Weather Flow (DWF) in the model (DWF in the collection system usually includes a minor amount of base I/I that is accounted for in the model I/I loading). I/I is loaded into the model as an external source of flow. All flow is loaded to model "nodes", which are manholes in gravity systems and points upstream of pumps in individual STEP systems.

7.4.1 Sanitary Sewer Flows

Existing and projected sanitary sewer flow rates were developed for each basin on a gpd/acre basis using the following information:

- Population and employment data from the 2010 Census (described in Chapter 3)
- Population and employment projections from the TRPC (described in Chapter 3)
- Student population projections (described in Chapter 3)
- Mini-basin areas (described in Chapter 5)
- Existing measured flow rates (described in Chapter 6)
- Unit sewer flows (described in Chapter 6)
- Diurnal curves (described in Chapter 6)

Some of the City's wastewater service area is served by individual septic systems, rather than connections to the sewer system. Therefore, not all of the sewer flow generated within the City is loaded into the model. Some basins are unsewered and/or largely undeveloped and do not currently contribute any flow to the collection system.

Some basins are partly, but not entirely served by the collection system. The percent of the basin served was approximated using aerial photography, sewer account information, and the existing sewer system data. These basin sewer flows were verified against measured flow data.

Model loading is assigned on a flow per unit area basis, for nodes identified in each basin. The model assigns flow to the nodes, based on the amount of contributing area calculated for each node using the Thiessen polygon method.

7.4.2 Infiltration and Inflow (I/I)

Existing and projected I/I rates were developed on a gallons/inch-diameter-mile basis using the following information:

- I/I (described in Chapter 6)
- Existing pipe inch-diameter-mile (described in Chapter 5)

Total I/I was divided by the total inch-diameter-miles of pipe loaded in the model. I/I for a given pipe run was calculated and then loaded to the node directly upstream of the pipe run it was calculated for.

A key issue is determining how I/I should be projected into the future as the collection system expands and ages. Based on the King County Regional Infiltration/Inflow Control Program,

a widely accepted assumption in Western Washington is to increase the I/I component of sewer flow by 7 percent per decade, up to a maximum of 28 percent. The City adopted this method for estimating I/I.

7.5 Model Calibration

The model was calibrated using flow meter data collected by LOTT and the City. The majority of the flow metering sites used weirs to estimate the flows to an accuracy of 5-10%. The primary calibration points were at LOTT flow monitoring stations L6, L7, and the Martin Way Pump Station. Combined, these flow monitoring stations record all sewer flows from the City conveyed to LOTT's system. The Martin Way Pump Station diverts up to 2 mgd to the Martin Way Reclaimed Water Plant, which was taken into account during calibration by adding the diverted flow to L6 to compare the Martin Way Basin model flows. The flow monitoring stations are shown on Figure 6-1.

The model results were also compared with the analyses in the following reports to ensure consistency with measured flows:

- *2010 Flows and Loadings Report*, LOTT, October 2010
- *2010 Inflow & Infiltration and Flow Monitoring Report*, LOTT, October 2010
- *2011 Inflow & Infiltration and Flow Monitoring Report*, LOTT, February 2012

7.5.1 Calibration to 2012 Flow Data

7.5.1.1 Dry Weather Flow Calibration

The first step in calibrating the model was to compare predicted sanitary flows without I/I to measured dry weather average annual flow data. Dry weather flows were determined by selecting the lowest daily flows from measured data and comparing these with winter water usage developed by LOTT in the *2010 Inflow & Infiltration and Flow Monitoring Report*. After the modeled sanitary sewer volumes were verified, diurnal flow patterns were loaded and adjusted until the variations in simulated flow throughout the day reasonably matched the measured dry weather flow conditions.

7.5.1.2 Average Annual Flow Calibration

Average annual I/I was loaded into the model and simulation results were compared with the average annual flow at the flow meters throughout the City. The modeled flow volumes were compared with the measured average annual flow volumes to ensure model loading was correct. After the modeled average annual sewer volumes were verified, diurnal flow patterns of the I/I component were loaded and adjusted until the variations in simulated flow throughout the day reasonably matched the measured average annual flow conditions.

7.5.1.3 Peak Day Flow Calibration

Peak day I/I was loaded into the model and simulation results were compared with the peak day flow at the flow meters throughout the City. The modeled flow volume was compared with the measured flow volume during peak days as determined by LOTT to ensure model loading was correct.

7.5.1.4 Peak Hour Flow Calibration

Diurnal flow patterns for the peak day I/I were developed and input to the model, then modified as necessary to match diurnal flow variations at L6 and L7, ensuring that the modeled peak hour flow matched the metered data.

7.5.2 Calibration Results

7.5.2.1 Sleater Kinney South Calibration

The Sleater Kinney South Basin was calibrated to LOTT flow monitoring data at stations L5 and L7. Average annual flows were calibrated to within 2 percent; peak day flows to within 8 percent; and peak hour flows to within 3 percent. This is within the accuracy limits of the flow meters used and is considered acceptable.

7.5.2.2 Martin Way/Sleater Kinney North Calibration

The Martin Way and Sleater Kinney North Basins were calibrated to LOTT flow monitoring data at stations L2, L3, and L6, and at the Martin Way Pump Station and LS-9. Average annual flows were calibrated to within 8 percent, peak day flows to within 7 percent, and peak hour flows to within 7 percent. This is within the accuracy limits of the flow meters used and is considered acceptable.

7.6 Future Sewer System Expansion

While system expansion resulting from new development can be reasonably estimated based on population and employment data provided be TRPC, the issue of converting existing on-site septic systems to sanitary sewer can be a contentious and political topic. As such, the rate at which those conversions will take place in the future is much less certain. For the purposes of this plan, future septic to sewer conversion is assumed to occur at a rate of 2 percent per year, or approximately 200 septic systems per year. All future population growth is assumed to connect to the sewer system.

An investigation was performed to extend sewer service into unsewered basins. The investigation incorporated:

- Topography
- Right-of way alignments
- Service type (e.g. lift stations, STEP systems or grinder pumps)
- Connection points to the existing system
- d/D criteria for gravity sewers (percent of flowing full)
- Maximum velocities for force and STEP mains
- Minimum velocities for force mains

The expanded future collection system was developed using an iterative process based on model results and discussions with City staff. Alternatives were analyzed to maximize the use of the capacity of the existing facilities by rerouting some existing sewer systems. These projects are described in Section 7.8.5. The resulting expanded collection system configuration was used to analyze future flow scenarios and identify capacity requirements for the proposed new service configurations as well as impacts and improvements required to the existing system to convey flow from the future developments. Figure D-1 in Appendix D illustrates the future collection system configuration. Service to the majority of the future basins is presumed to be provided with STEP systems, particularly in the south-east portion of the service area. This is

due primarily to the rolling terrain in the new basins (otherwise requiring numerous lift stations) and the connection points to existing STEP systems. Figure 7-3 schematically illustrates the connectivity and configuration of the future collection system.

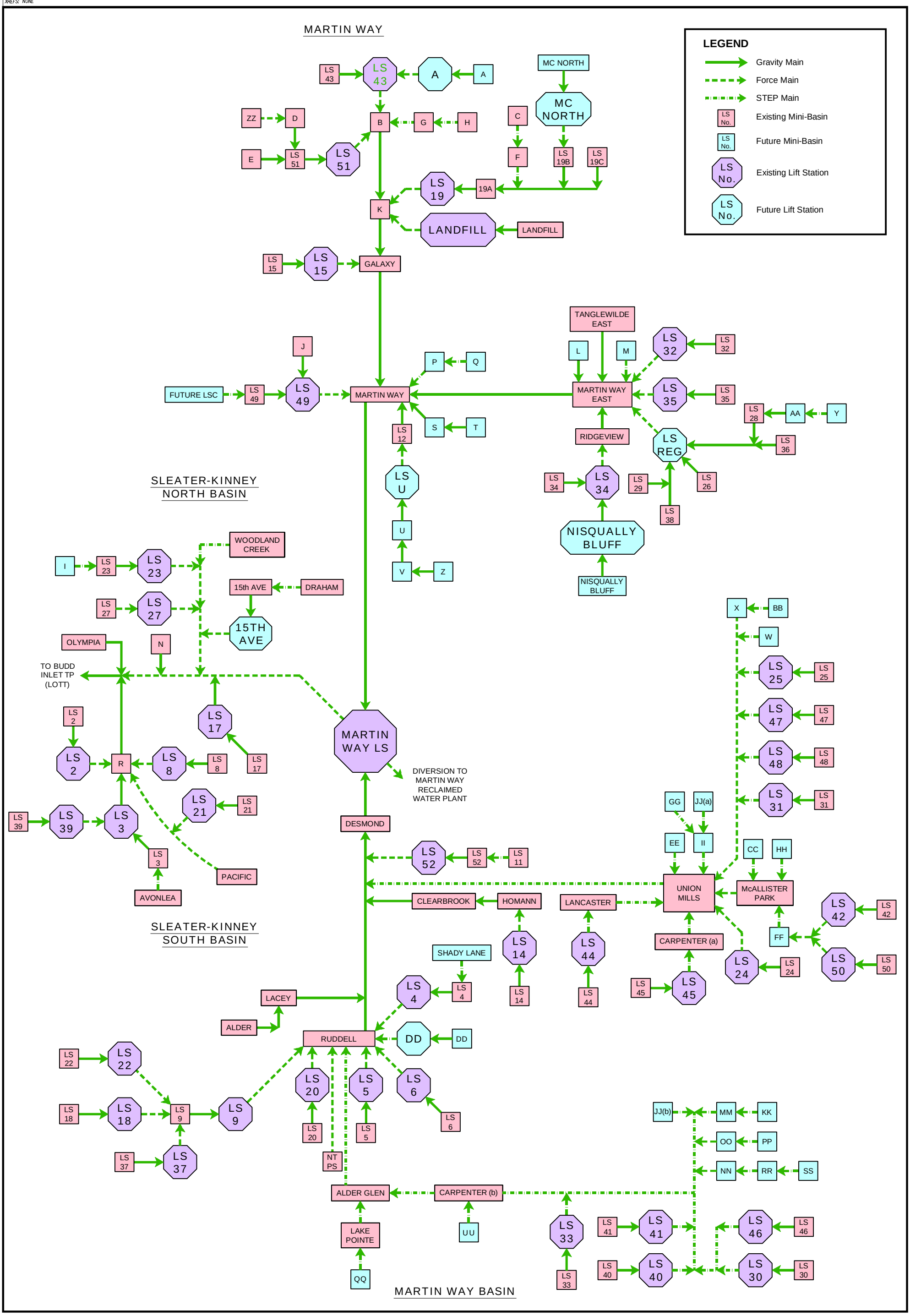
7.7 Modeling Scenarios

The following four scenarios were developed to analyze the City's wastewater conveyance system utilizing the population and unit flow projections described in Chapters 3 and 6, respectively:

- Existing Scenario, calibrated utilizing available flow data
- 2018 Scenario
- 2032 Scenario
- Build-out Scenario

FILE NAME (UPDATED BY)	PLOT DATE & TIME
S:\CAD\LACEY\12-1026J COMP PLAN\DWGS\F12-1026J0_FIG 7-3 22X34.DWG (PLS)	MAR 30 2015 15:29:00

XREFS: NONE



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Future Sewer Schematic

City of Lacey
April 2015

Figure

7-3

Table 7-1 Projected Wastewater Flows, Sleater Kinney South Basin (MGD)				
Flow	**2012**	**2018**	**2032**	**Build-Out**
Average Annual	0.88	0.97	1.15	1.20
Peak Day	2.04	2.19	2.48	2.68
Peak Hour	2.97	3.16	3.50	3.83

Table 7-2 Projected Wastewater Flows, Martin Way/Sleater Kinney North Basin (MGD)				
Flow	**2012**	**2018**	**2032**	**Build-Out**
Average Annual	2.93	3.72	5.19	8.36
Peak Day	4.36	5.22	7.34	10.24
Peak Hour	6.91	8.06	10.58	14.69

7.8 Hydraulic Modeling Analysis

7.8.1 Design Capacity

The design capacity of the gravity mains is considered to be 80 percent depth (0.80 d/D ratio), which is equivalent to 87 percent of the hydraulic capacity. The maximum design capacity of STEP mains and force mains are exceeded when flow velocities are greater than 8 feet per second. System pressure is also evaluated in the STEP areas to ensure that existing pump systems are able to operate against fluctuating head conditions. The firm capacity of a lift station is defined as the capacity of the lift station with the largest pump out of service. When model simulation results exceed these design capacities in piping or in lift stations, they are identified as deficient and system improvements are identified to resolve them. Modeling results for all scenarios are included in Appendix D.

7.8.2 Existing System – Results

The following areas were identified in the model as being deficient:

- The existing Sleater Kinney trunk surcharges over the crown of the pipe during peak day flow conditions from the discharge manhole of LS-3 (MH VQD02) to the outfall to LOTT's interceptor (MH UYW01).
- The gravity main in Lakeview Drive surcharges during peak day flow conditions between MH VZD01 to MH VSV01.
- The gravity main in 26th Loop SE surcharges during peak day flow conditions between MH VSK01 and MH VSM01.

7.8.3 2018 Scenario – Results

The following areas were identified in the model as being deficient:

- The gravity main in 26th Loop SE from MH WVM01 to MH VSK01 is expected to surcharge for approximately 2 hours during peak day conditions.

- Model results predict LS-2 is under capacity during peak day conditions. A gravity pipe rehabilitation project is planned upstream of the lift station that will likely reduce I/I in the LS-2 basin. The reduction in basin flow will likely bring LS-2 back into compliance. After the rehabilitation project is completed, the City should closely monitor flows to determine if an upgrade is still required.

7.8.4 2032 Scenario – Results

The following areas were identified in the model as being deficient:

- The gravity main in Lakeview Drive surcharges during peak day flow conditions between MH VYR01 and MH VZD01.
- The gravity main in Lacey Boulevard SE surcharges during peak day flow conditions between MH VBQ01 and MH VCJ01.
- Velocity in the 4-inch STEP main in Mullen Road, from the intersection with Kagy Street to Carpenter Road (3EW02), exceeds the maximum allowable during peak day flow conditions and should be upsized to 10-inch. New piping will be installed in Mullen Road, east of Kagy, serving new basins as the collection systems are developed.
- Velocity in the 6-inch STEP main in Mullen Road, from Carpenter Road (3EW02 to 4GW05) to just east of Ruddell Road, exceeds the maximum allowable during peak day flow conditions and should be upsized to 12-inch. A 10-inch line is sufficient to convey flows for the 2032 scenario, however the additional capacity provided by the 12-inch line is necessary to convey build-out scenario flows.
- The 21-inch gravity sewer in Ruddell Road surcharges during peak day flow conditions and should be increased to 30-inch between 32nd Court SE (MH WY601) and 27th Avenue SE (MH WTU01). The 30-inch size is adequate to convey build-out scenario flows.
- The LS-23 is deficient during peak day flow conditions and the capacity should be increased by replacing the pumps and replacing the existing 4-inch force main with a larger force main to reduce velocities and headloss for the larger capacity pumps.

7.8.5 Build-Out Scenario – Results

The following concepts were developed in concert with the City to reduce the number of deficiency-related CIP projects:

- The Steilacoom Road Regional Lift Station and associated force main will replace Lift Stations 26, 28, 29, 36, and 38. The force main will likely discharge into the Martin Way South interceptor near the intersection of Martin Way and Hoh Street.
- Routing flow from future development in the southeast portion of the sewer system into the new Mullen Road STEP main, and into the Ruddell Road interceptor.

The above concepts utilize the excess capacity in the existing sewer system, and reduce flow in the Union Mills and Carpenter Rd areas of the STEP system that would otherwise become deficient over the planning horizon. The Steilacoom Road Regional Lift Station will divert flows from the northern part of the Union Mills STEP system, reducing the operating pressure in that area and preserving capacity in the Union Mills trunk line for future growth to the south along Marvin Rd. This has the added benefit of eliminating 5 community STEP lift stations, reducing operation and maintenance costs. Routing flow along Mullen Rd to the Ruddell Rd interceptor will keep pressure manageable in the extreme south-east portion of the STEP area without impacting the Carpenter Rd and Union Mills STEP systems.

Chapter 8 Collection Facilities Improvements

This chapter provides a compilation of specific projects, improvements, and programs the City should implement, providing the tools necessary for long range project planning and budgeting. These projects are derived primarily from the system analysis and discussions with the City's operations and engineering staff. Other non-project recommendations can be found throughout the preceding chapters. Each project is accompanied by a planning level opinion of probable cost and a schedule identifying when the project is anticipated to begin and end. The City should review the CIP periodically to adjust for significant changes in the priority of each project, its cost, and scope.

Collection facilities improvement projects for the City wastewater system are broken into the following five categories:

- **Capacity:** Improvements classified as insufficient in capacity are determined based on whether or not the infrastructure can effectively convey the incoming flow. Gravity sewer pipes are considered to have insufficient capacity when the flow through the pipe is 80 percent or more of the pipe flowing full (d/D > 0.8). Force mains are considered to have insufficient capacity when the velocities exceed 8 feet per second. Pump stations are considered to have insufficient capacity when inflow exceeds the flow produced by the pump station with the largest pump out of service. As described in Chapter 7, the conveyance system was evaluated using existing flows and flows projected for 2018, 2032, and build-out conditions. The evaluations determined system deficiencies when subjected to these existing and future flow conditions. Following identification of system deficiencies, the computer model was used to evaluate and select system improvements to alleviate the system deficiencies.
- **Operations & Maintenance (O&M):** O&M projects will replace facilities identified by the City O&M staff as having unacceptably high maintenance requirements, both in terms of frequency and in magnitude.
- **Obsolescence:** Improvements classified as obsolete are based on the age of the infrastructure. Mechanical and electrical equipment is expected to have a typical usable life of 25 years. Structures are expected to have a typical usable life of 50 years. Pipes are expected to have a typical usable life of 100 years.
- **General:** General improvement projects are those identified by City staff for various reasons that do not fall within any of the remaining four categories. These projects may be needed to simplify system operation, ease O&M efforts and reduce O&M costs, consolidate and/or eliminate redundant facilities, reduce or eliminate non-critical O&M concerns, or to meet ongoing sewer system management needs.
- **Developer:** Projects identified as developer dependent are needed to serve new developments but are not needed to provide continuation of service to existing customers.

Projects are also identified as either "Replacement", "Upgrade", or "Expansion" or a combination of the three. This gives a quick indication of the driving need for the project and the appropriate funding source.

- Replacement: These projects are generally intended to replace like infrastructure with like, they are typically the result of obsolete equipment that has exhausted its useful life or creates excessively high maintenance.

- Upgrade: These projects are normally targeted at reducing maintenance or improving operations, this may include new equipment or a replacement of equipment that is still functional but has not been optimized.
- Expansion: These projects can include new equipment or a replacement of equipment but their driving force is to provide additional capacity for future growth.

When possible, system improvement projects should be coordinated with other utilities to minimize disruption and reduce associated costs such as road and surface restoration.

Due to the number of projects scheduled in the 6-year CIP the City should periodically evaluate its progress in completing those projects and determine if current project engineer staffing levels are adequate to complete those projects efficiently.

8.1 6-Year CIP (2014-2019)

The projects recommended for the 6-year Capital Improvement Program (CIP) are illustrated on Figure 8-1 and described in Table 8-1. Developer improvements are expected to be privately funded by developers and are not listed in this section. The project order was developed by the City.

Summary sheets for CIP projects projected to occur prior to 2023 are included in Appendix H. The sheets include a description, opinion of probable project cost, and a more detailed project map.

8.1.1 Project Descriptions

CIP 1 - Wastewater Comprehensive Plan Update

The Wastewater Comprehensive Plan Update provides for recurring updates to the City's Wastewater Plan on an 8 year cycle. These planning efforts provide the basis for the City's policies, capital improvements, and financing of the wastewater utility. These recurring updates allow the City to periodically reevaluate existing and projected flows, condition of existing infrastructure, the need future improvements, and the utility's financing plan. This ensures a long lasting and reliable utility. This project is budgeted at $500,000 per cycle.

CIP 2 - Lift Station 25 & 31 Retrofit

Both lift stations 25 and 31 are located in the City's Union Mills STEP area. These lift stations were designed as community STEP stations but were originally installed with solids-handling submersible pumps. The intention was that this area would at some point be converted to a more traditional combination of gravity and lift station collection system. This STEP area has grown considerably since these stations were originally installed and the current pumps at these stations struggle to operate effectively against the variable head conditions. The City has determined that it is not cost effective at this time to transition the STEP area to a traditional combination of gravity and lift stations; and has instead elected to install more appropriate pumps at these stations. The new pumps will be Orenco high-head pumps which will greatly improve the stations' ability to operate in variable head conditions and will also improve overall efficiency. This project will also include electrical and mechanical updates as needed. Estimated cost for this project is $1,075,000; project completion is scheduled for the year 2014.

CIP 3 -Steilacoom Rd Lift Station

A new lift station along Steilacoom Rd, east of Marvin Rd, is planned to serve both future and existing customers. Many of the existing customers in this area are served by community STEP stations. The City has found that the large septic tanks associated with community STEP systems can be very problematic to operate and maintain, they also restrict growth in the tributary basins and drive up over all operating costs. A new lift station along Steilacoom Rd will accept wastewater from five separate community STEP stations (26, 28, 29, 36, 38), allowing them to ultimately be decommissioned. The new lift station will also be sized to accommodate future growth and septic-to-sewer conversions. This will be accomplished using a phased approach, making planned capacity improvements over time, as flows increase. This project also benefits the Union Mills STEP area by diverting flow from five community STEP stations north to the Martin Way gravity system. This will alleviate some concerns of increasing system pressure and allow for additional connections in the southern portion of the STEP area. Estimated cost for this project is $3,650,000; project completion is scheduled for the year 2017.

CIP 4 - Tanglewilde East ULID

A portion of Tanglewilde East is currently served by a large on-site septic system (LOSS), this system has been directed by the state department of health to take corrective actions related to the operation of their system. The most favorable option for this system is to connect directly to Lacey's collection system and decommission the LOSS. The City has offered to lead a project connecting the Tanglewilde East 3B system via gravity main. This project would be done as a ULID; in which the beneficiaries would reimburse the City for work done. This project will also be coordinated with a City water line replacement project to promote mutual cost savings. Estimated cost for this project is $3,776,000 (including connection fees); project completion is scheduled for the year 2015.

CIP 5 - College St and Martin Way ULID

There are four businesses located at the south east corner of College St and Martin Way, these businesses are currently served by the City of Olympia through a temporary service agreement. The City of Olympia has exercised its authority through the service agreement to terminate service to these businesses and they must now connect to Lacey's collection system. Lacey has offered to take the lead on this project through the ULID process, were the beneficiaries would reimburse the City for its work. This project would involve the installation of a gravity line across Martin Way, connecting the businesses to Lacey's existing collection system tributary to Lift Station 17. Estimated cost for this project is $758,000 (including connection fees); project completion is scheduled for the year 2014.

CIP 6 - STEP Main Air Release/Vacuum Relief Valves

The *City of Lacey Wastewater STEP Main Evaluation and System Plan (AECOM, 2012)* found that the City's Union Mills STEP area was experiencing higher than normal system pressure, likely due to air becoming trapped within the STEP mains. This project will help to reduce the occurrence of air in the mains by seeking out those areas where air is likely to be collecting and installing air release valves at those locations. By reducing the amount of air trapped within the STEP mains the STEP area will experience lower operating pressure and an overall increase in efficiency. Estimated cost for this project is $232,000; project completion is scheduled for the year 2015.

CIP 7 - Lift Station 18 Retrofit

Lift Station 18 is one of the City's older style of lift station, consisting of above grade vacuum prime pumps. This station also experiences abnormally heavy FOG and fibrous debris loads. The combination of vacuum prime pumps and heavy FOG/debris loads results in frequent pump and priming system failures, and necessitates an aggressive wet well cleaning schedule. In order to alleviate the excessive operation and maintenance effort required to keep this station functional the City replace the existing pump system with submersible chopper style pumps which are able to better handle the waste stream at this station. This project also includes ancillary mechanical and electrical upgrades. Estimated cost for this project is $762,000; project completion is scheduled for the year 2014.

CIP 8 - Lakeview Dr Gravity Upsize (Phase 1)

The existing Lakeview Dr gravity main which serves a large area adjacent to Chambers Lake is nearing its maximum capacity and needs to be upsized to reduce the risk of surcharging and to serve future growth. The City will be replacing the existing 10-inch main with a 12-inch to ensure sufficient capacity for full build-out of the sewer basin. This project will be done in phases, the first and most urgent phase is the northern portion of the main between 29th Ave and 26th Ave, the southern portion (Phase 2) will be done in subsequent years. Additionally, Phase 1 of this project will be coordinated with the City's Chambers Lake Regional Stormwater Treatment Facility project. Estimated cost for Phase 1 of this project is $500,000; project completion is scheduled for the year 2014.

CIP 9 - Lift Station 15 Generator/Flow Meter

Lift Station 15 serves an active commercial area in Lacey. This station has relatively little emergency storage capacity in the wet well and does not have on-site auxiliary power. The City is concerned that a delayed response to a power outage may result in surcharging of the upstream gravity system and potentially impact commercial customers. To increase reliability of this station the City will install an on-site generator to provide an auxiliary power source during outages. This project will also include the installation of flow meter so that the City can more accurately track flow from this basin and monitor pump performance. Estimated cost for this project is $350,000; project completion is scheduled for the year 2014.

CIP 10 - Avonlea Odor Control

This project includes the emergency cleanup associated with a faulty chemical storage tank used for odor control on the City's Avonlea STEP area. Also included is a replacement of the failed odor control facility on the existing site. Estimated cost for this project is $100,000; project completion is scheduled for 2014.

CIP 11 - Train Depot Sewer Line

This project includes extension of a gravity sewer line in Lebanon St to serve the future Train Depot/Lacey Museum. Estimated cost for this project is $61,800; project completion is scheduled for the year 2014.

CIP 12 - Carpenter Rd STEP Upgrades

This project will replace air release valves and the manhole structures they are housed in on the City's Carpenter Rd STEP main. The two locations are at 1530 and 2417 Carpenter Rd SE. These air release valves are needed to ensure any air trapped in the STEP main is allowed to escape, preventing excessively high system pressure. Estimated cost for this project is $50,000; project completion is scheduled for the year 2014.

CIP 13 - Lift Station #2 - Lift Station, Gravity, and Force Main Replacement

This project combines several issues that need to be resolved in the Lift Station #2 basin. Lift Station #2 was constructed in 1970 and is Lacey's oldest lift station still in operation. This station located along the shoulder of Westlake Dr and has very limited space for operations crews to perform routine maintenance tasks. It is also located very close to low hanging utility lines; both of these issues present a potential safety hazard to City crews. Recent safety regulations now limit the area around overhead utility lines in which boom operated equipment can safely operate, this impacts the City's ability to perform routine wet-well cleaning. This lift station is scheduled to be relocated to a more suitable location along Westlake Dr, where sufficient room can be provided for operation and maintenance of the facility. Property acquisition will likely be required for the replacement lift station. The force main discharging from Lift Station #2 currently follows a path across a private lot and underneath a home that was constructed some time after the piping was installed. The existing force main alignment has severely restricted access for crew to make repairs in the event of a failure and exposes the City to some degree of potential liability if a failure were to occur. The existing force main alignment should be abandoned following construction of the replacement lift station and a new force main should be installed along Westlake Dr, ultimately discharging to the Sleater Kinney gravity line. Finally, the gravity collection system located in Westlake Dr experiences high levels of infiltration. This is attributed to the high local ground water, age of the gravity system, and deterioration of manholes in this area. The gravity collection system along Westlake Dr should be replaced concurrent with the other improvements. Estimated cost for this project is $1,610,000; project completion is scheduled for the year 2017.

CIP 14 - Rumac St STEP Main

This project would extend a new STEP main along Rumac St, allowing the Lake Pointe STEP area to be diverted to the Mullen Rd STEP line. The Lake Pointe STEP area currently has three separate odor control facilities and requires relatively high chemical injection rates to reduce odors at the outfall to acceptable levels. This is due primarily to the limited amount of contact time that the chemical has with the STEP effluent, resulting in incomplete conversion of the hydrogen sulfide. By diverting the Lake Pointe STEP area to the Mullen Rd STEP line the City will be able to consolidate odor control facilities, resulting in more efficient odor control. It is anticipated that both the Lake Pointe and Mullen Rd STEP areas will be served by a single chemical injection facility for odor control. This project should be completed concurrently with or after the Mullen Rd STEP Main project and covers only the STEP main along Rumac St; budget for a future odor control facility is included in the Mullen Rd STEP Main project. Estimated cost for this project is $1,000,000; project completion is scheduled for the year 2016.

CIP 15 - Mullen Rd STEP Main

The Mullen Rd STEP main is intended to serve a growing STEP area in the south east corner of the City's UGA. This project will install a section of STEP main along Mullen Rd from the City's

eastern city limits to Rumac St, completing the line between Ruddell Rd and Kagy St. This will allow a portion of the existing STEP flow currently connected to the Carpenter Rd STEP main to be diverted to Ruddell Rd, as well as future flow from growth in the south east portion of the UGA. This diversion will help to moderate the high pressure spikes observed near Kagy St and will also preserve capacity in the existing Carpenter Rd STEP main. Once completed, the Lake Pointe STEP area can also be diverted to the Mullen Rd STEP main, allowing odor to be more effectively controlled. The diversion of these flows to the Ruddell Rd gravity system will require the installation of a new odor control facility which is anticipated to be a chemical injection site in the vicinity of Rumac St. This project should be constructed prior to, or concurrently with a planned county road project to reconstruct a portion of Mullen Rd. Estimated cost for this project is $500,000; project completion is scheduled for the year 2016.

CIP 16 - College St / 26th Ave Gravity Repair

This project will repair two locations of gravity main along the College St corridor that suffer from heavy root intrusion. The first location would involve a repair between manholes WVE01 and WVE02 along 26th Ave; the second location is between manholes WVV01 and WV502 along College St. This project may also include the installation of CIPP along College St between manholes WNE01 and WVM01, or roughly from 22nd Ave to 26th Ave. The CIPP will help to preserve the existing concrete pipe which is showing signs of deterioration through exposed aggregate and cracking at service laterals. Estimated cost for this project is $100,000; project completion is scheduled for the year 2015.

CIP 17 - Annual Sewer Line Replacement

As the City's collection system ages it will begin to show signs of deterioration, the oldest portions of the collection system are now approaching 50 years old and were constructed using techniques and materials that have fallen out of favor today. This general budget item provides a funding source to repair and replace problematic or deteriorated areas. This allows maintenance crews to monitor the condition of the City's collection system and make recommendations for repairs or replacement as warranted. This proactive approach will keep I&I rates low and preserves the overall functionality of the collection system. This also helps the City to avoid the high expenses often associated with emergency repairs. This funding program is intended to increase throughout the planning horizon as the overall age of the City's collection system increases.

CIP 18 - FOG / Fibrous Wipes Program

FOG (fats, oils, grease) and fibrous wipes present a significant challenge to maintenance crews. These items have a tendency to build up in the collection system and lift stations, reducing capacity and performance. In extreme cases, build up of these items can lead to sewer backups and frequent pump failures. In an effort to reduce the FOG and fibrous loading in the City's collection system an annual budget for education and outreach has been included. The initial goal of the program will be to educate wastewater customers on the impact these items have on the City's collection system and how to properly dispose of them.

CIP 19 - Generators / Flow Meters

Several of the City's lift stations currently do not have on-site generators to provide auxiliary power during outages. During wide spread power outages City crews must rotate portable generators from site to site. This consumes large amounts of staff time and is often

compounded by inclement weather or other emergency conditions. In order to reduce the staff time required to deploy portable generators during these events this project will install on-site generators at four of the City's existing lift stations (17, 20, 22, and 23). Several other lift stations are also scheduled to have on-site generators installed; installations at those sites will be coupled with other rehab and improvement projects. This project will also include the installation of flow and pressure monitoring equipment, allowing staff to more effectively monitor lift station performance and troubleshoot potential issues. Estimated cost for this project is $800,000; project completion is scheduled for the year 2016.

CIP 20 - Lift Station 49 Land Purchase

This project is to acquire additional land adjacent to Lift Station 49. The City feels it would be prudent to acquire additional property at this site to provide a buffer between the facility and a future residential development. This additional property would help to reduce the potential for noise and odor complaints, and also provide maintenance crews with additional space when repairs are needed. Estimated cost for this project is $120,000; project completion is scheduled for the year 2016.

CIP 21 - Lift Station 12 Abandonment

Lift Station 12 is one of the City's older above grade vacuum prime stations and is operating near capacity. Rather than performing extensive upgrades to keep this facility operational it is recommended to abandon this station completely. This can be accomplished with a new gravity line by-passing the station and following a westerly route to Carpenter Rd, where it can discharge to an existing gravity system near the Carpenter Crest apartments. This will reduce the need for costly upgrades and long-term maintenance costs. This project will require easements and/or property acquisition to provide a route for the new gravity line between the existing lift station and Carpenter Rd. Estimated cost for this project is $902,000; project completion is scheduled for the year 2020.

CIP 22 - Sleater Kinney Gravity Main Improvements (Phase 1)

This project will replace and up-size the existing gravity main along the southern portion of Sleater Kinney Rd from 250-feet north of 21st Ave to approximately 500 feet north of 14th Ave (manhole VQD02 to VGE01). This section of gravity main serves a large number of customers along the City's western boundary and operates in excess of the City's 80% depth criteria for maximum capacity during peak hour flows. Additionally, this main consists of older concrete pipe that is showing signs of deterioration (exposed aggregate, root penetrations) which would trigger repair/remediation work in the near future regardless of the capacity conditions. It is recommended that this section of pipe be completely replaced with 21-inch or larger to safely accommodate build-out flows. Estimated cost for this project is $1,300,000; project completion is scheduled for the year 2018.

CIP 23 - Lift Station Rehabilitation (Phase 1)

Mechanical and electrical equipment associated with lift stations typically have a much shorter useful life than the structural components. It is recommended that funds be budgeted for the rehabilitation/replacement of mechanical and electrical equipment based on its age. This project will provide for the rehabilitation of two existing lift stations (15, 17). Both stations targeted with this phase will require the conversion of vacuum prime pumping systems to submersible pumping systems. Additionally, Lift Station #17 will require the replacement of the

upper section of the wet-well to allow for proper mounting of the new pumping system and to provide access for future wet-well cleaning and maintenance. These stations should also have on-site generators, flow meters, and pressure transmitters installed if they have not already been done through the Generators / Flow Meters project. Wet-wells should be inspected and coated as needed. Estimated cost for this project is $1,900,000; project completion is scheduled for the year 2018.

CIP 24 - Lift Station Rehabilitation (Phase 2)

Mechanical and electrical equipment associated with lift stations typically have a much shorter useful life than the structural components. It is recommended that funds be budgeted for the rehabilitation/replacement of mechanical and electrical equipment based on its age. This project will provide for the rehabilitation of three existing lift stations (19, 20, and 21). These facilities should be carefully inspected prior to project scoping to accurately determine the extent of rehabilitation needed at each site. Significant reconfiguration of the wet-well or site layout is not anticipated at these stations. These stations should also have on-site generators, flow meters, and pressure transmitters installed if they have not already been done through the Generators / Flow Meters project. Wet-wells should be inspected and coated as needed. Estimated cost for this project is $2,850,000; project completion is scheduled for the year 2019.

CIP 25 - Lift Station and STEP System Flow Meters

Many of the City's existing lift stations and STEP mains do not have any direct means of monitoring flow or pressure; an important tool in establishing the performance, remaining capacity, and in troubleshooting these systems. This project would install flow and pressure monitoring equipment capable of communicating to the City's existing SCADA system at strategic lift stations and locations in the various STEP areas (approximately 24 locations). Estimated cost for this project is $1,180,000; project completion is scheduled for the year 2020.

CIP 26 - Sewer Main Replacement (50th Ave)

This project will replace a section of gravity main along 50th Ave, near Ruddell Rd between manholes 5KK02 and 5KJ02. A section of this main was laid at a reverse slope which needs to be corrected. Additionally, the private sewer system serving the Cottages is currently connected as a single service lateral. Due to the size of this connection it should be reconfigured to connect at a manhole to facilitate maintenance and to prevent potential backups. Estimated cost for this project is $210,000; project completion is scheduled for the year 2019.

CIP 27 - Chemical Storage Tank Replacement

The City has three above ground odor control facilities utilizing single wall chemical storage tanks. It is recommended that the City replace these single wall tanks with either double wall tanks or to implement some other form of secondary containment. Estimated cost for this project is $150,000; project completion is scheduled for the year 2019.

CIP 28 - Sewer Main Replacement (34th Ave)

This project will replace a section of 6-inch sewer main along 34th Ave between manholes W3R01 and W3R02. This section of sewer main is a smaller diameter than City standards allow and was laid at a slope that is less than the minimum for this pipe size. It requires regular

cleaning by the City's maintenance crews and it is recommended that it be replaced with an 8-inch sewer pipe installed at an appropriate slope. Estimated cost for this project is $60,000; project completion is scheduled for the year 2019.

Table 8-1 6-Year CIP (2014-2019)

CIP No.	Project	Type	Replacement	Upgrade	Expansion	Project Description
1	Wastewater Comprehensive Plan Update (recurring)	General		☑	☑	▪ Update the Wastewater Comprehensive Plan as necessary to address the needs of the City's sewer collection system.
2	Lift Station 25 & 31 Retrofit	Capacity	☑	☑		▪ Convert from solids handling submersible pumps to Orenco STEP pumps. ▪ Upgrade electrical equipment. ▪ Repair wet well coating.
3	Steilacoom Road Lift Station	General		☑	☑	▪ Replace community STEP stations LS-26, LS-28, LS-29, LS-36, and LS-38 with a single lift station. ▪ Construct approximately 3,700 lf of gravity sewer to convey wastewater to the new lift station. ▪ Construct approximately 4,500 lf of force main from the new lift station to the Martin Way Interceptor.
4	Tanglewilde East ULID	General			☑	▪ Abandon the community septic system serving the Tanglewilde East area and connect the piping to Lacey sewer through a Utility Local Improvement District (ULID).
5	College Street and Martin Way ULID	General			☑	▪ Convert the parcels on the southeast corner of College Street and Martin Way from Olympia's sewer system to Lacey's. This would be done through a ULID.
6	STEP Main Air Release/Vacuum Relief Valves	O&M		☑		▪ Install air release/vacuum relief valves to remove air trapped in the Union Mills STEP area and to reduce operating pressures.
7	Lift Station 18 Retrofit	O&M	☑		☑	▪ Convert from above ground vacuum prime to submersible pumps.
8	Lakeview Dr Gravity Upsize (Phase 1)	Capacity			☑	▪ Upsize approximately 850 lf of pipe MH VZD01 to MH VSV01 from 10-inch to 12-inch.
9	Lift Station 15 Generator/Flow Meter	General		☑		▪ Install a backup generator set. ▪ Install a flow meter and pressure transducer and connect to SCADA.
10	Avonlea Odor Control	O&M		☑		▪ Replacement of existing odor control facility.
11	Train Depot	Capacity			☑	▪ Construct new 8-inch gravity sewer in Lebanon St to serve the future Train Depot/Lacey Museum
12	Carpenter Road STEP Upgrades	O&M	☑			▪ Replace air release/vacuum relief valves at Roo-Lan Road and 26th Street. ▪ Replace manholes.
13	Lift Station 2 - Lift Station, Gravity, and Force Main Replacement	O&M	☑			▪ Replace Lift Station #2 ▪ Reroute force main for easier access and reduced liability. ▪ Replace approximately 900 lf of gravity pipe and manholes in Westlake drive to reduce infiltration and inflow.
14	Rumac St STEP Main	General		☑		▪ Install approximately 4,400 lf of 6-inch STEP main along Rumac Street. ▪ Reduce the number of odor control facilities and operating costs.
15	Mullen Rd STEP Main	Capacity			☑	▪ Install approximately 1,200 lf of missing 6-inch force main in Mullen Road from the city limits to Rumac Street. ▪ Include odor control facility.
16	College St / 26th Ave Gravity Repair	O&M	☑			▪ Install approximately 1,300 lf of 8-inch CIPP to address deterioration in pipeline. ▪ Spot repairs in 2 locations to address root problems in pipeline.

Table 8-1 6-Year CIP (2014-2019)

CIP No.	Project	Type	Replacement	Upgrade	Expansion	Project Description
17	Annual Sewer Line Replacement	Obsolescence	☑			▪ Annual program to repair and replace deteriorating sewer mains
18	FOG / Fibrous Wipes Program	General		☑		▪ Conduct a second FOG pilot program to confirm preliminary findings of first program. ▪ If successful, expand program to other high-FOG areas. ▪ Coordinate program with other jurisdictions. ▪ Include fibrous wipes.
19	Generators / Flow Meters (LS-22, LS-23, LS-17, LS-20)	General		☑		▪ Install backup generator set. ▪ Install flow meter and pressure transducer and connect to SCADA.
20	Lift Station 49 Land Purchase	General		☑		▪ Purchase adjacent lot before it develops to prevent future odor and noise complaints from future resident
21	Lift Station 12 Abandonment	Obsolescence Capacity		☑	☑	▪ Replace LS-12 with gravity sewer. ▪ Abandon LS-12.
22	Sleater Kinney Gravity Main Improvements	Capacity			☑	▪ Upsize approximately 2,590 lf of pipe between MH VQD02 to MH VGE01 from 15-inch to 21-inch.
23	Lift Station Rehabilitation (Phase 1)	Obsolescence	☑			▪ Upgrade mechanical and electrical equipment in LS-15, and LS-17.
24	Lift Station Rehabilitation (Phase 2)	Obsolescence	☑			▪ Upgrade mechanical and electrical equipment in LS-21, LS-20, and LS-19.
25	Lift Station and STEP System Flow Meters	General		☑		▪ Install 21 flow meters and pressure transducers at lift stations that do not currently have them and connect to SCADA. ▪ Install 3 flow meters and pressure transducers in STEP mains and connect to SCADA.
26	Sewer Main Replacement (50th Ave)	General		☑		▪ Replace approximately 350 lf of 18-inch pipe with adverse grade, and install a manhole where the Cottages connect with the main.
27	Chemical Storage Tank Replacement	O&M	☑			▪ Replace 3 existing odor control chemical storage tanks with new double containment tanks.
28	Sewer Main Replacement (34th Ave)	Capacity		☑		▪ Replace approximately 100 lf of existing 6-inch sewer with 8-inch sewer.

Legend

Lift Stations
- City of Lacey LS
- LOTT LS
- Private LS

Force Main
- City of Lacey FM
- LOTT FM
- Private FM

Sewer Main
- City of Lacey Sewer Main
- LOTT Sewer Main
- Private Sewer Main

STEP System
- City of Lacey STEP System
- Private STEP System
- WWTP

CIP
- Capacity
- O & M
- Obsolescence
- General
- ## Project Number

Base Layers
- City Limits
- UGA
- Basins
- Parcels

N W E S

0 2,500 5,000 Feet

MARTIN WAY BASIN

SLEATER KINNEY NORTH BASIN

SLEATER KINNEY SOUTH BASIN

GIS Data: City of Lacey.
This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

P:\Mapping\Maps_Generated\Lacey\12-10263.00\006 - CIP\maps\Fig 8-1 6-Yr CIP 11x17.mxd 3/30/2015 ctolentino

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6-YEAR CAPITAL IMPROVEMENT PROJECTS

WASTEWATER COMPREHENSIVE PLAN UPDATE

City of Lacey
April 2015

Figure 8-1

8.2 20-Year CIP (2020-2033)

The projects recommended for the 20-year CIP are described in Table 8-2. Developer improvements are expected to be privately funded by developers and are not listed in this section.

8.2.1 Project Descriptions

CIP 101 - 26th Loop SE Replacement

This project will replace and upsize a portion of gravity sewer main along 26th Loop between manholes WVM01 and VSM01. It is projected that this section of sewer main will exceed the City's design threshold for gravity mains during peak hour flow within the 20 year planning horizon. Estimated cost for this project is $520,000; project completion is scheduled for the year 2020.

CIP 102 - Lift Station 3 Pumps and Inlet Piping

The pumps and inlet piping at Lift Station 3 are expected to reach capacity within the 20 year planning horizon and should be upsized to accommodate full build-out flows. Estimated cost for this project is $230,000; project completion is scheduled for the year 2020.

CIP 103 - Lift Station 8 Generator and Flow Meter

Lift Station 8 serves City Hall and should be equipped with auxiliary power to ensure continued operation during power outages or other emergencies. It may be possible to operate this station with the existing generator currently serving City Hall. This station should also be outfitted with flow and pressure monitoring equipment. Estimated cost for this project is $200,000; project completion is scheduled for the year 2020.

CIP 104 - Lift Station 37 Discharge Manhole

The manhole directly receiving the discharge from Lift Station 37 experiences minor surcharging while the station is pumping. This manhole should be replaced with a larger structure to facilitate the transition of flow from the force main to the gravity system. Estimated cost for this project is $16,000; project completion is scheduled for the year 2020.

CIP 105 - Lift Station 11 Abandonment

Lift Station 11 is an aging facility that serves approximately 20 single family residences. It is typically not cost effective to serve a small number of customers with a lift station. It is recommended that the City abandon Lift Station 11 and replace it with a pressurized collection system utilizing individual grinder pumps. This will allow the City to avoid high replacement, operation, and maintenance costs generally associated with lift stations. Estimated cost for this project is $490,000; project completion is scheduled for the year 2021.

CIP 106 - Lacey Blvd Sewer Main Replacement

The gravity sewer main in Lacey Blvd is projected to reach its allowable capacity within the 20 year planning horizon. The section of sewer main between manholes VBQ01 and VCJ01

should be upsized to accommodate build-out flows. Estimated project cost is $389,000; project completion is scheduled for the year 2021.

CIP 107 - Lakeview Drive Gravity Main Replacement Phase 2

The existing Lakeview Dr gravity main which serves a large area adjacent to Chambers Lake is nearing its maximum capacity and needs to be upsized to reduce the risk of surcharging and to serve future growth. The City should replace the section of main between manholes VYR01 and VZD01 with a larger size to ensure sufficient capacity for full build-out of the sewer basin. Estimated cost for Phase 2 of this project is $239,000; project completion is scheduled for the year 2021.

CIP 108 - Lift Station 23 Upgrade and Force Main Upsizing

Lift Station 23 is not able to meet the anticipated increase in flows over the 20 year planning horizon. The existing pumps should be upsized along with the associated mechanical and electrical equipment. The existing 4-inch force main is also undersized and limiting the station's capacity. This force main should be upsized concurrently with the lift station upgrades. Estimated project cost is $1,291,000; project completion is scheduled for the year 2022.

CIP 109 - Lift Station Rehabilitation (LS-9, LS-24)

Mechanical and electrical equipment associated with lift stations typically have a much shorter useful life than the structural components. It is recommended that funds be budgeted for the rehabilitation/replacement of mechanical and electrical equipment based on its age. This project will provide for the rehabilitation of two existing lift stations (9, 24). These facilities should be carefully inspected prior to project scoping to accurately determine the extent of rehabilitation needed at each site. Significant reconfiguration of the wet-well or site layout is not anticipated at these stations. These stations should also have on-site generators, flow meters, and pressure transmitters installed if they have not already been done through the Generators / Flow Meters project. Wet-wells should be inspected and coated as needed. Estimated cost for this project is $1,412,000; project completion is scheduled for the year 2023.

CIP 110 - Pacific Ave and Kinwood St Lift Station

This project would construct a new lift station near the intersection of Pacific Ave and Kinwood St and would serve both new growth in the area and septic systems converting to sewer. This project will require a pre-design report and property acquisition. Estimated cost for this project is $915,000; project completion is scheduled for the year 2025.

CIP 111 - Lift Station Rehabilitation (LS-27, LS-30, LS-32)

Mechanical and electrical equipment associated with lift stations typically have a much shorter useful life than the structural components. It is recommended that funds be budgeted for the rehabilitation/replacement of mechanical and electrical equipment based on its age. This project will provide for the rehabilitation of three existing lift stations (27, 30, and 32). These facilities should be carefully inspected prior to project scoping to accurately determine the extent of rehabilitation needed at each site. Significant reconfiguration of the wet-well or site layout is not anticipated at these stations. These stations should also have on-site generators, flow meters, and pressure transmitters installed if they have not already been done through the

Generators / Flow Meters project. Wet-wells should be inspected and coated as needed. Estimated cost for this project is $2,117,000; project completion is scheduled for the year 2027. It is anticipated that a new developer built lift station will be constructed along 15th Ave NE, if that station has been completed prior to this project the City should evaluate options for abandoning Lift Station #27 at that time and directing flow to the new 15th Ave Lift Station.

CIP 112 - Lift Station Rehabilitation (LS-33, LS-34, LS-35)

Mechanical and electrical equipment associated with lift stations typically have a much shorter useful life than the structural components. It is recommended that funds be budgeted for the rehabilitation/replacement of mechanical and electrical equipment based on its age. This project will provide for the rehabilitation of three existing lift stations (33, 34, and 35). These facilities should be carefully inspected prior to project scoping to accurately determine the extent of rehabilitation needed at each site. Significant reconfiguration of the wet-well or site layout is not anticipated at these stations. These stations should also have on-site generators, flow meters, and pressure transmitters installed if they have not already been done through the Generators / Flow Meters project. Wet-wells should be inspected and coated as needed. Estimated cost for this project is $2,117,000; project completion is scheduled for the year 2028.

CIP 113 - Ruddell Trunk Replacement

This project would replace and upsize a section of the Ruddell trunk line between manholes WY601 and WTU01. This section of line is projected to exceed its current capacity by the year 2032. The timing of when this upsizing will need to occur will depend on the rate of growth in the new Mullen Rd STEP area. The City should monitor flows in this area to ensure an appropriate level of timeliness for this project. Estimated cost for this project is $1,220,000; project completion is scheduled for the year 2028.

CIP 114 - Mullen Rd STEP Main Upsize

As the Mullen Rd STEP area grows the existing 6-inch STEP main along Mullen Rd will become a significant restriction, resulting in high operating pressure. The existing STEP main will need to be upsized to safely accommodate long range flow projections. The City should monitor system pressure to ensure an appropriate level of timeliness and to evaluate options for phasing of this project. Estimated cost for this project is $3,372,000; project completion is scheduled for the year 2029.

CIP 115 - Lift Station Rehabilitation (LS-39, LS-40, LS-41, LS-42, LS-43)

Mechanical and electrical equipment associated with lift stations typically have a much shorter useful life than the structural components. It is recommended that funds be budgeted for the rehabilitation/replacement of mechanical and electrical equipment based on its age. This project will provide for the rehabilitation of five existing lift stations (39, 40, 41, 42, and 43). These facilities should be carefully inspected prior to project scoping to accurately determine the extent of rehabilitation needed at each site. Significant reconfiguration of the wet-well or site layout is not anticipated at these stations. These stations should also have on-site generators, flow meters, and pressure transmitters installed if they have not already been done through the Generators / Flow Meters project. Wet-wells should be inspected and coated as needed. Estimated cost for this project is $3,939,000; project completion is scheduled for the year 2032.

CIP 116 - Sleater Kinney Gravity Main Improvements (Phase 2)

This project will replace and up-size the existing gravity main along the northern portion of Sleater Kinney Rd from 12th Ave to Interstate 5 (manhole U2M01 to VB401). This section of gravity main serves a large number of customers along the City's western boundary and is projected to exceed the City's 80% depth criteria for maximum capacity during peak hour flows. The City should closely monitor flow along this section of gravity main to ensure an appropriate level of timeliness for this project. Estimated cost for this project is $3,120,000; project completion is scheduled for the year 2031.

CIP 117 - Lift Station Rehabilitation (LS-44, LS-45, LS-46)

Mechanical and electrical equipment associated with lift stations typically have a much shorter useful life than the structural components. It is recommended that funds be budgeted for the rehabilitation/replacement of mechanical and electrical equipment based on its age. This project will provide for the rehabilitation of three existing lift stations (44, 45, and 46). These facilities should be carefully inspected prior to project scoping to accurately determine the extent of rehabilitation needed at each site. Significant reconfiguration of the wet-well or site layout is not anticipated at these stations. These stations should also have on-site generators, flow meters, and pressure transmitters installed if they have not already been done through the Generators / Flow Meters project. Wet-wells should be inspected and coated as needed. Estimated cost for this project is $2,117,000; project completion is scheduled for the year 2032.

Table 8-2 20-Year CIP (2020-2033)

CIP No.	Project	Type	Replacement	Upgrade	Expansion	Project Description
101	26th Loop SE Replacement	Capacity			☑	▪ Upsize approximately 1,150 lf of pipe between MH WVM01 to MH VSM01 from 8-inch to 10-inch.
102	Lift Station #3 Pumps and Inlet Piping	Capacity			☑	▪ Increase pumping capacity. ▪ Construct approximately 60 lf of new 15-inch inlet pipe to divert flow from southern and eastern portions of the basin directly to wet well to alleviate surcharging between MH VTA02 and MH VTA01.
103	LS-8	General		☑		▪ Install a backup generator set or connect to the City Hall generator. ▪ Install a flow meter and pressure transducer and connect to SCADA.
104	LS-37 Discharge Manhole Improvements	General		☑		▪ Repair or install appurtenances to relieve surcharging at existing discharge manhole for LS-37, located at the intersection of Yelm Highway and College Street.
105	Lift Station 11 Abandonment	General	☑			▪ Replace LS-11 with 20 individual grinder pumps and install 650 lf of 2-inch force main. ▪ Abandon LS-11.
106	Lacey Boulevard SE Replacement	Capacity			☑	▪ Upsize approximately 900 lf of pipe between MH VBQ01 to MH VCJ01 from 8-inch to 10-inch.
107	Lakeview Drive Gravity Main Replacement Phase 2	Capacity			☑	▪ Upsize approximately 500 lf of pipe between MH VYR01 to MH VZD01 from 10-inch to 12-inch.
108	LS-23 and Force Main Upgrade to 8-inch	Obsolescence, Capacity			☑	▪ Replace lift station and upsize 1,850 lf of force main from 4-inch diameter to 8-inch diameter in 2022. ▪ Mechanical, electrical.
109	LS-9, LS-24 (Rehabilitation)	Obsolescence	☑			▪ Replace in 2024. ▪ Mechanical, electrical.
110	New Lift Station Near Pacific Avenue and Kinwood Street	General			☑	▪ Construct a new lift station to allow for future septic to sewer conversions.
117	LS-27, LS-30, LS-32 (Rehabilitation)	Obsolescence	☑			▪ Replace in 2027. ▪ Mechanical, electrical.
112	LS-33, LS-34, LS-35 (Rehabilitation)	Obsolescence	☑			▪ Replace in 2029. ▪ Mechanical, electrical.
113	Ruddell Trunk Replacement	Capacity			☑	▪ Upsize approximately 1,850 lf of pipe between MH WY601 to WTU01 from 21-inch to 30-inch.
114	Mullen Road STEP Main Replacement	Capacity			☑	▪ Upsize approximately 5,200 lf of pipe between 3JS03 to 3EW02 from 4-inch to 10-inch. ▪ Upsize approximately 2,600 lf of pipe between 3EW02 to 4GW05 from 6-inch to 12-inch.
115	LS-39, LS-40, LS-41, LS-42, LS-43 (Rehabilitation)	Obsolescence	☑			▪ Replace in 2031. ▪ Mechanical, electrical.

Table 8-2 20-Year CIP (2020-2033)

CIP No.	Project	Type	Replacement	Upgrade	Expansion	Project Description
116	Sleater Kinney Gravity Main Improvements 2					▪ Upsize approximately 430 lf of pipe between MH VQD01 to MH VKW01 from 15-inch to 18-inch. ▪ Upsize approximately 800 lf of pipe between MH VGE01 to MH VBV01 from 15-inch to 21-inch. ▪ Upsize approximately 560 lf of pipe between MH VBV01 to MH VCH01 from 15-inch to 24-inch. ▪ Upsize approximately 1,430 lf of pipe between MH VBD01 to MH U7D01 from 21-inch to 30-inch. ▪ Upsize approximately 400 lf of pipe between MH U7D01 to MH U2W01 from 24-inch to 30-inch. ▪ Upsize approximately 1,270 lf of pipe between MH U2W01 to MH UYW01 (discharge to LOTT system) from 24-inch to 36-inch.
117	LS-44, LS-45, LS-46 (Rehabilitation)	Obsolescence	☑			▪ Replace in 2032. ▪ Mechanical, electrical.

8.3 Opinions of Probable Cost

Opinions of probable project costs for the 6-year CIP are listed in Table 8-3. These projects have been defined only to a preliminary level of design with approximate dimensions. All projects will require further definition and design refinement as part of the design process.

Construction costs were estimated from bid results for similar projects in the Puget Sound area and RS Means cost data for 2013. The opinion of probable construction cost includes the costs to build the various components and sales tax.

Opinions of probable costs for City labor and direct costs, planning, surveying, engineering services, permitting, bid advertisement, contract award, and services during construction were calculated as 30 percent of the opinion of probable construction costs. No costs are included for financing, easements, right-of-way, or property acquisition unless specifically noted.

Table 8-3 Opinion of Probable Project Costs, 6-Year CIP (2014-2019)

CIP No.	Project	Replacement	Upgrade	Expansion	Opinion of Probable Project Cost
1	Wastewater Comprehensive Plan Update (recurring)		☑	☑	$45,000
2	LS-25 and LS-31 Retrofit	☑	☑		$1,023,000
3	Steilacoom Road Lift Station	☑			$3,650,000
4	Tanglewilde East ULID			☑	$3,764,000(2)
5	College Street and Martin Way ULID			☑	$750,000
6	STEP Main Air/Vac's	☑			$224,000
7	LS-18	☑			$690,000(1)
8	Lakeview Drive Gravity Main Phase 1		☑		$500,000
9	LS-15 Generator/Flow Meter		☑		$350,000
10	Avonlea Odor Control		☑		$100,000
11	Train Depot			☑	$62,000
12	Carpenter Road STEP Upgrades	☑			$50,000
13	Lift Station 2 - Lift Station, Gravity, and Force Main Replacement	☑			$1,610,000
14	Rumac St STEP Main			☑	$1,000,000
15	Mullen Road Force Main		☑		$500,000
16	College Street Repair	☑			$100,000
17	Annual Sewer Line Replacement	☑			$300,000
18	FOG/Fibrous Wipes Pilot Program		☑		$50,000
19	Generator/Flow Meter LS-22, LS-23, LS-17, LS-20		☑		$800,000
20	LS-49 Land Purchase		☑		$120,000
21	LS-12 Abandonment		☑		$200,000(3)

Table 8-3 Opinion of Probable Project Costs, 6-Year CIP (2014-2019)

CIP No.	Project	Replacement	Upgrade	Expansion	Opinion of Probable Project Cost
22	Sleater Kinney Gravity Main Improvements		☑		$1,300,000
23	Lift Station Rehab (Phase 1)	☑	☑		$1,900,000
24	Lift Station Rehab (Phase 2)	☑	☑		$2,850,000
25	Lift Station and STEP System Flow Meters		☑		$690,000(4)
26	Sewer Main Replacement (50th Ave)		☑		$210,000
27	Chemical Storage Tank Replacement	☑			$150,000
28	Sewer Main Replacement (34th Ave)		☑		$60,000
Total Opinion of Probable Project Cost					**$23,048,000**

Notes:
(1) Costs for LS-18 only include construction costs. Other project costs were previously expended.
(2) Tanglewilde East is expected to be financed using bonds, to be repaid with funds from the ULID.
(3) LS-12 Abandonment includes land acquisition and allied costs. Construction will occur in 2020 and is not included in the 6-year CIP.
(4) Lift Station and STEP System Flow Meters construction will continue into 2020. The 2020 construction costs are not included in the 6-year CIP.

Chapter 9 Wastewater Reuse

The City does not own, operate, or maintain a wastewater treatment plant. LOTT treats and disposes of all of the City's sewage from the collection system. The agreement between the City and LOTT is included as Appendix A. LOTT owns and operates two treatment plants.

The Budd Inlet Treatment Plant (BITP) is LOTT's largest plant, and it serves the cities of Lacey, Olympia, Tumwater, and Thurston County. The BITP produces up to 1 MGD of Class A reclaimed water which is used for irrigation, cleaning, and a constructed pond.

The Martin Way Reclaimed Water Plant (MWRWP) only receives wastewater generated in the City and produces Class A reclaimed water. The Martin Way Pump Station diverts some flow to MWRWP, with excess flow conveyed to BITP. The MWRWP currently has a 2 mgd capacity, and is planned to be expanded to 8 mgd. The plant currently conveys reclaimed water to the Hawks Prairie Reclaimed Water Ponds/Recharge Basins, a series of constructed wetland ponds and groundwater recharge basins on a 40-acre site located off of Hogum Bay Road NE and 30th Ave NE via a 14-inch reclaimed water main. The reclaimed water system is shown on Figure 9-1.

LOTT makes Class A reclaimed water available to the partner jurisdictions, who then distribute the water to the end-user. This water may be used for irrigation, dual-plumbed buildings, environmental enhancement projects, and many other non-potable uses. LOTT reserves the first 0.25 mgd of reclaimed water produced at the MWRWP for its use at the plant and at the Hawks Prairie Ponds/Recharge Basins. The remainder of the first 1 mgd is allocated to Lacey and Olympia (60% and 40%, respectively), while 100% of the second 1 mgd is allocated to Lacey. Reclaimed water produced by MWRWP is shown on Table 9-1.

Table 9-1 Annual Average Reclaimed Water Produced at MWRWP

Year	Annual Average Flow (mgd)
2007	0.62(1)
2008	0.52
2009	0.87
2010	0.98
2011	0.47

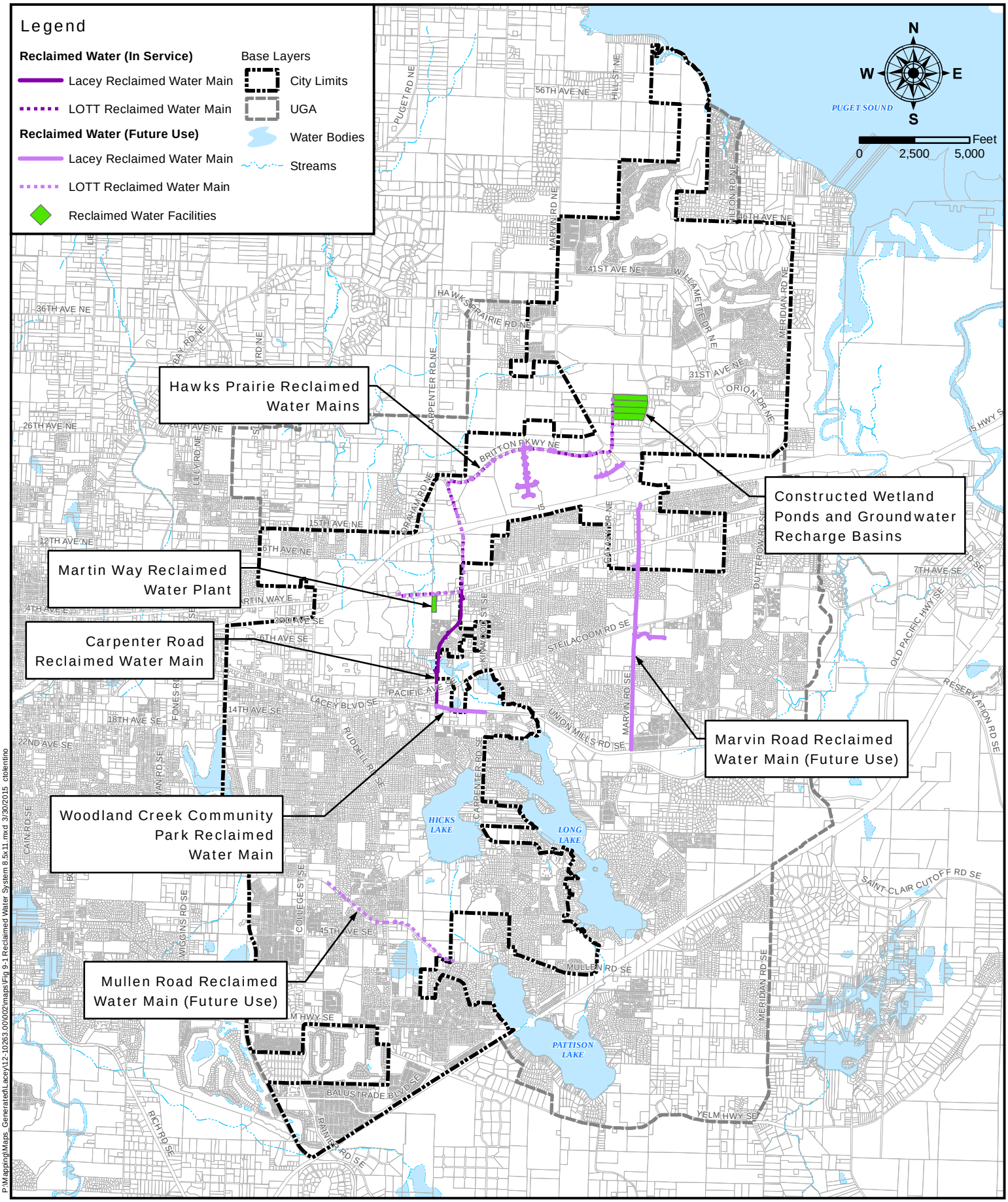
Notes:
(1) Reclaimed water in 2007 was only produced in October, November, and December.

The City will be diverting some of the reclaimed water to infiltrate at Woodland Creek Community Park off of Pacific Avenue to preserve stream flows in Woodland Creek and to serve as mitigation for additional water rights. The City has also planned to construct a reclaimed water distribution system, including a booster pump station and reservoir, which is tentatively planned to begin construction in 2021. This will provide access to reclaimed water along the City's Britton Parkway and future Main Street corridors.

The City has also installed reclaimed water piping in Marvin Road SE between I-5 and Union Mills Road SE. The pipe will eventually serve the Regional Athletic Complex (RAC), but is

currently dry. The pipe may be connected to the reclaimed water piping leaving the MWRWP, or to the City's future reclaimed water distribution system when it becomes economically feasible to do so.

LOTT has long-range plans to build a future reclaimed water satellite plant on Mullen Road near College Street. A 12-inch reclaimed water main owned by LOTT has already been installed in Mullen Road between College Street SE and Forest Glen Drive SE.



P:\Mapping\Maps_Generated\Lacey\12-10263.00\002\maps\Fig 9-1 Reclaimed Water System 8.5x11.mxd 3/30/2015 ctolentino

GIS Data: City of Lacey.
This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

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RECLAIMED WATER SYSTEM
WASTEWATER COMPREHENSIVE PLAN UPDATE
City of Lacey
April 2015

Figure 9-1

Chapter 10 Operations and Maintenance

10.1 Introduction

Wastewater Maintenance and Operations (O&M) is a group within the City's Public Works Division. Day to day operation of the City's wastewater utility is divided into five distinct budgeted programs, General Services, Customer Service, the Wastewater Lift Stations Program, the Wastewater Mains Maintenance Program, and the STEP System Maintenance Program. Of these five, the wastewater lift stations, mains maintenance, and STEP system maintenance programs directly apply to the daily field operation and maintenance of the collection system.

10.2 Organization of the Wastewater Sections

Wastewater Programs are under the direct supervision and support of the Water/Wastewater Supervisor and two Senior Technicians. These programs are divided into three main sections that include O&M of wastewater lift stations, wastewater mains, and STEP systems.

The Senior Tech leading the Lift Station Section is responsible for maintenance of the City's lift stations, auxiliary generators, and SCADA/radio communication systems. A second Senior Tech leads both the Wastewater Mains and STEP System Sections. Those responsibilities include maintenance of the City's network of gravity and pressure sewer pipe, manholes and cleanouts, odor control systems, and STEP systems. STEP systems include a mix of individual STEP pumps, community STEP lift stations, STEP pressure mains, debris tanks, and a growing number of residential grinder pump systems.

Of the thirty-five full time employees allocated to the Water/Wastewater Division, fourteen are assigned to Wastewater Programs. An organization chart showing the 2013 Wastewater Group structure is shown in Figure 10-1.

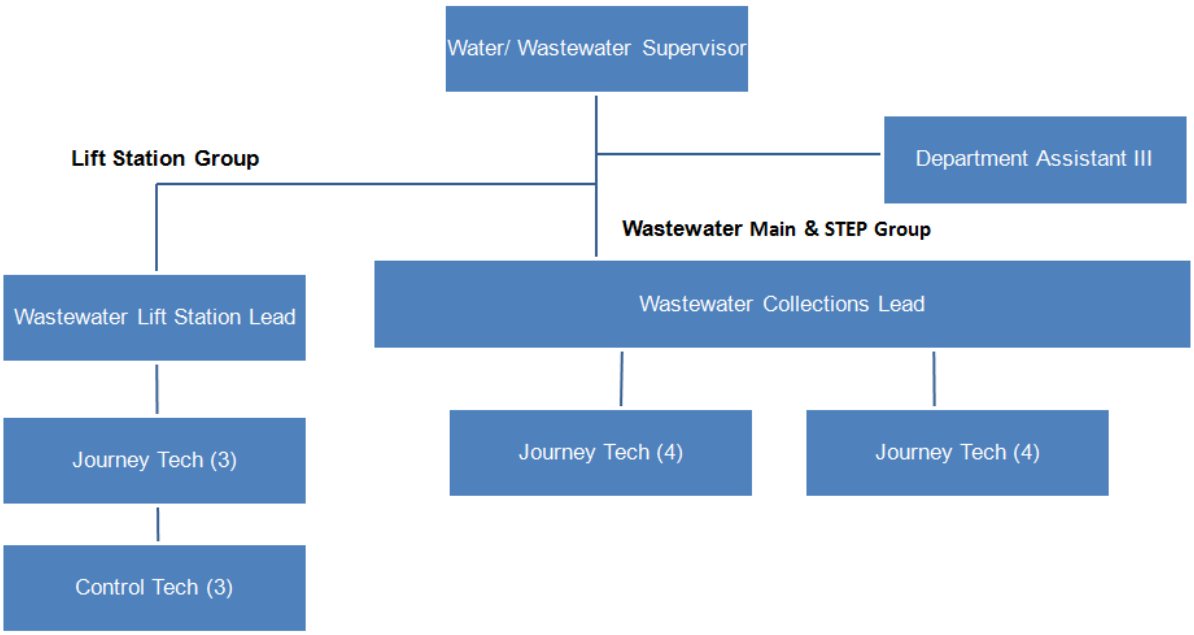


Figure 10-1 Wastewater Group Organization Chart

Wastewater staff is assigned to one of four crews that are responsible for the following activities:

1. Main line sewer cleaning
2. Closed Circuit Television (CCTV) inspection
3. STEP systems
4. Lift Stations
5. Auxiliary Generators
6. Odor Control

10.3 Infrastructure Condition Assessment

This section describes and summarizes the general condition of the facilities and infrastructure components that the department is responsible for operating and maintaining. A detailed description and mapping of the existing system of lift stations, force mains, major gravity lines, and STEP mains within the UGA is presented in Chapter 5: Existing Wastewater Facilities.

The City discharges all of its wastewater to the LOTT Clean Water Alliance for treatment. There are multiple discharge points to LOTT's system, which generally follows Martin Way from Galaxy Drive to Sleater Kinney Road. Areas entering LOTT's system west of Desmond Drive flow toward Olympia and ultimately to the Budd Inlet treatment plant. Areas that enter LOTT's system between Desmond Drive and Galaxy Drive ultimately flow to the Martin Way pump station (formerly Lacey's LS-16). The Martin Way pump station then directs flows to either the Martin Way Reclaimed Water Plant or to the Budd Inlet treatment plant as needed.

Following are descriptions of the City's sewer system components and their condition in relation to the Wastewater Division's operation and maintenance activities.

10.3.1 Sewer Mains

At a system-wide level, the gravity system is generally in very good condition, with little evidence of excessive inflow or infiltration, which is a common indicator of sewer system degradation. There are isolated areas in the older portion of the system, such as along Sleater Kinney Road. Where CCTV inspections indicate that sewer rehabilitation or replacement is warranted. However, modeling has indicated that this area is hydraulically deficient, and as such, work associated with this line is addressed in the Capital Improvement Plan of this report.

The objective of the on-going CCTV and manhole inspection programs is to identify structural problems early, before they become significant and costly to repair. The objective of the line cleaning and manhole washing maintenance programs is to relieve potential blockages, greatly reducing system overflows, and minimizing emergency call outs. The City maintains the inventory of sewer main components shown in Table 10-1. This also includes a portion of LOTT owned sewer lines which are maintained by the City through an inter-local agreement, a copy of the agreement is included in Appendix A.

Table 10-1 2010 Inventory of Sewer Main Components

Sewer Mains	141 miles
Sewer Mains (LOTT owned)	2 miles
Force Mains	15 miles
Force Mains (LOTT owned)	2 miles
STEP Mains	52 miles
Manholes and Clean-outs	4,000

10.3.1.1 Gravity Sewer Connections

The majority of sewer accounts are connected to the sewer system by means of gravity connections. Gravity connections account for approximately 75 percent of all connections. See Table 10-2 below for connection counts in 2004 and in 2009, 2010 and 2011.

Table 10-2 Gravity Connections

Year	2004	2009	2010	2011
Gravity Connections	7,416	11,111	11,453	11,639
Gravity EDU's	10,897	15,196	15,556	15,750
% (of total connections)	71%	76%	75%	75%

10.3.2 STEP and Grinder Pump Systems

There were 2,974 active STEP connections throughout the City in 2004 (including community STEP). That number had increased to 3,937 by 2011. While an increasing number of grinder pump systems are being constructed in areas where STEP is not practical, the number of grinder pump accounts is still small compared to the number of STEP accounts. As such, all equipment, operations and maintenance activities associated with the grinder pump accounts are included in the STEP System Program.

Individual STEP systems tend to be more costly from an O&M perspective than individual residential grinder pump systems. This is largely due to the maintenance requirement that the tanks in which the STEP pumps are located must be pumped out, similar to septic tanks used for on-site treatment systems. Wastewater Division staff are responsible for conducting these pump outs as part of their regular maintenance activities.

Operations staff currently has a generally positive outlook on grinder pump systems and are considering whether to promote their use. Since the grinder systems do not require the use of storage or septic tanks, pump out maintenance costs are considerably lower. It is also anticipated that grinder pumps will contribute lower levels of corrosive and odiferous gasses when compared to STEP, particularly when used in limited numbers with relatively short force main lengths. However, the individual pumping units are more expensive to replace and may have a shorter life span due to pumping raw sewage rather than screened effluent.

Individual homeowners currently own and are responsible for any maintenance or repairs to the grinder systems. This is in contrast to STEP systems, which are fully owned and maintained by the City. Because of this discrepancy the City is currently assessing whether or not to take over ownership and operation of these and future grinder pumps and whether the future cost of ownership, including O&M costs, would be less than or equal to that of STEP pump systems. If so, the City may choose to promote their use in areas of the collection system where a pressure sewer alternative is the best option.

E/One grinder pumps manufactured by Environment One, Inc. are commonly used by agencies across the Pacific Northwest, including the City. According to the manufacturer, there is an average of ten years between service calls on these pumps. Local agencies are equally divided in how they manage their grinder pump systems. Some agencies own and maintain the pump systems, while other agencies, including the City, do not own or maintain them for the homeowner.

Prior to the preparation of the *2005 Wastewater Comprehensive Plan*, maintenance costs for individual STEP systems had been steadily increasing to the point that the City was considering halting construction of new STEP systems. The Capital Improvement Plan for the 2005 Plan was based on the assumption that all future growth would be served by means of traditional gravity sewers and pump stations, and no future STEP connections would be allowed. Significant contributors to the high cost of maintenance were costs associated with pumping out STEP tanks.

Orenco Systems, Inc., the manufacturer of the individual STEP pumps used by the City, assisted the City's Wastewater Division and Engineering staff in conducting a study to determine an optimal cleaning rate for the tanks. It was determined that pump out frequency could be reduced from the previous service level of once every five years to a new service level of once every eight years, without increasing the risk of plugging the system with solids.

This reduced level of service has been implemented and has greatly reduced the cost of maintaining STEP systems, primarily through reductions in labor. These cost reductions have once again made STEP connections economically viable alternative to traditional gravity/lift station systems. At this time, it is anticipated that some future growth areas will be served using STEP systems.

The STEP system was evaluated in 2011 to determine the remaining capacity of the system and to address concerns regarding higher than anticipated operating pressures and long run times at some of the City's community STEP lift stations (CSLS). The results of the study were reported in the *2011 Wastewater STEP Main Evaluation*. It was determined that the STEP system was not reaching capacity due to wastewater loading, even though system pressures were limiting the ability of some community lift stations to pump wastewater into the STEP system during peak flow periods. Two of the City's CSLS's, LS-25 and LS-31, were found to have pumps that are not compatible with the range of pressures expected in the area. It was recommended that these stations be fitted with pumps more appropriate for the application.

It was also found that STEP system pressures would drop immediately following line cleaning (pigging) but would return to an elevated state after only 1-2 weeks of normal operation. The speed with which the pressure would increase following pigging suggests that entrapped air in the STEP mains was the primary reason for the elevated pressures. This, along with significant elevation changes and relatively small main sizes is the likely cause of long runtimes reported at some CSLS's along Steilacoom Road, north of Madrona Park. Faulty air/vacuum valves were identified as the probable reason for the air entrapment and Operations staff has been actively repairing and replacing existing air/vacuum valves since that time. Valve maintenance and line cleaning activities have combined to maintain system pressure at acceptable levels until such time as flow from those CSLS's can be diverted north following construction of the Steilacoom Road lift station.

Excluding the hybrid community STEP lift stations, the current STEP system includes the inventory of facilities shown in Table 10-3:

Table 10-3 2011 Inventory of STEP System Components

Individual STEP Systems	2,921
Pressure STEP Mains (City owned)	52 miles
Pressure STEP Mains (private)	0.5 miles
Sewer Air Relief valves	150
Grinder Pumps	98

STEP and grinder system connections account for approximately 25 percent of all connections to the City's sewer system. See Table 10-4 below for connection counts in 2004 and in 2009, 2010 and 2011. Note that the difference between the number of STEP Connections and the number of STEP tanks represents the number of homes connected to community STEP lift stations.

Table 10-4 STEP and Grinder Pump Connections				
Year	**2004**	**2009**	**2010**	**2011**
STEP Systems	2,654	2,861	2,867	2,921
STEP Connections (EDU's)	2,742	3,026	3,043	3,099
Community STEP Systems	10	19	19	20
Community STEP Connections (EDU's)	415	756	866	1,012
Grinder Systems	14	87	93	99
Grinder Connections (EDU's)	26	140	146	152
% of Total Sewer Connections	29%	24%	25%	25%

10.3.2.1 STEP System Flow Meter

The City currently has one flow meter for monitoring flows in its STEP areas. The meter is located on a 14-inch STEP main at 7509 Union Mills Road SE and measures flow originating from the eastern portion of the system, primarily along the Marvin Road corridor. Pressure measurements are also taken at this location. Flow and pressure monitoring can play an important role in diagnosing operational problems, determining existing operating conditions, and in future planning. It is recommended that the City install additional flow and pressure monitoring sites throughout its STEP areas so that it can better evaluate the performance and remaining capacity of those areas as well.

10.3.2.2 STEP System History

Construction of the first STEP systems in the City occurred in 1986 and the City has owned and operated STEP systems since 1989. By 1998 1,400 STEP systems had been installed and failure rates on individual systems had begun to increase noticeably, peaking at 26 percent annually that year. Failures require an emergency call out and are defined as the inability of an individual STEP system to operate, no matter what the reason.

Failure rates were reduced substantially by implementing a Full Service Maintenance (FSM) program in 1999. Two brief reports, both prepared by City staff, are included in Appendix I. Combined they provide a history of the STEP system and implementation of the FSM program. Maintenance activities that comprise the FSM program are described below in Table 10-10.

10.3.2.3 Odor Control Facilities

There are a total of 8 active odor control facilities being maintained by wastewater staff. Odor problems are typically related to the presence of hydrogen sulfide, therefore the alternatives for control of odor are typically aimed at preventing sulfide generation or at removing sulfides through chemical or biological action. The City takes odor complaints very seriously and utilizes a combination of chemical injection, aeration, and soil filter beds to reduce offensive odors to the maximum extent feasible. Chemical injection also provides the added benefits of maintain a residual effect in the downstream system and reducing corrosive gasses, prolonging the life expectancy of the City's infrastructure.

All odor control (OC) equipment, chemicals, and O&M costs are currently funded through the STEP System Program. However, to more accurately reflect actual cost activities to relevant

budgets, the OC budget should be treated as a stand-alone program benefiting the entire customer base.

Table 10-5 Inventory of Odor Control Facilities

Name	Address	Type	Telemetry
OCF 01	6620 Carpenter Rd. SE	Chemical Injection	No
OCF 02	9165 31st Ave. NE	Chemical Injection	No
OCF 03	6100 Stockton St. SE	Chemical Injection	Yes
OCF 04	5800 Rumac St. SE	Chemical Injection	No
OCF 06	4905 Ruddell Rd. SE	Soil Filter Bed	No
OCF 08	6120 Thornbury Ct. SE	Aeration/Soil Filter Bed	No
OCF 10	4031 Campus Green Dr. NE	Aeration/Soil Filter Bed	No
OCF 12	4119 Ingleside Lp. SE	Chemical Injection	No
OCF 05	Nelson St. SE	Soil Filter Bed	No
OCF 07	3065 Hogum Bay Rd. SE	Soil Filter Bed	No
OCF 09	6200 61st Ave. SE	Soil Filter Bed	No
OCF 11	800 Torden Ln. SE	Chemical Injection	No
OCF 13	8320 Vashon Dr NE	Chemical Injection	No
OCF 14	2365 Shady Glen Ct. SE	Chemical Injection	Yes

Notes:
1) Chemical storage tank levels are monitored through the chemical suppliers SCADA system. City staff also conducts bi-weekly site visits and an annual tank inspection.
2) Shaded facilities are currently inactive.
3) OCF 12 is currently in the process of being replaced and possibly relocated.

10.3.3 Community Septic Systems

The Wastewater Mains group is responsible for maintaining four community septic systems that are located within the City's system. These on-site treatment systems are viewed as temporary systems, which will be removed from service by the City as sewers are constructed nearby and connection to the City's system becomes economically feasible. The residents currently pay regular connection fees and rates. New community septic systems are discouraged. The City's policy is discussed in more detail in Chapter 4.

10.3.4 Lift Stations

At the end of 2012 there were 47 wastewater lift stations in service within the City's service area. Of these, 20 are hybrid community STEP lift stations (CSLS). City-owned lift stations range in capacity from 30 gpm up to 2,000 gpm. Rapid growth in the service area had been occurring prior to the time that the *Wastewater Comprehensive Plan* was last updated in 2005. By the end of 2003, the reporting year for the previous plan, there were 29 lift stations listed as being in service, an increase of 18 stations. Population growth has slowed substantially in recent years; however given the topography and distance to the existing gravity system from the outlying areas of the UGA where most growth is anticipated, the number of lift stations is expected to increase.

Wastewater service to support future growth in the outlying areas of the UGA is currently anticipated to be largely met by utilizing low pressure STEP or grinder pump systems. These alternative systems can be effective in areas where the terrain significantly limits the number of homes that are able to drain to a central location and will help to reduce the total number of lift stations at build-out. Lift stations will continue to be the preferred alternative in areas serving a sufficiently large number of customers. As such, O&M costs and labor effort are expected to rise due to the increased maintenance, repair, and power consumption associated with each new station. Chapter 4 discusses how the City will determine when STEP or grinder systems should be utilized or if a new lift station is warranted, and the cost effectiveness of each.

Auxiliary generators, which provide electrical power to operate pumps in the event of a power failure, are currently installed at 34 of the existing lift stations. During electrical outages, stations that do not have auxiliary power generation installed are kept in operation through the use of portable diesel driven generators delivered to the site by wastewater staff. These deliveries are often made under emergency conditions and in adverse weather. Five portable generators are available and maintained for this purpose. It is the City's goal to eventually install auxiliary power generation at all lift stations.

The City also owns 5 additional generators that are used for non-sewer purposes that are maintained by the Lift Station crew. These are located at water facilities, City Hall, the Maintenance Center, and Animal Services.

An inventory of City-owned lift stations and generators is included in the Lift Station Inventory provided in Appendix E.

10.4 Operation and Maintenance Programs

Organized maintenance planning is necessary to ensure continuous service to customers and to maximize the benefit derived from the wastewater assets that are owned, operated and maintained by the City. The Wastewater Division implements several maintenance programs designed to maintain system integrity, extend component life, and reduce the overall cost of owning and maintaining the collection system. These programs are funded through the Wastewater Main, the Wastewater Lift Station, and the Wastewater STEP System budget programs.

In general, the City's Wastewater O&M program conforms to practices recommended by the Water Environment Federation (WEF) in *Wastewater Collection System Management Manual of Practice* (published by WEF, 1992) and in EPA's CMOM program. See Section 10.6 and Appendix J *Checklist for Conducting Evaluations of Wastewater Collection system Capacity, Management, Operation, and Maintenance (CMOM) Programs, USEPA, 2005* for more details on CMOM.

This section describes most of the Lift Station maintenance programs that are currently in place. Descriptive text is provided for the maintenance programs that require the highest levels of labor or capital funding.

10.4.1 Wastewater Lift Station Program

The City owns and maintains 47 lift stations ranging in complexity and size having nameplate capacities ranging from 30 gpm to 2,000 gpm. There is a mix of submersible, wet well/dry well, and above grade/vacuum prime configurations. While each station is unique, they generally consist of mechanical pumps and electric motors, enclosure and vaults, telemetry and process

control to allow for automatic pump control and remote monitoring. The City is slowly phasing out its existing above grade/vacuum prime stations and has standardized on submersible stations for all future installations.

In many cases a backup diesel powered electric generator is installed to ensure continuous service in case of power failure. Detailed operating instructions for pump station components are provided in the O&M manuals for each station. The manuals have been compiled by the various equipment manufacturers and are located at each station and on file at the maintenance shop. The City is also developing an electronic version of the O&M manuals that will be accessible through the City's network.

Lift station maintenance programs include the operation, maintenance and repair of lift station structures and components, auxiliary power generators, STEP system electrical support, Supervisory control and data acquisition (SCADA) programs. Field work associated with odor control facilities is also the responsibility of the lift station section.

Figure 10-2 shows a breakdown of the regular labor hours spent on wastewater lift station maintenance.

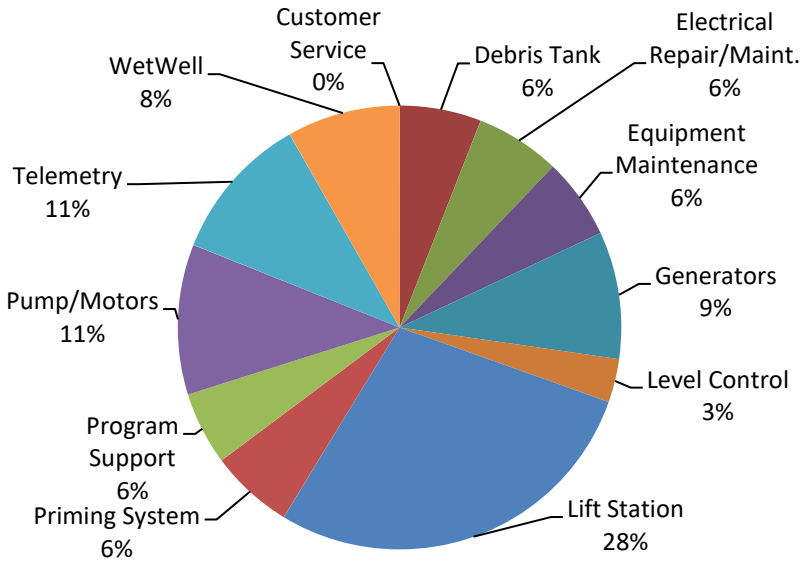


Figure 10-2 Wastewater Lift Station Maintenance Program Labor Hours

The Wastewater Lift Station crew consists of seven staff: one Senior Technician, three Journey Level Technicians and three Control Technicians. This crew is responsible for the on-going activities listed in Table 10-6 (level of service in parenthesis), all maintenance programs associated with the City's lift stations, and the activities listed in Table 10-7.

Table 10-6 Sewer Facility Maintenance Checks

▪ Wastewater facility security management ▪ Wastewater production report support ▪ Power failure support equipment ▪ Pipes and check valves (annually) ▪ Sump pumps (monthly) ▪ Lighting ▪ Heating and ventilation ▪ Facility site and station checks (semi-annual) ▪ Equipment (varies by manufacturer)	▪ Motors (annually) ▪ Control valves (monthly) ▪ Oil and filters (bi-annually) ▪ Buildings and vault O&M (semi-annual) ▪ Blower and vent screens (monthly) ▪ STEP Electrical Support ▪ STEP effluent sampling (bi-weekly) ▪ Training

Table 10-7 Maintenance Activities for Wastewater Lift Stations

Maintenance Activity	Definition	Benefit to the City	Target Service Level	Rationale for the Service Level	2011 Actual Service Level
Wet Well Cleaning	Flushing, jetting and evacuating wet wells. (Preventive Maintenance)	Minimizes odor and corrosion; ensures reliable level control.	Frequency varies based on type of station, flows and debris in wet well.	Based on industry standard and operator's observations.	100% of target
Service Electrical Control Panels	Inspection, cleaning and calibration of electrical control panels (15 tasks). (Preventive Maintenance)	Ensures efficient and reliable operation	Weekly inspection, quarterly calibration and annual cleaning and testing	Based on industry standards and manufacture's recommendations.	100% of target
Maintain Buildings and Enclosures	Cleaning, inspection and maintenance including grounds maintenance. (Preventive Maintenance)	Ensures security and protection of equipment in buildings	Monthly, quarterly and annual cleaning and inspection	Based on industry standard.	100% of target
Pump Service	Pull pump, clean, inspect, and service pump components (12 tasks). (Preventive Maintenance)	Improves lift station reliability, Identifies need for pump repairs	Annual	Based on industry standards and manufacture's recommendations.	100% of target
L/S Checks and Readings	Checks and readings of pump stations. (Preventive Maintenance)	Record pump run times	Weekly and year end pump hour readings	Based on industry standard	100% of target
Telemetry System Test	Physical test and inspection of telemetry system. (Preventive Maintenance)	Improves SCADA reliability and accuracy	Semi-annual	Based on industry standard	100% of target
Generator Inspections	Generator inspection and testing. (Preventive Maintenance)	Confirms operation to ensure that generators will function when required in emergency situations.	Portables monthly. Fixed generators weekly exercising and hour meter readings.	Manufacturers' recommendations	100% of target
Vehicle/ Equipment Maintenance	Weekly cleaning, fueling and stocking of line cleaning and TV inspection vehicles to ensure they are ready for work. (Includes equipment servicing, small equipment and tools) (Preventive Maintenance)	Ensures rapid and efficient mobilization of crews. Improves reliability of vehicles and equipment.	Weekly maintenance of vehicles (presently conducted at end of shift on Fridays)	Preparation of vehicles in advance of weekends (when emergency call outs may occur)	Generally met the target
HTE Support for Automated Maintenance Management System (AMMS)	Updating the HTE system (Record Keeping and Administration)	Maintains currency of AMMS	Daily, as required	Complete and timely information is required for management purposes	Generally met the target
Minor Maintenance	Includes a range of maintenance activities including start-ups, priming, supervision, level control, etc. (24 tasks each consuming less than 3% of the total pump station maintenance hours). (Corrective Maintenance)	Ensures system reliability and responds to the needs of customers	As required. Immediate response to emergencies. Routine work is scheduled as available.	Based on the past experience and best management practices.	As required

10.4.1.1 Supervisory Control and Data Acquisition (SCADA)

The SCADA system monitors the operation and alarms at the City's lift stations, generators, and odor control facilities. The system also alerts on-call staff of any alarms that occur outside of normal business hours. The system transmits and records wet well levels, pump cycles (starts and stop's), set points and work history. Flow and pressure monitoring is also being added to all new lift station, while existing stations are being retrofitted with these capabilities whenever the station undergoes significant upgrades. The lift station maintenance crews currently support the SCADA System Operation & Maintenance and perform semi-annual telemetry alarm checks.

A Site Survey Evaluation was conducted in 2012 to determine if additional repeater locations would help resolve chronic SCADA communication failures that were being experienced. At the time the radio communication system consisted of 86 Water/Wastewater facilities transmitting communication data to a single repeater. The survey identified a need to install three new repeaters.

Repeaters were installed at the Hawks Prairie, Judd Hill and McAllister water reservoirs. Installation of these repeaters has optimized water/wastewater SCADA communication abilities and minimizes communication failures. The old repeater at Union Mills is no longer required.

10.4.2 Wastewater Main Maintenance Program

The Wastewater Mains Program includes the operation, maintenance and repair of the City's wastewater mains, which range in size from 4- to 27-inches in diameter, pressure mains, manholes, sewer clean outs, and air release valves.

The Wastewater Mains maintenance crew consists of four Journey Level Technicians working under the supervision of a Senior Technician responsible for the Wastewater Mains and STEP System programs. This crew is responsible for maintenance programs associated with the City's gravity sewer mains, pressure mains, manholes and cleanouts. Components of the Wastewater Mains Maintenance program discussed in detail below include the Line Cleaning and the Closed Circuit Television (CCTV) programs.

Figure 10-3 shows a breakdown of the regular labor hours spent on wastewater main maintenance.

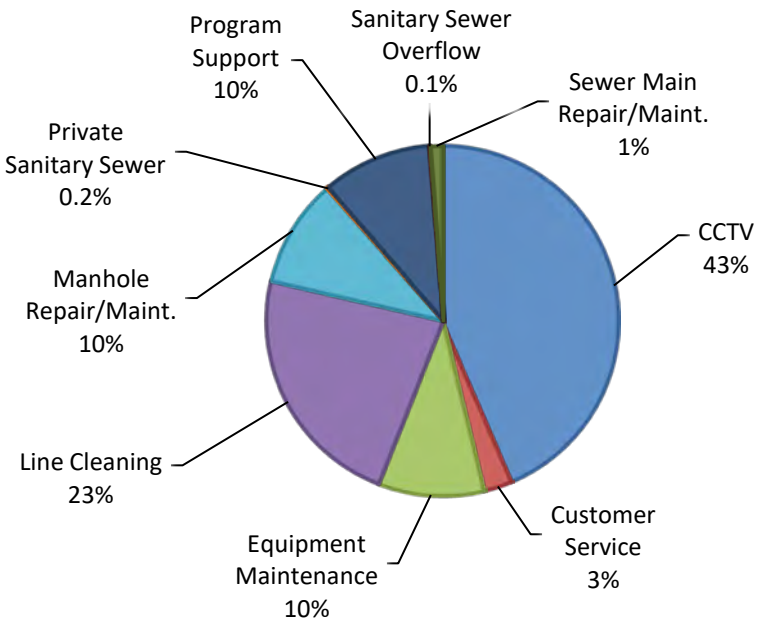


Figure 10-3 Wastewater Mains Maintenance Program 2011 Labor Hours

10.4.2.1 Line Cleaning Program

Two staff members are assigned to the Line Cleaning program. City-owned jetting equipment is used to conduct cleaning activities throughout the gravity main collection system.

Line cleaning helps to remove debris such as sand and rocks, silt, grease, and roots that accumulates in pipelines. If debris is allowed to accumulate, it reduces the hydraulic pipe capacity and blockages can occur, which in turn, can result in overflows from the system onto streets, yards, basements, or surface waters.

Gravity sewers are cleaned utilizing high pressure jetting equipment. A nozzle attached to a length of high pressure hose is connected to a high pressure water pump. Pressurized water expelled from the nozzle jets cleans debris and removes pipe blockages from the inside of the pipe. Debris is then removed from the system and decanted prior to disposal. Maintenance crews experience mixed results successfully removing roots. Operators are responsible for recording line segments, footage and the volume of water used on Line Cleaning reports.

It is the City's goal to clean 20% (147,000 LF) of the gravity collection system each year as recommended by the City's insurance carrier. In 2009 the City added a dedicated line cleaning truck and crew, since that time the City has outperformed its goals (Figure 10-3). A high frequency of line cleaning is critical to limiting the City's risk of sewer overflows and potential property damage. The City has not experienced an overflow due to line blockages in its gravity system in over 15 years.

Work orders are typically filled to clean sewers under one of three conditions below. The lengths of pipe cleaned are displayed in Figure 10-4.

1. Many sewer lines are cleaned on a rotating basis with a goal of cleaning approximately 20 percent (147,000 LF) of sewer annually, providing a system-wide level of service of 5-years.
2. Routine preventative cleaning is also scheduled at locations within the system where sediment deposition, FOG or root intrusion conditions are known to exist and cleaning more than once every 5-years is warranted. Levels of service for these high frequency areas vary from semi-annual to bi-annual frequencies.
3. Unanticipated and emergency cleaning is conducted on an as-needed basis. These conditions are typically identified through on-going television and manhole inspection activities, or through customer reports.

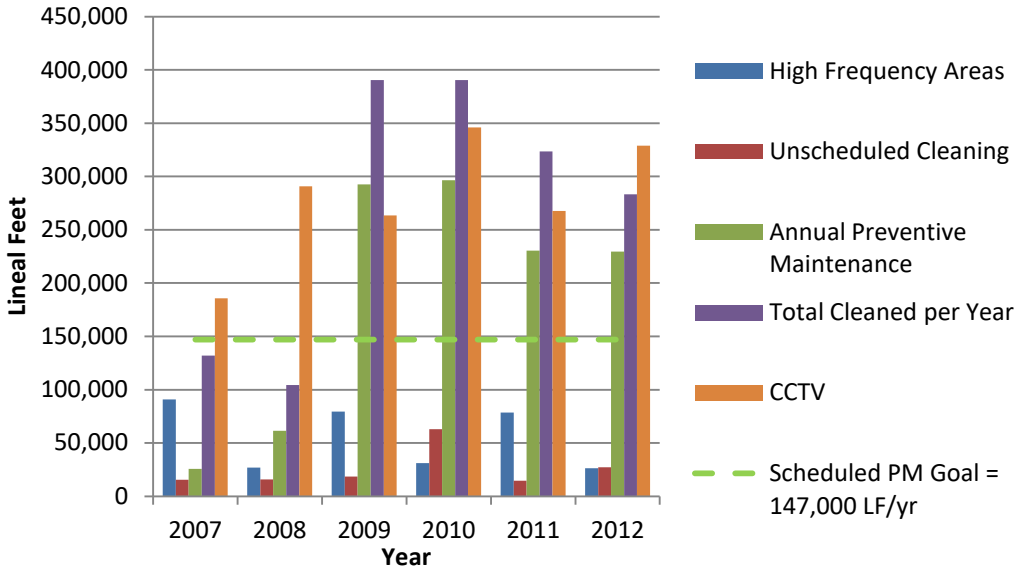


Figure 10-4 Annual Sewer Line Cleaning

10.4.2.2 Closed Circuit Television (CCTV) Inspection Program

Two operators are assigned to the CCTV program. The operators receive certification through the Pipeline Assessment and Certification Program (PACP). During certification, operators are trained in the use of a unified abbreviation and code system, which is an industry standard used to describe features, defects and conditions in underground pipes.

TV inspection is performed with City-owned equipment, utilizing a robotic camera that is lowered into the sewer line through a manhole. Consistent with most modern television inspection equipment, the system has the capabilities to move the camera forward and backward, change its angle of perspective, and digitally record and document a visual image of a pipeline's interior using computer management software. The camera is sized such that pipelines 8- through 27-inches in diameter can be inspected.

It is the Wastewater Divisions goal to inspect 20 percent (147,000 LF) each year. The City has exceeded its goal for this category in recent years, recognizing the benefits that TV inspection provides. Inspection reports produced by the CCTV program are used to identify problematic areas requiring higher cleaning frequencies and to monitor the condition of the pipes so that rehabilitation efforts can be initiated prior to a failure. Figure 10-3 shows the total length of sewer inspected using CCTV for 2009-2011.

10.4.2.3 Fats, Oils, and Grease (FOG), and Flushable Wipes

When fats, oils and grease are discharged into sewer systems they congeal and can clog collection system pipes which can lead to sewage spills, overflows at manholes or backups in homes and businesses. FOG reduces the hydraulic capacity in the collection system and causes clogging at lift stations. Its presence increases maintenance costs through increased pipe cleaning frequency, cleaning and repair of lift stations due to grease build-up, and increased inspection frequency to check the system for FOG build-up.

Operations staff experience indicates that commercial accounts such as restaurants tend to be the highest contributors of FOG into the system. The City's FOG program is currently taking an educational approach tailored to inform citizens of the negative impact that FOG has on the wastewater system. LOTT provides educational materials and program support due to the impact FOG can have on the treatment process. Historically the program has focused on commercial customers.

City staff recently conducted a pilot program to test the effectiveness of using educational materials to reduce FOG in residential areas. This low cost approach is used by many sewer utilities to reduce FOG at its source by informing the public of the negative effects of FOG on sewer systems.

For the pilot study, two lift stations that each have a history of high FOG related maintenance requirements were chosen for the pilot project. Door hangers containing educational materials were left at all homes in the service areas draining to the lift stations. Laboratory testing of the wastewater was conducted before and after distribution of the educational materials to determine if a FOG reduction in the wastewater stream could be detected. Lift station operators were also interviewed to determine if the level of observable FOG that needed to be cleaned from pumps and wet wells was reduced during the test period.

The lab results were inconclusive; however the operators stated that they observed less grease at the lift stations in the months during and immediately after the educational campaign. Approximately one year has passed since the pilot project and operators now report that grease at the lift stations appears to have returned to normal. The short-term improvements suggest that there may be benefits for conducting an on-going public education program. However, other wastewater utilities have experience mixed results from public education programs, with some agencies finding no appreciable benefit. The agencies that did experience improvements tended to embark upon extensive education programs.

A second FOG pilot program is planned to confirm the preliminary findings of the first pilot project. If the pilot projects are successful, similar educational techniques are planned for other high-FOG areas of the system, including commercial customers. Opportunities should be provided for City staff to develop the program further and to encourage communication and coordination efforts with other jurisdictions. Development of a privately owned grease trap inspection and maintenance program may provide additional benefits should an educational approach fall short of having the desired effect.

Flushable wipes also presents a significant burden to Operations staff. Service calls for system clogging and lift station pump failures due to fibrous ragging problems are becoming increasingly frequent and could lead to overflows in some cases. Many personal hygiene wipes and cleaning products are marketed as being "flushable." Despite confusing and misleading product labels, "flushable" or "disposable" products should never be flushed. Items labeled as

"flushable" or "disposable" (even "bio-degradable" ones) can get caught on roots in sewer pipes and contribute to blockages, back-ups, and overflows. Pump station operators must remove so-called “flushable” wipes from seized-up pumps on a frequent basis, a process that can take several hours.

However, consumers are typically not aware of the maintenance problems caused by these products. As maintenance costs associated with fibrous products increases, the City should consider embarking on a public education campaign, similar to the pilot FOG program discussed in Section 10.3.2.3. Educational programs at many wastewater utilities encourage customers with the tagline “*Dispose of them in the trash, not the toilet!”*

FOG and fibrous wipes programs are anticipated to be a collaborative effort between Water Resources and Operations staff.

Table 10-8 Maintenance Activities for Wastewater Mains

Maintenance Activity	Definition	Benefit to the City	Target Service Level	Rationale for the Service Level	2011 Actual Service Level
Line Cleaning	Cleaning of gravity sewers and manholes using high pressure flushing. (Preventive Maintenance)	Reduces blockages and sewer overflows and maintains pipe capacity. Minimizes odor and corrosion. Removes grease and debris from lines and problematic manholes.	Varies by area ranging from semi-annual to bi-annual. Target is to clean approx. 20% of system per year (5 year cycle)	Based on insurance and industry standards. City can defend against claims if cleaning occurs every 5 years	Target met, see Figure 10-3
Television Sewer Inspection	Visual inspection of main condition using Closed Circuit Television. (Preventive Maintenance)	Assesses condition of sewers to prioritize repairs	20% of system per year (5 year cycle)	Prioritization of repairs to reduce breaks and blockages	Target met, >20% per year
Vehicle/ Equipment Maintenance	Weekly cleaning, fueling and stocking of line cleaning and TV inspection vehicles to ensure they are ready for work. (Includes servicing of equipment in vehicles, other small equipment and tools.) (Preventive Maintenance)	Ensures rapid and efficient mobilization of crews. Improves reliability of vehicles and equipment.	Weekly maintenance of vehicles (presently conducted at end of shift on Fridays)	Based on best management practices. Preparation of vehicles in advance of weekends (when emergency callouts may occur)	Generally met the service level
Manhole Washing	Washing manholes using high pressure flushing (this activity is part of the line cleaning program) (Preventive Maintenance)	Reduces blockages and sewer overflows. Minimizes odor and corrosion.	20% annually (5 year cycle) performed with line cleaning. More frequent washing of priority manholes (~ 100 problematic manholes in system)	Based on industry standards and staff observations	Target met
Manhole Inspection	Physical inspection of manhole condition for the purpose of identifying defects. (Preventive Maintenance)	Assesses condition of manholes to prioritize repairs	20% of system per year (5-year cycle)	Based on industry standards	Target met, 20% of system per year
Manhole Repairs	Emergency and routine repairs to manholes (Corrective Maintenance)	Improves reliability of manholes and ensure continued system reliability	Immediate response to emergencies. Routine work is scheduled as available.	Based on best management practices and staff observations	Performed on an as-needed basis
HTE Support (AMMS)	Updating the HTE system (Record Keeping and Administration)	Maintains currency of AMMS. Complete and timely information is required for management purposes	Daily, as required	Based on best management practices	Target met
Minor Maintenance	Minor repairs and maintenance related activities including customer service, cut brush, locates, air release maintenance, odor complaint response etc.	Ensures system reliability and responds to the needs of customers	As required. Immediate response to emergencies. Routine work is scheduled as available.	Based on best management practices	As required
Spill incidents	Cleaning up of unpermitted discharges from the sewer system (Corrective Maintenance)	Protects the environment, private and public property. Responds to the needs of customers.	0 spills. Immediate response to spills that do occur.	Spills are unacceptable since they are a health and environmental hazard.	Target met

10.4.3 STEP System Program

The Wastewater STEP System crew consists of two field technicians. This crew is responsible for all maintenance programs associated with the City's individual STEP systems. In STEP systems small City-owned pumps move the effluent from individual City-owned septic tanks into a small diameter pressure sewer. The pressure sewer main subsequently connects to larger diameter STEP mains and ultimately to the gravity collection system.

The City's STEP and grinder pump systems meet the requirements set forth in Section C1-10.4 of Washington State Ecology's *Criteria for Sewage Works Design Water Quality Program* (Orange Book), August 2008. The Orange Book requirements address issues associated with long term system management, including maintenance management.

Figure 10-5 shows a breakdown of the regular labor hours spent on STEP Program maintenance.

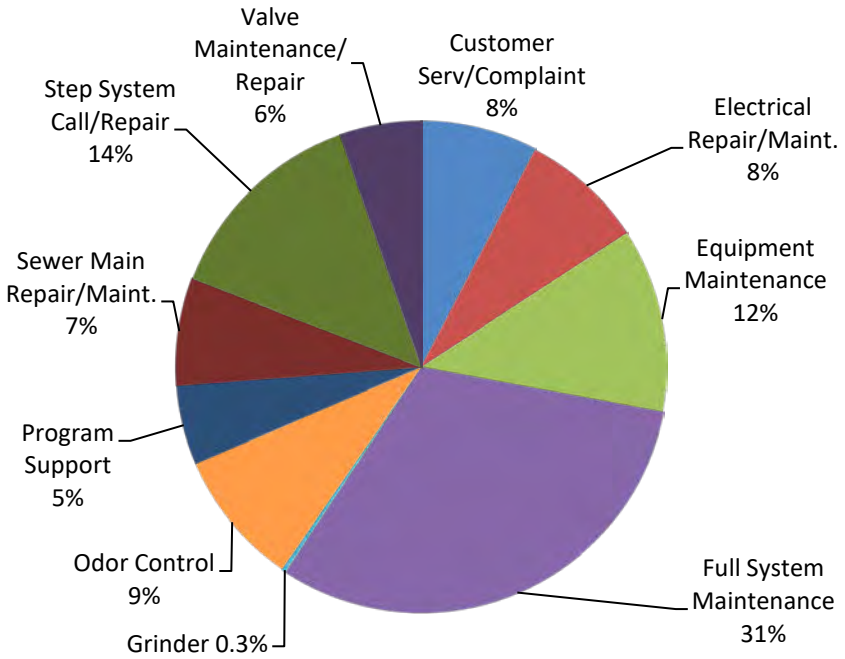


Figure 10-5 Breakdown of Wastewater STEP Program 2011 Maintenance Hours

STEP systems are prone to odor problems and experience higher levels of corrosive gas, which can drastically reduce the life expectancy of receiving gravity sewers if not adequately controlled. STEP systems maintenance costs per connection are often higher than the cost of gravity system connections, including those served by a lift station. However, STEP also possesses some very useful qualities, it can serve multiple small basins in rolling terrain more efficiently than multiple lift stations, and the effluent can be pumped for long distances at low velocities since the solids have been largely removed.

It is important to note that the City's attitude toward STEP has changed since the last wastewater plan was prepared. Although STEP system maintenance costs are higher than

maintenance costs for a gravity collection system, due to improvements to the STEP maintenance programs, the cost is now lower than when the last plan was prepared.

STEP sewer connections are a viable and economic alternative to conventional gravity sewers and lift stations when all costs associated with the construction and maintenance are accounted for.

The on-site portion of the low pressure systems operate as a septic system, except that the clear-water discharge from the septic tank is connected to a pressure main instead of a drain field. Within the City, major components associated with the STEP systems include:

- On-site 1,500-, 3,000, and 8,000 gallon settling and debris (septic) tanks
- High head, low volume pumps, biofilters, and float switches for level control
- Residence mounted control panels with control/alarm features.
- Air vacuum/relief valves.
- Odor Control system.
- An emergency support plan for up to 2,600 individual units during power outages.

Each STEP service is equipped with an audible alarm system to signal high sewage levels in the STEP tank. Once Operations staff is alerted by the homeowner of this condition, it is treated as an emergency, which requires immediate attention and maintenance.

Operations staff have developed standard operating procedures for STEP tank and pump maintenance and for start-ups. Additionally, in response to high STEP failure rates experienced in the 1990s, the City initiated a Full Service Maintenance (FSM) program in 1999.

The FSM program is a preventive maintenance approach that provides a level of service which initially called for replacing most major components and pumping out all tanks on a 5-year cycle. This level of service was later relaxed to 5-year intervals between site visits, replacing major components on an as-needed basis, and 8-year intervals between tank pump outs. The revision to the level of service occurred without increasing emergency call outs or failure rates (see Appendix I STEP System History).

STEP mains are cleaned using line pigging techniques. Pigging is an internal pipe-cleaning process commonly used to clean foreign matter from the inside of pressure water systems. It works by pushing an object, called a pig, using the water in the pipe, in the direction of normal flow. When performed correctly, line pigging will increase flow rates and reduce pumping pressures by removing sediment and air that is trapped in the system.

The STEP field crew is responsible for the maintenance programs associated with the City's individual STEP system, the programs described above, and the activities listed below in Table 10-10.

10.4.3.1 Grinder Systems

As an alternative to STEP systems the City has been contemplating the use of grinder pump systems. Similarly to STEP systems, grinder pump systems operate as a pressure system, with each individual system pumping into a common pressure main. But unlike STEP, which allows solids to settle out in debris tanks before pumping the screened effluent, these systems grind the waste stream into a slurry during the pumping cycle, discharging the liquid and solids together. This allows the grinder systems to operate with a much shorter residence time in the

tank, resulting in reduced odor and corrosion potential but as with any pressure system long residence time in force mains can lead to anaerobic conditions and the associated odor and corrosion issues. These systems do however require that scouring velocities be attained on a frequent basis to ensure that solids are adequately transported through the main. Grinder mains can benefit from periodic cleaning to remove accumulated solids through the use of pigging techniques.

While the City does allow the installation of grinder systems, their use has been limited. The City currently views these systems as private facilities, tasking the customer with maintenance and operation responsibilities for the on-site equipment. The City is re-evaluating this practice, as well as contemplating the use of grinder systems on a more wide-spread basis. Further discussion regarding future policies relating to grinder systems can be found in Chapter 4. If the City were to allow an increasing number of grinder systems and/or provide maintenance support for these systems then it is recommended that the on-site equipment and installation configurations be standardized so that an efficient maintenance program can be developed and to limit parts inventories. A future grinder system maintenance program would likely be modeled on the City's existing STEP maintenance program with only minor modifications.

10.4.3.2 Odor and Corrosion Control Program

The Odor Control (OC) program has historically been funded through the STEP system Budget Program, though recently these costs have been shared by both the STEP and Lift Station budgets. While this practice more accurately places the funding burden with the appropriate facility types, it can complicate accounting and program evaluations. It is recommended that a separate wastewater budget category, specific to odor and corrosion control be created. This will help promote future program evaluations without embedding the cost of this program in another.

The City utilizes a combination of differing approaches to odor and corrosion reduction. These include aeration, soil filter beds, and chemical injection. Chemical injection tends to be the City's preferred method, making up more than half of the eight active facilities. The OC program began in the mid-1990s with the construction of a Bioxide chemical injection system at the Bus Barn site (OCF 01). As the STEP system grew and more lift stations were constructed, additional odor control facilities were required. The OC program has been working well and odor control complaints are few, with only three reported complaints in 2010 and three in 2011.

While the chemical systems have been successful at odor and corrosion control, the cost of operating the systems has continued to rise with the cost of the injection chemicals. Operations staff has investigated several alternatives to chemical addition, but have yet to find a cost effective method that performs as reliably.

The Lift Station field crew is responsible for the odor and corrosion maintenance programs and the associated activities listed below in Table 10-9.

Table 10-9 Maintenance Activities for Septic Tank Effluent Pump (STEP) Systems and Odor/Corrosion Control

Maintenance Activity	Definition	Benefit to the City	Target Service Level	Rationale for the Service Level	2011 Actual Service Level
STEP Full System Maintenance (FSM)	Complete service overhaul of individual STEP sites. Replace major system components when needed. Pump out and clean debris tank. (Preventive Maintenance)	Improves reliability of STEP systems and reduces STEP failures. Improves customer service.	12.5% of sites per year (8 year cycle)	Based on manufacturer recommendations and industry standard	100% of target
STEP System Repairs	Emergency & routine work performed on a STEP system due to failures e.g. basket collapse, pump failure, control box failure etc. (Corrective Maintenance)	Maintains reliability of STEP systems. Improves customer service. Brings the system back to an operable state.	Immediate response to emergencies. Next working day for routine work.	Customer service. Maintains system functionality	As required (188 repairs in 2010)
STEP System Start ups	Connecting new STEP system connections	Commences new customer service. Ensures standards are met.	As required	Customer service	As required
Odor Control	Maintenance of OC facilities including readings. Includes emergency and routine repairs to facilities as identified by odor complaints. (Corrective Maintenance)	Ensures reliability of OC facilities & reduces odor complaints. Improves customer service. Reduces corrosion.	Quarterly maintenance on facilities and bi-weekly readings.	Based on best management practices and customer complaints	100% of target
H2S Monitoring	Monitoring H2S levels	Alerts staff of potential corrosion in sewers, ensures H2S treatment is effective. Improves customer service.	Monthly system checks, continuous data logging.	System optimization and customer service	100% of target
Odor Complaints	Investigating and resolving the cause of odor complaints. (Corrective Maintenance)	Improves customer satisfaction.	0 odor complaints. Immediate response to complaints.	Based on customer complaints	3 odor complaints in 2011
Community STEP Debris Tanks	Clean large STEP hybrid tanks ranging in size from 7,000 to 50,000 gallons	Ensures uninterrupted system operation	Each site has a customized schedule	Based on operator observations and waste-stream characteristics	Target met
HTE Support (AMMS)	Updating the HTE system (Record Keeping and Administration)	Maintains currency of AMMS	Daily, as required	Complete and timely information is required for management purposes	As required
Minor Maintenance	Special projects, electrical control panels, sewer breaks, locates etc. (Corrective Maintenance)	Ensures system reliability	As required	Corrective maintenance	As required
Spill Response	Response to sewer and chemical spills. Provide containment and clean-up. (Corrective Maintenance)	Limits exposure to potential contaminates	As required	Corrective maintenance	As required

10.4.4 Emergency Reponses

Operation of the sewer system under emergency conditions is a critical responsibility of Wastewater Operations. The City has a comprehensive Emergency Response Plan that is integrated with Operations and with Regional, County and State officials. The Operations Control Center (OCC) is an extension of the City's Emergency Operations Center (EOC). It is designed to focus on the management of the repair of the City's streets, utilities, facilities, and other required operations during an emergency.

The OCC supports the Emergency Response Plan and internal emergency operations. The Operations Division is responsible for assigning staff to maintain the capability to operate the OCC on multiple shifts, seven days a week during emergencies. The emergency plan includes maintaining operation of the sewer system and enables the City to leverage its own resources and those needed outside the City's resources. Lacey is also a member of WAWARN, a water/wastewater agency response network that allows water and wastewater utilities to receive rapid mutual aid and assistance from other member agencies (see Appendix L).

A goal of the OCC with regard to wastewater operations is to maintain sewer support for residents during emergencies. The Emergency Sewer Support Checklist provided in Table 10-10 defines essential actions required to provide the necessary support.

Table 10-10 Operations Control Center Emergency Sewer Support Checklist

Item	Description
1.0	Generator Support Fixed generators: Verify that generators are functional and operating Portable generators: Transport generators to key locations and rotate throughout system as needed.
2.0	SCADA Monitoring a. Monitor the SCADA system for lift station failures b. Dispatch staff to evaluate lift stations functionality
3.0	Sewer line inspections a. Alert police, fire, and City staff to be alert for sewer line breaks and to report observations.
4.0	STEP support a. Emergency Pumping capabilities in place b. Contract Pumping if necessary c. Small generator pump down of STEP tanks d.
5.0	Repair criteria a. Greatest good/Highest priority b. Public health and safety c. Protection of environment/wetlands d. Contract support if necessary

The City maintains a tracking system to ensure follow-up action to emergency work is taken in an appropriate timeframe using the SunGard HTE Work Management System. Refer to Section 10.5 for additional information on the maintenance management system.

An overview of the potential effects and recommended actions for emergency situations is presented in Tables 10-11, 10-12, and 10-13. The five emergency situations considered are power loss, flooding, hazardous waste spill, earthquake, and sabotage/vandalism. Potential effects and recommended actions are identified for sewage pump stations, force mains, and the gravity sewer system.

Table 10-11 Emergency Response Actions for Lift Stations

Emergency	Potential Effects	Recommended Actions
Power Loss	Pumps rendered inoperable, Auxiliary generators activated to run pumps.	Transport portable generators to Lift Stations that do not have auxiliary power, check other lift stations to ensure generators are operating.
Flooding	Station overflow	Deploy by-pass pump or pump to truck until flooding effects subside.
Hazardous Waste Spill	Spill enters wet well at a Lift Station	Isolate Lift Station receiving spill, pump out of wet well and dispose of hazardous material, notify Thurston County, LOTT, Health, and DOE of situation.
Earthquake	Wet well damaged, inlet and outlet piping severed or damaged.	Deploy by-pass pump or pump to trucks while repairs are made.
Sabotage/Vandalism	One or more pumps rendered inoperable	Isolate damaged Lift Station damage; operate other pumps while repairs are made. Deploy by-pass pump as needed.

Table 10-12 Emergency Response Actions for Force Mains

Emergency	Potential Effects	Recommended Actions
Power Loss	No anticipated effects.	No actions anticipated.
Flooding	Manholes surcharged	Implement bypass pumping at critical areas.
Hazardous Waste Spill	Spill enters sewer system.	Isolate Lift Station receiving spill, pump out of wet well and dispose of hazardous material, notify Thurston County, Health, and DOE of situation.
Earthquake	Breaks in sewer lines, Damaged Manholes	Isolate damaged area, implement bypass pumping until affected area is repaired. Install temporary force main as needed.
Sabotage/Vandalism	Force mains plugged or broken	Isolate damaged area, implement bypass pumping until affected area is repaired.

Table 10-13 Emergency Response Actions for Gravity Sewers

Emergency	Potential Effects	Recommended Actions
Power Loss	No anticipated effects.	No actions anticipated.
Flooding	No anticipated effects.	No actions anticipated.
Hazardous Waste Spill	No anticipated effects.	No actions anticipated.
Earthquake	Breaks in force main pipes	Bypass pumping where necessary
Sabotage/Vandalism	Force mains plugged or broken Gravity Sewers plugged or broken, Manholes damaged	Isolate damaged area, pump from affected lift station to trucks until affected area is functional. Attempt line cleaning to remove blockage.

10.4.5 Standby Procedures

The Wastewater Operations Division maintains a Standby Manual which contains general procedures for the most common wastewater calls that are likely to occur in emergencies and during periods after normal working hours. A duty Standby person is assigned to on-call and is the first point of contact outside of normal business hours. They are responsible for coordinating a prompt response to after-hours emergencies. The Standby person must comply with all safe working practices and City policies.

The manual also contains a list of the personnel that can be contacted for assistance or questions related to wastewater-related calls. The Standby person is required to leave a voice mail message if unable to contact personnel.

The Standby manual is updated annually and as required with new information or changes in policies. One copy of the manual is located in the Standby case which is passed from duty person to duty person. Another copy is kept at the Service Desk and may be checked out by employees at any time.

10.4.6 Sewer Overflow Emergency Response

The City's Sewer Overflow Emergency Response Plan (SOERP) was prepared to ensure that in the event of an emergency the Wastewater Utility can maintain or return services to full operational condition in a timely manner, while minimizing adverse impacts to people and the environment.

The SOERP was prepared consistent with LOTT's National Pollution Discharge Elimination System (NPDES) Permit. While LOTT is the primary NPDES Permittee, the permit designates the City as a contributing jurisdiction, sharing the responsibility for permit issues involving the treatment plant and wastewater discharges. As a contributing jurisdiction, the City is responsible for its collection system and lift stations and the discharge of wastewater to the LOTT system.

The SOERP contains the following standard operational procedures:

1. Field Response Procedures
2. Regulatory Agency Notification Procedures
3. Public Notification Procedures

The SOERP is designed to ensure that every report of a sewage overflow will be sent as quickly as possible to the appropriate City staff for confirmation. The procedures defined in the manual promote a quick response to minimize the impacts of an overflow on public health, beneficial uses, surface water quality, and on customer service.

10.5 Safety Program

The City has documented safety training procedures, which are readily available to all field staff in a consolidated manual, and regular safety training is well established. Required training is monitored, scheduled, and documented by City Human Resources staff in accordance with all local, State, and Federal regulations.

The City has adopted an *Accident Prevention Program* to ensure a safe workplace which respects the safety and health of employees, the environment, visitors and the communities served by the City. All City employees, contract personnel, and visitors at City-owned facilities are expected to understand, participate, and assist in the implementation of the program.

All employees receive training on general City policies and procedures, including safety. New employees receive an orientation on their first day of employment. Existing employees receive regular training updates. Topics include:

- An explanation of the City's safety programs
- On-the-job training
- Safety meetings
- Personal protective equipment
- Pertinent safety rules specific to the work area
- First aid supply equipment and training
- Vehicle safety
- Personal work habits
- A general overview of operation procedures, methods, and hazards as they relate to specific jobs and duties.

Operations staff may be required to work in confined space areas where dangerous atmospheric hazards exist, or may be in the presence of electrical and mechanical equipment. These conditions present hazards to personnel during the performance of operations and maintenance tasks.

A Safety Manual was prepared which contains the City’s policies and procedures for conditions that field employees might encounter while in the performance of their duties. Table 10-14 presents the chapters included the Safety Manual.

Table 10-14 Safety Manual Programs, Plans and Procedures	
▪ Accident Prevention Program ▪ Personal Protective Equipment ▪ Ergonomics ▪ Hearing Conservation Program ▪ Confined Space Entry Program ▪ Fall Protection Program ▪ Lock Out/Tag Out Program	▪ Hazardous Material Spill Response Plan ▪ Hazard Communication Program ▪ Heat Related Illness Prevention Program ▪ Blood Borne Pathogen Protection ▪ Respiratory Protection Program ▪ Emergency Action Plan ▪ Excavation, Trenching and Shoring

Safety procedures and guidelines are documented and were established many years ago. The City Human Resources department is responsible for ensuring safety policies and procedures are in compliance with current regulations. Regular checks are made to ensure that safety related equipment is replenished and in good working order, meeting all regulatory requirements and manufacturers recommendations.

10.6 Automated Maintenance Management System

Effective maintenance is an essential component of managing the City's wastewater system. The City's operations staff manages routine maintenance tasks, modifications to the existing infrastructure, and emergencies. Keeping accurate and up-to-date maintenance records is important for system evaluations and for scheduling preventative maintenance measures. Maintenance records are, in turn, used to monitor maintenance and repair activities, expenditures and labor-hours required to conduct the work.

10.6.1 Work Order Classification System

Since 2001 the City has utilized SunGard HTE, an Automated Maintenance Management System (AMMS) to assist in scheduling and managing maintenance activities for the City. Maintenance field personnel are responsible for keeping accurate inspection and maintenance records. Support staff enters the information into the SunGard database. The City tracks hours and expenses spent on each task through the AMMS system. The AMMS system divides maintenance activities into three categories: Preventative, Routine or non-preventative, and Emergency.

1. **Preventative maintenance (PM)** is defined as planned maintenance that is intended to ensure reliability, maintain operability, and maximize the life of equipment. PM is scheduled through the SunGard system based upon recommendations by manufacturers, industry standards, and historical operating experience. It is performed at defined, recurring intervals. The frequency of PM for a given asset is referred to as level of service.
2. **Routine maintenance (RM)** is work that must be planned to mitigate identified system problems, failures or deficiencies, or as an aid to other internal or external organizations. While deadlines are established, RM does not require an urgent or immediate response. This work is scheduled when work orders are issued for specific tasks.
3. **Emergency maintenance (EM)** corresponds to unanticipated work that must be responded to in an urgent or immediate manner. EM includes responses such as pump failures, power outages, overflowing toilets, etc. This work also includes high priority

responses to internal and external requests that require an urgent or immediate response.

This classification system is capable of facilitating adequate work analysis to plan future work, provided all relevant data is completed and stored reliably within the HTE system. The HTE system standard reports do not provide the information necessary for staff to manage system assets most effectively. This need is described in Section 10.5.4. Table 10-15 provides further details of the City's Work Order classification system.

Table 10-15 HTE Work Order Classification System

Type of Maintenance	Description	Includes	Results	Impact
Preventative Maintenance (PM)	PM is required to meet standard level of service. It is determined by vendor/operating experience	Not failure related. Required to assure the continued operation of wastewater systems and infrastructure	Ensures system reliability	None. Defines level of service
Routine Maintenance (RM)	Various maintenance tasks as identified through observation	Repairs that are not emergencies Work requests that do not require immediate response Tasks that can be planned ahead of time	Planned and scheduled maintenance	Can disrupt preventative maintenance schedules, depending on staff availability
Emergency Maintenance (EM)	Problem that may result in loss of service or other severe consequence to the utility (e.g.; spill, etc.)	Response to failures in the wastewater system Required to provide uninterrupted service to community Poses a risk to life, property or the environment	Deploy maintenance as soon as possible to mitigate emergency and to restore service	Disrupts maintenance schedules, may incur overtime, and high costs

The City's standard response time for conducting the initial assessment of an emergency situation (i.e. sewer back-up) is 15 minutes if it occurs during work hours, or 40 minutes if it occurs after work hours. The City's response time for a non-acute emergency is 24 hours (usually first thing next morning if notified in afternoon).

10.6.2 Maintenance Program Reporting

A shortcoming of the software that was specifically noted by operations staff is that the SunGard software does not allow operators to prepare unique reports that would allow them to manage maintenance activities more effectively. HTE reporting capabilities are limited to a relative few number of standard reports that can presently be generated from the system. Although the information is stored and available in the database, preparing useful, but non-standard reports is very difficult.

There is a need to develop more useful and user-friendly reports. Reports should be readily available in the system and targeted to assist utility staff in making decisions to improve maintenance efficiency in terms of labor and assets. As such, the City should consider developing a user interface, "dashboard," or other solution that would allow operators and supervisory staff the ability to pull information and prepare reports as needed. Until the reporting subsection of the Maintenance Management process is addressed, the overall system cannot realize its full benefits.

Reports should be designed to present the appropriate data to allow staff to make informed decisions regarding equipment maintenance strategies, maintenance work practice improvements, manpower scheduling, and equipment design modifications.

Examples of improved reporting capability could include locations of known FOG locations, failure analysis, lost time analysis, budget variance analysis, and common work-associated problem identification and resolutions.

In highly effective management systems, the maintenance management system is linked to the City's financial and GIS systems. The mapping system would be linked to the inventory of sewer system assets that includes information on asset age, material, dimensions, flow capacities, etc. The City could increase its ability to manage utility assets and labor by improving its mapping and data reporting capabilities. This may require the assistance of outside consultants familiar with GIS, data reporting, and utility management systems to assist in developing ways to improve access to information needed by operators and managers, and by creating industry standard and custom reports.

10.6.3 Work Orders

The information and layout of the printed HTE work order is good, but could be improved with the following features (according to *Wastewater Collection Systems Management Manual of Practice,* (WEF, 1992).

1. **Labor and material estimates:** Estimates should be confirmed in advanced and noted on the work order. Estimates should be realistic but reflect the requirements of the job, assuming no unforeseen complications or problems.
2. **Reference to applicable procedures, standards, and codes:** Ideally, documented procedures should be stored within the system and printable by the employee performing the work in advance.
3. **Work Order Issues/Notes:** This is a field in the work order where the employee can note problems or issues that occurred while performing the work order. This information is important in conducting Work Order Variance Analysis.

These types of business process improvement efforts can be labor intensive and if so, may require staffing that is not readily available to the Wastewater Division. To the extent possible, such improvements will be made internally.

10.6.3.1 Work Order Completion and Variance Analysis

Most, if not all of the data from completed work orders is now being entered into the HTE system. The following activities are recommended to complete the process:

1. **Work Order Variance Analysis:** This is a useful and potential cost-saving maintenance management process. Work orders that were completed as expected (in the anticipated timeframe and within the WO estimate) can be entered directly into the system and closed. Work Orders that experience a variance, either in terms of cost, schedule or the time it took to complete, should be examined by the Senior Technicians considering the following general criteria:

   - What caused the problem?
   - Does this happen frequently?
   - What can be done to ensure that the problem does not recur?

2. **Work Order Documentation:** The output of work order Variance Analyses should be documented and stored within the HTE system for future reference.

10.6.4 Continued Use of the SunGard HTE System

The HTE system, now in use for over twelve-years, is a stand-alone software program that is no longer supported by SunGard. Wastewater operations supervisory staff use personal experience to problem-solve usage issues as they arise and the City's IT staff is called in as needed when difficult hardware or software issues occur.

10.7 Consistency with EPA's CMOM Program

Capacity Management, Operations, and Maintenance (CMOM) is a planning and management structure that was developed for use by wastewater utilities to analyze and assess their system's capacity, operations, and maintenance management programs. From a federal perspective, CMOM programs are a suggested requirement of state and regionally administered National Pollutant Discharge Elimination System (NPDES) permits.

LOTT's NPDES permit does not require satellite collection systems (including the City) under its permit to create and maintain CMOM programs. However, the City is currently employing most of the key CMOM program components.

The United States Environmental Protection Agency (USEPA) Office of Enforcement and Compliance Assurance offers CMOM guidance. The *Guide for Evaluating Capacity, Management, Operation, and Maintenance Programs at Sanitary Sewer Collection Systems,* USEPA, January 2005 document is not a regulation nor does it impose legally binding requirements of the Clean Water Act or other related EPA regulation. It is intended as a guide for evaluators of sanitary sewer collection systems such as EPA or state inspectors, collection system owners and operators, consultants, third-party evaluators, or compliance assistance providers.

EPA's *CMOM Program Self Assessment Checklist* is a useful screening-level tool prepared to help utilities evaluate the general areas of strength and weakness in the way they operate and maintain their systems. The checklist can also be viewed somewhat as an inventory of current wastewater management best practices. In CMOM planning, the utility selects performance goal targets and then designs activities to meet those goals. Alternatively, as in the City's case, the checklist can be utilized to determine how closely current City practices compare against CMOM program guidance.

Wastewater Divisions staff recently completed a *CMOM Program Self Assessment Checklist*. The completed checklist is included in Appendix J.

10.8 Performance Indicators

Performance measurement is one of the keys to successful utility management. Consistent with CMOM guidelines, the Wastewater Division selects performance goal targets for key operations and maintenance activities. These targets, referred to as level of service targets are also discussed in Tables 10-7, 10-8, and 10-9.

Following is a partial list of Wastewater Collections Performance Measures for 2010, provided by Operations staff.

- 74 Miles of Collection Mains Cleaned
- 65 Miles of Collection Mains CCTV
- 356 STEP Systems Serviced
- 188 STEP System Repairs
- 87 STEP System Repairs After Hours
- 0 Main Collection Line Blockages
- 155 Manholes Repaired & Maintained
- 51,359 Gallons of Odor Control Product Used
- 95 Customer Responses

Performance indicators that are relevant to the City's system from other Western Washington wastewater utilities were difficult to obtain. Table 10-16 summarizes the City's performance indicators, which can be used when making comparisons with other wastewater systems.

Table 10-16 Wastewater Utility Comparison

	City of Lacey		
Performance Indicator	**2009**	**2010**	**2011**
Wastewater Staff	14	14	14
No. of Collection Line Field FTEs	6	6	4
Lift Station Field FTEs	4	4	6
STEP Field FTEs	2	2	2
Sewer Mains Field FTEs /100 Mile Length of Gravity Sewer	3.9	3.9	3.9
No. of Lift Stations	44	44	47
No. of STEP Systems	2,861	2,867	2,921
% Length of sewers cleaned	54%	54%	44%
% STEP Systems Serviced	12%	13%	12%
Annual % of WW Mains Program Hours spent on sewer cleaning	28%	18%	23%
Annual % of WW Mains Program Hours spent on Manhole Repairs	8%	14%	10%
Generally operate in conformance with CMOM Requirements?	yes	yes	yes
% Length of sewers Inspected via CCTV	36%	48%	37%
Annual % of WW Mains Program Hours spent on CCTV Inspection	36%	46%	44%
No. Sewer accounts / WW FTE	1,021	1,049	1,111
No. of WW FTEs / 100 connections	0.10	0.10	0.09

It is recommended that data on the above performance measurements be gathered on an on-going basis and analyzed for trends on an annual basis to observe long term changes in wastewater operation efficiencies. In addition, data on the following performance measurements should be gathered, as this information was of interest to wastewater operations staff:

- Number of manholes inspected per year
- Number of sewer related customer complaints per year
- Number of air release/vacuum vents repaired per year

10.9 Staffing Summary

Wastewater Program staffing levels during the period 2009-2011 have remained level. Previously anticipated staff increases in the STEP program were not required, largely due to redefining the STEP system FSM level of service. As discussed in Section 10.5.3, the FSM program reduced the frequency that individual STEP tanks are cleaned from once every 5 years to once every 8 years. The requirement to replace major system components from every 5 years to replacement on an as-needed basis was also made, also causing a reduction in labor hours.

Maintenance and repair programs are ultimately the responsibility of the Water/Wastewater Supervisor and are carried out by the senior and field technicians.

According to *City of Lacey 2005 Wastewater Comprehensive Plan*, in 2004, the City employed a total of 26 staff to serve both the water and wastewater utilities. In 2011 there was a total of 35 Water/Wastewater Operations FTEs.

The City employs 16 total staff at approximately 14 FTE's in the Wastewater Division. Of these, 7 are assigned to the Wastewater Lift Stations Program, 9 are assigned to the Wastewater Collections Program. In addition to these staff, the Water/Wastewater Supervisor and one Department Assistant III provide supervision, management and support for both the Water and the Wastewater Programs.

The 7 staff in the Wastewater Lift Stations field crew is responsible for operating and maintaining 47 lift stations, a total of 44 auxiliary generators, 9 odor control facilities, and the SCADA/ Radio communication system.

In the Wastewater Collections Program 2 staff are assigned to the line cleaning program, 2 operators are assigned to the television inspection program, 2 staff are assigned to the STEP program, 2 are assigned to collection system maintenance (although a substantial portion of their time is dedicated to assisting the water utility), and one Sr. Technician oversees and manages the group.

Technicians from the Water and the Wastewater programs support each other when necessary. Support required for the water system can negatively impact the wastewater group by reducing the amount of time that wastewater staff have available for wastewater O&M activities.

The *2005 Wastewater Comprehensive Plan* reported that approximately 11 percent of wastewater staff's regular hours were spent supporting other departments. Currently the wastewater division is providing nearly 2 FTEs worth of support to the water division; however, City staff report that negative impacts on the wastewater program have been reduced.

Operations staff is unionized and are members of the American Federation of State, County and Municipal Employees (AFSCME, part of the AFL-CIO), Local 618-L.

10.9.1 Staffing Hours

Figure 10-6 shows the average annual percentage of labor hours for wastewater staff to conduct maintenance activities on Wastewater Lift Stations, Gravity Mains, and STEP programs.

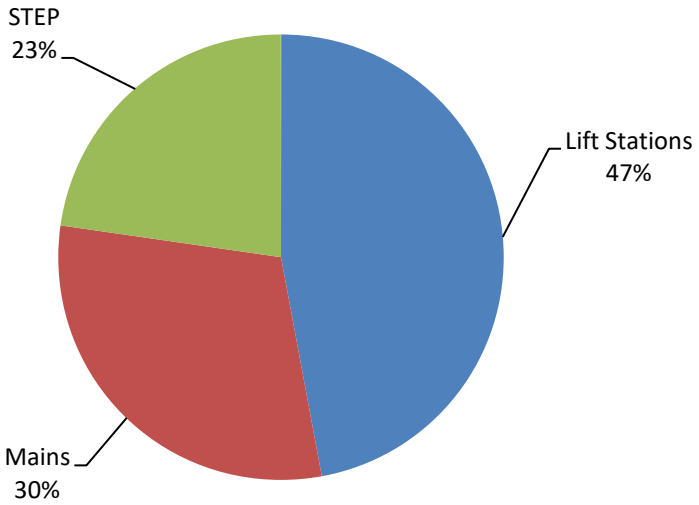


Figure 10-6 Wastewater Programs Annual Labor Hours

10.9.2 Staff Training and Institutional Knowledge Transfer

The commitment that the City has made to training is a crucial element in the success of the Water and Wastewater Programs, both now and in the future. City supervisory staff wish to provide adequate training for employees to encourage staff retention and build a competent, motivated, adaptive, and safe workforce in the future. Training also facilitates retainage of employee institutional knowledge and provides opportunities for professional and leadership development. Lastly, training provides for an informed senior leadership team.

The City recognizes training as an expense item in its annual budget. A guideline for the typical amount of annual funding for training is three to five percent of the gross budget for the collection system, as stated in USEPA's *Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM)*, prepared by the Office of Enforcement and Compliance Assurance in January 2005. In 2010, the Water/Wastewater Program spent approximately 10 percent of its budget for certifications and training combined. These expenses included job-specific training on topics such as water production, CCTV inspection, and wastewater lift stations.

Although certification is not explicitly required under Washington State regulations, in the past, all of the City's Water/Wastewater employees were required to maintain either a water or wastewater certification. This policy was relaxed beginning in January 2013 as a result of the City's desire to minimize the administrative effort associated with maintaining certification levels and in consideration of personal preferences of staff not wishing to maintain certifications if not mandated by the City.

The Water/Wastewater Operations Division leadership regularly communicates training requirements to operations staff. In January 2013 a memorandum was sent to all operations staff which defined the job classifications and designations that require certification. The City's certification requirements match State of Washington requirements. New employees that require certification must have already gained the required certifications before being hired or must attain those certifications within a specified period of time.

Within clearly defined guidelines, the City pays for employee certifications, renewals, and training. Three types of training opportunities are made available for employees. During each three year CEU reporting period employees can choose: 1) attendance at a Washington Operator Workshop (WOW) conference; 2) attendance at six local training workshops; or, 3) a water/wastewater conference of their choice and three local workshops. A copy of the City's Training Policy can be found in Appendix M.

Many organizations, including the City, are now facing the challenge of an aging workforce that may retire in a few years. Lacey's training efforts are intended to train staff for their work assignments as well as transfer institutional knowledge before employees retire.

10.9.2.1 Injuries and Time Off

Time off for injuries can be disruptive and costly; however according to time off records, individual events tend to be short lived. Time off labor codes indicate that the total time off for Labor and Industries (L&I) injuries coded as L&I Vacation, L&I Sick Leave, and L&I Comp Time have averaged approximately 2 percent (0.4 FTE) of total time off for the years 2009, 2010, and 2011. Total staff time off for vacations, sick leave, leave without pay, L&I injuries, family leave and bereavement has averaged an equivalent of 4.5 – 5.0 FTE's per year during the same period or approximately 35 percent of payroll hours, therefore operating at approximately 65 percent effective working time. In EPA's *Estimating Costs and Manpower Requirements for Conventional Wastewater Treatment Facilities,* their estimate for an average effective working time is 90 percent of payroll labor hours. While the City operates approximately 25 percent below the recommended effective working time, the sewer system is operated and maintained very effectively. Additionally, the City continually reviews the need for additional staff.

10.9.2.2 Water and Wastewater Programs Cross Training

Technicians from the Water and the Wastewater programs occasionally support each other's work loads when necessary. However, some of the support tasks and assignments require skills, experience or knowledge that is unique to the water or wastewater industries. Because specialized skills may be required for staff to "crossover" between programs on an occasional basis, supervisory staff believes that there is an increasing need for cross training water and wastewater staff.

10.9.3 Recommendations for Staffing Levels

There are no recommended additions to wastewater staff at this time. Current internal practice is to evaluate staffing levels on an on-going basis to assess work required and staffing needs.

Replacement staff will need to be hired as current senior level staff approaches retirement. Replacement hiring should be conducted in a planned manner, which provides advancement opportunities for junior staff and adequate time for training new employees under the mentorship of experienced employees.

Additional staff will likely be required as population growth in the service area occurs or as O&M requirements change. The Lift Station program has seen a significant increase in workload in recent years as the number of stations has increased. This trend is expected to slow in the coming years, but will continue to increase. As patterns in new development change and occur farther from the City's core, it's likely that the STEP program will begin to see increases in workload as a result. It is likely that an additional FTE will be needed in the future due to growth of the overall system, this may occur as early as 2017.

Supervisory staff estimates that using current FSM maintenance methods and assuming the existing rate of emergency call outs continues, the existing equipment and crew should be able adequately maintain the STEP system until approximately 5,000 individual STEP tanks are in service. However, by that time the existing staff and equipment will have reached maximum capacity. Two additional staff, one septic pumper truck and one service van will need to be acquired to maintain additional STEP connections once approximately 5,000 STEP tanks are in service.

In anticipation of meeting future staff and equipment requirements, the City should begin planning to hire an additional STEP crew and purchase necessary equipment when a total of 4,000 individual STEP systems are in service (about 1,000 more than current).

10.10 Recommended Operation and Maintenance Improvements

1. All odor control (OC) equipment, chemicals, and O&M costs are currently funded through the STEP System Program. The cost of odor control should be made into its own budget program so that associated costs can be more easily tracked and are not embedded in any one particular program.
2. Continue to inspect and monitor single-wall Odor Control chemical storage tanks at OCF 2 (31st Ave. NE), OFC 3 (Romac St. SE) and OFC 4 (Stockton St. SE); and replace as needed.
3. A second FOG pilot program, extending over several years, should be conducted to confirm the preliminary findings of the first pilot project. If the pilot projects are successful, similar educational techniques should be planned for other high-FOG areas of the system, including commercial customers. Opportunities should be provided for City staff involved with the FOG program to develop the program further, and to communicate and coordinate education efforts with other jurisdictions. LOTT may also provide assistance with this program.
4. The impact of fibrous wipes on the sewer system includes system plugging, backups, potential overflows, and pump clogging. Sewer customers are often not aware of the maintenance problems caused by disposable wipes and similar products. As maintenance costs associated with fibrous products increases, the City should consider embarking on a public education campaign. Educational programs at many wastewater utilities encourage customers with the tagline "*Dispose of them in the trash, not the toilet!"*
5. A shortcoming of the SunGard HTE Automated Maintenance Management Software that was specifically noted by operations supervisory staff is that the SunGard software does not allow operators to prepare unique reports which would allow them to manage the utility's maintenance activities more effectively. Although the information is stored in the database, preparing useful but non-standard reports is very difficult. The City should develop a dashboard, or provide a solution that will allow users of the software the ability to prepare reports as needed. It may be necessary to retain a consultant to prepare some initial reports along with training of in-house staff to maintain and develop future reports.
6. Staff has stated that there is a need for cross-utilization of water and wastewater staff for common O&M activities. Specific training should be determined by Water/Wastewater Operation supervisory staff.
7. Internal performance measurement should be increased to help determine whether the utility's performance is improving or diminishing in areas of interest. The information gathered would be utilized to analyze on an annual basis how each measure is trending.

Performance measurement for items listed in Table 10-15 and in the following areas is recommended:

a. Number of manholes inspected and repaired per year
b. Number of sewer related customer complaints per year
c. Number of air vents repaired per year
d. Number and estimated volume of sewage overflows per year

Chapter 11 Financial Plan

11.1 Introduction

The objective of the financial plan is to identify the total cost of providing wastewater service and to present a financial program that allows the wastewater utility to remain financially viable during execution of the Capital Improvement Program (CIP) identified previously in this Comprehensive Plan. This viability analysis considers the historical financial condition of the utility, the financial impact of executing the CIP, the sufficiency of utility revenues to meet current and future financial and policy obligations, and the affordability of rates.

11.2 Historical Financial Condition

This section includes a historical (2008 - 2013) summary of financial performance as reported by the City of Lacey on the Statement of Revenues, Expenses and Changes in Fund Equity and the Statement of Net Assets, specific to the wastewater utility.

11.2.1 Comparative Financial Statement: Revenues, Expenses and Changes in Net Assets

Table 11-1 shows a consolidated Statement of Revenues, Expenses and Changes in Net Assets for the period 2008 – 2013.

Findings and Trends: Revenues, Expenses and Changes in Net Assets

Operating income (including depreciation expense) has been positive three out of the six years, but there has been a noteworthy drop off when comparing 2008-2011 with years 2012 and 2013. In year 2009, operating income was just below breakeven. In 2010-2011, operating income was slightly positive, totaling $43,000 and $59,000 respectively. In 2012 and 2013, operating income was a negative $210,000 and negative $236,000 respectively, the lowest amounts in the six year table. Operating expenditures increased 11% from 2011 to 2013 while operating revenues only increased 9%. Most notably within the Operating Expenses heading, there was a 15% increase in maintenance expense during that time. It is important to note that depreciation is a non-cash expenditure, so even though operating income has been negative in some years, cash flow was positive in each of the six years in the table.

Table 11-1 shows that over the past six years, revenue from wastewater service charges has increased from $11.11 million to $13.94 million (25% total increase), reflecting increases in both the Local Sewer rates and the Lacey, Olympia, Tumwater, and Thurston County (LOTT) treatment charge as well as growth in the number of customers within the wastewater system.

During this same time period, total expenses from operations increased from $10.5 million to $14.2 million. Operating expense has increased by 37%, maintenance expense has increased by 32%, and depreciation expense has increased 26%.

In summary, total operating revenues have increased by a total of 26% from 2008 to 2013 and operating expenses have increased by 35%. As a result, operating income has eroded over time. In 2008, operating income was over $560,000, while operations in 2013 resulted in a negative operating income of $236,000.

Reflecting this overall trend, the following key performance indicators have gradually eroded over this historical time period. These ratios are expected to improve as the recommended rate increases are incorporated over the multi-year study period.

- **The O&M Coverage Ratio:** *[Service Revenues ÷ Operating and Maintenance Expenses (excludes depreciation)]*
  - **Result:** This coverage ratio has declined from 1.23 in 2008 to 1.13 in 2013.
  - **Benchmark:** A ratio of less than 1.0 is not considered a good financial result; a ratio of 1.0 or greater is indicative of sufficient revenues to meet cash operating expenses. It may be prudent to aim for an O&M coverage ratio significantly above 1.0 if it is the policy to recover a portion of depreciation expense through rate revenue.

- **The Operating Ratio:** *[Total Operating Expenses (excludes depreciation) ÷ Total Operating Revenues]*
  - **Result:** Increased from 82% in 2008 to 88% in 2013.
  - **Benchmark:** A ratio greater than 90% indicates there is little room for new debt service and increased annual capital replacement without additional rate increases. A ratio greater than 100% indicates that operating expenses exceed operating revenues and is reflective of an unsustainable financial condition.

Table 11-1
Statement of Revenues, Expenses, and Changes in Fund Net Assets: 2008 - 2013

Category	2008	2009	2010	2011	2012	2013
OPERATING REVENUES						
Charges for services	$11,112,482	$11,161,598	$11,873,620	$12,816,912	$13,215,579	$13,940,042
Miscellaneous Operating Revenues	-	-	-	-	415	14,452
Total operating revenues	$11,112,482	$11,161,598	$11,873,620	$12,816,912	$13,215,994	$13,954,494
OPERATING EXPENSES						
Operating expense	$ 7,226,399	$ 7,774,356	$ 8,198,898	$ 8,904,825	$ 9,322,083	$ 9,904,395
Maintenance expense	1,706,121	1,710,091	1,854,827	1,950,432	2,134,748	2,246,613
Debt discount amortization	-	-	-	-	-	-
Depreciation expense	1,486,699	1,554,352	1,638,476	1,748,764	1,810,284	1,876,625
Taxes	129,732	127,277	138,874	153,561	158,875	162,469
Total operating expenses	$10,548,951	$11,166,076	$11,831,075	$12,757,582	$13,425,990	$14,190,102
OPERATING INCOME (LOSS)	$ 563,531	$ (4,478)	$ 42,545	$ 59,330	$ (209,996)	$ (235,608)
O&M Coverage Ratio	***1.23***	***1.16***	***1.16***	***1.16***	***1.14***	***1.13***
Operating Ratio	***82%***	***86%***	***86%***	***86%***	***88%***	***88%***
NON-OPERATING REVENUES (EXPENSES)						
Intergovernmental revenue	$ (11,821)	$ 1,110,594	$ 48,728	$ 670,178	$ 47,804	$ -
Investment earnings	521,855	162,221	58,079	40,218	37,876	38,448
Miscellaneous non-operating revenues	3,774	-	899	3,078	-	-
Interest expense	-	-	-	-	-	-
Gain (loss) on sale of capital assets	-	-	-	-	-	-
Total non-operating revenues (expenses)	$ 513,808	$ 1,272,815	$ 107,706	$ 713,474	$ 85,680	$ 38,448
Income (loss) before contributions and transfers	$ 1,077,339	$ 1,268,337	$ 150,251	$ 772,804	$ (124,316)	$ (197,160)
Capital contributions	$ 4,815,569	$ 673,488	$ 1,596,570	$ 632,296	$ 3,237,601	$ 1,183,720
Transfers in	295,263	295,263	-	-	-	
Transfers out	(1,548,523)	(702,767)	-	(78,104)	(2,940)	(138,692)
Change in net assets	$ 4,639,648	$ 1,534,321	$ 1,746,821	$ 1,326,996	$ 3,110,345	$ 847,868
NET ASSETS - BEGINNING	$73,090,504	$77,730,152	$79,264,473	$81,011,294	$82,338,290	$85,448,635
NET ASSETS - ENDING	$77,730,152	$79,264,473	$81,011,294	$82,338,290	$85,448,635	$86,296,503

11.2.2 Comparative Financial Statement: Statement of Net Assets

Table 11-2 shows a consolidated Statement of Net Assets for the period 2008 – 2013.

Findings and Trends: Statement of Net Assets

This statement shows that the City of Lacey's net wastewater assets, which is a measure of the amount of assets remaining after liabilities are paid, increased from $78 million to $86 million over the 2008 to 2013 time period; this represents an 11% increase over the six year period (approximately 2% simple annual average). This includes an overall increase in the current assets from $2.9 million in 2008 to over $12.1 million in 2013 which represents a 316% increase in total current assets. Cash and cash equivalents have increased by 389% over that same time period.

Non-current assets, which represent resources required for use or consumption beyond one year, have remained relatively level with $75.47 million in 2008 and $75.55 million in 2013. However, it should be noted that restricted cash for capital acquisition was moved into the current assets "cash and cash equivalents" section in 2010, which may account for a portion of the several million dollar increase in that non-restricted, current cash balance. A more detailed look at the change in capital assets over this six year period reveals that Land has increased 74%, Improvements Other than Buildings has increased 19%, and equipment has increased 30% while Buildings has decreased by 15%. Total liabilities for the City increased from $648,000 to $1.4 million between 2008 and 2013 which represents a 111% increase.

The following key performance indicators of the utility reflect the trends and discussion above.

Liquidity –

- **The Current Ratio** *[Unrestricted Current Assets ÷ Current Liabilities]*
  - **Result:** Has increased from 4.57 in 2008 to 9.00 in 2013. This ratio was as low as 2.39 in 2009 and then increased significantly when restricted cash for capital acquisition was moved into the current cash and equivalents account.
  - **Benchmark:** A current ratio of 2:1 or higher is considered good in terms of healthy liquidity. The current ratio is a measure of short-term financial strength and answers an important question: Are current assets able to cover expected current liabilities in the coming year?

- **The Quick Ratio** *[Cash plus Receivables(assumed to include ONLY customer receivables) ÷ Current Liabilities]*
  - **Result:** Has increased from 4.57 in 2008 to 8.55 in 2013. This ratio was as low as 2.22 in 2009. The main driver for this healthy ratio is the increase in current cash and cash equivalents over the time period.
  - **Benchmark:** The quick ratio is even more conservative than the current ratio as it only looks at the current assets of "cash" and "receivables". Considering this, a Quick Ratio of 2:1 is even healthier than a Current Ratio of 2:1.

Efficiency –

- **Accounts Receivable Collection Period** *[(Customer Receivables on Balance Sheet X 365) ÷ Annual Sales]*
  - **Result:** Ratio has increased from approximately 24 days in 2008 to almost 34 days in 2013. This ratio was as low as 18 days in 2009. If customers can be encouraged to pay their bills more quickly, this would increase the cash available which increases financial flexibility.

- **Benchmark:** Generally, less than 30 days is considered very good.

Capital –

- **Capital Structure Ratio** *[Total Debt ÷ (Total Net Assets + Long Term Debt)]*
  - **Result:** Ratio is currently at 0% debt and 100% equity. The wastewater utility currently does not have any outstanding debt.
  - **Benchmark:** This is compared to the general industry target of no greater than 60% debt and 40% equity. This indicates that the City has sufficient capacity to debt fund a portion of future capital projects. A balanced combination of cash and debt can help normalize rate impacts (and is assumed in this analysis).

Table 11-2:
Statement of Net Assets: 2008 - 2013

Assets	2008	2009	2010	2011	2012	2013
Current Assets:						
Cash and cash equivalents	$ 2,087,469	$ 1,709,017	$ 7,351,631	$ 6,858,404	$ 9,213,072	$ 10,210,030
Restricted cash and cash equivalents						
Customer deposits	76,987	147,177	175,553	-	-	16,384
Receivables (net allowances)						
Customer accounts	737,283	545,843	602,380	1,120,569	1,254,091	1,286,442
Accrued interest & penalty	8,319	8,650	3,909	3,909	3,909	3,909
Prepayments		168,213	-	-	-	-
Current portion of interfund loan receivable	-	-	-	400,000	600,000	600,000
Due from governmental units	1,641	4,538	-	660,627	3,475	733
Inventory	-	-	-	-	-	-
Total Current Assets	**$ 2,911,699**	**$ 2,583,438**	**$ 8,133,473**	**$ 9,043,509**	**$ 11,074,547**	**$ 12,117,498**
Non-Current Assets:						
Restricted Cash and cash equivalents						
Capital acquisition	$ 6,806,931	$ 6,029,196	$ -	$ -	$ -	$ -
Special assessments	16,195	13,567	-	-	-	-
Special assessments deferred	13,663	2,347		-	-	-
Interfund loan receivable	10,000,000	9,500,000	8,800,000	7,800,000	7,100,000	6,497,324
Capital assets, net of depreciation						
Land	770,599	770,599	1,254,348	1,321,855	1,334,404	1,341,514
Buildings	766,558	744,169	721,780	699,392	677,003	654,614
Improvements other than buildings	55,844,434	55,202,110	62,726,574	63,797,262	66,209,518	66,607,184
Equipment	156,190	156,136	136,581	115,157	177,854	203,298
Construction in progress	1,091,738	5,314,321	355,703	880,245	497,350	244,401
Deferred charges	-	-	-	-	-	-
Total non-current assets	**$ 75,466,308**	**$ 77,732,445**	**$ 73,994,986**	**$ 74,613,911**	**$ 75,996,129**	**$ 75,548,335**
Total assets	**$ 78,378,007**	**$ 80,315,883**	**$ 82,128,459**	**$ 83,657,420**	**$ 87,070,676**	**$ 87,665,833**
LIABILITIES	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Current liabilities:						
Accounts payable	$ 508,508	$ 838,993	$ 257,452	$ 183,166	$ 128,809	$ 107,637
Matured interest payable	-	-	-	-	-	-
Due to other governmental units	10,345	9,382	626,138	1,073,141	1,438,705	1,190,839
Compensated absences	24,411	25,704	31,823	39,640	28,502	30,213
Current liabilities payable from restricted assets:						
Customer deposits	76,987	147,177	175,553	-	-	16,384
Total current liabilities	**$ 620,251**	**$ 1,021,256**	**$ 1,090,966**	**$ 1,295,947**	**$ 1,596,016**	**$ 1,345,073**
Noncurrent liabilities:						
Compensated absences	$ 27,604	$ 30,154	$ 26,199	$ 23,183	$ 26,025	$ 24,258
Long-term portion of interfund loan payable	-	-	-	-	-	-
Total noncurrent liabilities	**$ 27,604**	**$ 30,154**	**$ 26,199**	**$ 23,183**	**$ 26,025**	**$ 24,258**
Total liabilities	**$ 647,855**	**$ 1,051,410**	**$ 1,117,165**	**$ 1,319,130**	**$ 1,622,041**	**$ 1,369,331**
NET ASSETS						
Invested in capital assets	$ 58,629,519	$ 62,187,335	$ 65,194,987	$ 66,813,912	$ 68,884,724	$ 69,034,983
Restricted:						
Debt service	-	-	-	-	-	-
Unrestricted	19,100,633	17,077,138	15,816,307	15,524,378	16,563,911	17,261,520
Total net assets	**$ 77,730,152**	**$ 79,264,473**	**$ 81,011,294**	**$ 82,338,290**	**$ 85,448,635**	**$ 86,296,503**

11.3 Current Financial Structure

The City of Lacey wastewater utility is a self-supporting enterprise and as such it is responsible to fund all of its related costs. It is not dependent on general tax revenues or other general fund resources. The primary source of funding for the utility is collections from wastewater service charges. The City controls the level of service charges by ordinance and, subject to statutory authority, can adjust user charges as needed to meet financial objectives.

The Wastewater Utility is divided into three major categories for budgeting and cost accounting purposes: Operating, Capital, and Debt. The following individual funds reflect these aforementioned categories (descriptions taken from the City's budget documentation):

- 402 Wastewater Operating Fund
  - Lacey's Wastewater Utility consists of a collection system of sewer pipelines, sewage pump stations, STEP systems, and community on-site septic systems. These facilities serve to collect, initiate treatment, and transport wastewater to the regional LOTT Treatment Facilities. Lacey's Wastewater Utility is responsible for operation and maintenance of approximately 220 miles of wastewater lines, 47 lift stations and nearly 3,000 residential and community STEP systems.

- 411 Wastewater Capital Fund
  - The Wastewater Capital Fund provides revenues to construct new or replace portions of existing wastewater collection and treatment systems. Revenues also provide funding for special studies and resources for system improvements.

- 451 Wastewater Debt Fund
  - Debt obligations must be retired from utility system operating revenues, general facility charges for new sewer connections, or by special assessment against benefited properties. Generally speaking, debt in the wastewater utility has been issued to finance lift stations and major transmission lines. When property owners request the formation of a local improvement district to finance the construction of sewer lines to serve their property, bonds are sold to provide financing. Property owners then make installment payments to retire the debt. There is no outstanding debt at this time.

11.4 Fiscal Policies

A brief summary of the key financial policies employed by the City, as well as those recommended and incorporated in the financial forecast are discussed below:

11.4.1 Reserve Policies

Utility reserves serve multiple functions; they can be used to address variability and timing of expenditures and receipts; occasional disruptions in activities, costs or revenues; utility debt obligations; and many other functions. The collective use of individual reserves helps to limit the City's exposure to revenue shortfalls, meet long-term capital obligations, and reduce the potential for bond coverage defaults. Common reserves among municipal utilities are operating reserves, capital contingency reserves, and bond reserves. Further discussion of these tools is shown below:

- *Operating Reserve* – An operating reserve, or working capital reserve, provides a minimum unrestricted fund balance needed to accommodate the short-term cycles of

revenues and expenses. These reserves are intended to address both anticipated and unanticipated changes in revenues and expenses. Anticipated changes may include billing and receipt cycles, payroll cycles, and other payables. Operating reserves can be used to meet short-term cash deficiencies due to the timing of annual revenues and expenditures.

Generally, utilities target a certain number of "days" of working capital as a beginning cash balance to provide the liquidity needed to allow regular management of payment cycles. The City's documented policies state that the Utility funds should maintain an operating reserve of at least two months operating revenue. However, to be consistent with industry practice, a working capital reserve target of between 45 to 60 days (12% to 16%) of operating and maintenance (O&M) expense is incorporated into the current analysis. Based on the City's current financials, this target would be equivalent to approximately $1.6 million to $2.1 million in 2014. The 2013 ending fund balance of the operating fund was $2,350,830 according to City staff (nearly 68 days of O&M). The financial plan presented later in this chapter provides for maintaining the reserve within the designated benchmarks as cited above.

- *Capital Contingency Reserve* – A capital contingency reserve is an amount of cash set aside in case of an emergency should a piece of equipment or a portion of the utility's infrastructure fail unexpectedly. Additionally, the reserve could be used for other unanticipated capital needs including capital project cost overruns. There are various approaches to identifying an appropriate level for this reserve, such as 1) identifying a percentage of the utility system's total fixed assets (original cost) and, 2) determining the cost of replacing highly critical assets or facilities. For the purposes of this analysis, a minimum fund balance equal to 1-2% of system fixed assets is targeted. Based on total estimated assets at the end of 2014, a 1-2% minimum target balance ranges from roughly $950,000 to $1,900,000. The actual fund balance at the end of 2013 was $7.88 million which indicates the wastewater utility has the cash resources to directly fund a significant amount of capital projects and still remain above the targeted contingency reserve.

- *Bond Reserve* – Bond covenants often establish reserve requirements as a means of protecting an agency against the risk of nonpayment. This bond reserve can be funded with cash on hand, but is more often funded at the time of borrowing as part of the bond principal. However, there are currently no outstanding bonds in the wastewater utility.

11.4.2 System Reinvestment Funding (SRF) Policies

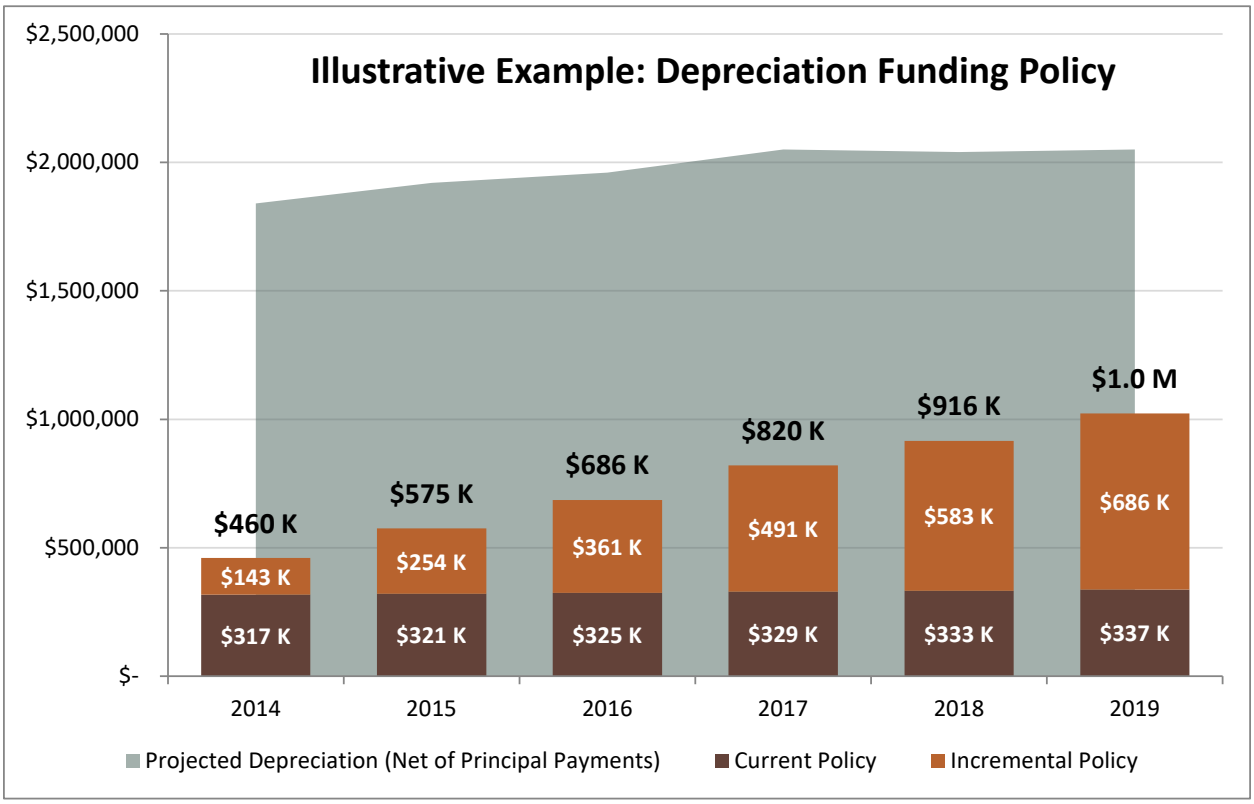
- Background: The purpose of system reinvestment funding is to provide for the replacement of aging system facilities to ensure sustainability of the system for ongoing operation. Each year, the utility's assets lose value, and as they lose value they are moving toward eventual replacement. That accumulating loss in value and future liability is typically measured for reporting purposes through annual depreciation expense (a non-cash expense), which is based on the original cost of the asset spread over its anticipated useful life. While this expense reflects the consumption of the existing asset and its original investment, the replacement of that asset may likely cost much more, factoring in inflation and construction conditions. Therefore, the annual replacement liability may be significantly greater than the annual depreciation expense. Depreciation is a non-cash expense and is not recovered through rates under the cash basis unless

specified by policy. Having a policy in place to recover at least a portion of system depreciation is a recommended industry best practice.

- One approach aimed at mitigating the accumulating asset replacement liability, as well as current rate impacts, is to fund an amount from rates equal to annual depreciation expense, net of annual debt principal repayment. Annual debt principal payments are one source of annual equity contribution to the system. Using annual depreciation expense as the measure of annual equity loss, and basis for a system reinvestment policy, it is appropriate then, to reduce the annual depreciation expense by the annual equity contribution, as measured by debt principal repayment. This approach tends to balance reducing near-term rate impacts with mitigating accumulating asset replacement liability.

- Current: The City currently deposits $1.25 of every local wastewater service charge into the utility capital fund for system replacement. For example, in 2013, $1.25 of every $16.48 was deposited into the capital account. In 2014, $1.25 of every $17.30 is deposited into the capital account. It is important to note that any policy in place is better than having no policy at all. However, the $1.25 does not increase over time; therefore the effectiveness of this policy gradually erodes. As the City's collection system continues to grow, the City is responsible for maintaining a growing number (and dollar amount) of assets. The City's current policy generates nearly $315,000 per year (about 17% of system-wide depreciation), but this amount does not increase as total system assets increase (note: this level of funding is projected to slightly increase each year reflecting assumed customer growth). For example, it's projected that within the next six years, this current level will only represent 15% of system depreciation, and this percentage will continue to decline (as depreciation expense increases) unless the policy is changed so that funding levels increase as depreciation expense increases.

- Recommendation: Our recommendation is that the City should update their system reinvestment policy to be based upon a defined percentage of depreciation net of any outstanding debt principal payments (the City does not currently have any outstanding debt in the Wastewater utility, so this net calculation is not applicable in the first several years). Our six year financial forecast phases in system reinvestment funding from approximately 17% (current level) to 50% of annual depreciation by 2019 (net of debt principal payments from new debt). This phasing technique is used to help avoid rate increase spikes in any single year and smooth the impact over the study period. We also recommend that the City continue to gradually increase this level of funding beyond 2019 until 100% of depreciation (net of annual debt principal) is funded. In the long-range capital financing forecast (through 2032), the analysis assumes that the City reaches this level by 2029, by assuming a 5% policy target increase per year.



11.4.3 Debt Policies

Bond covenants establish a minimum debt coverage ratio as a means of protecting an agency against the risk of nonpayment. The typical requirement for city utilities ranges from 1.0 to 1.5 times annual bond debt service. The City's wastewater utility currently has no outstanding bonds. For planning purposes, a debt service coverage requirement of 1.25 is assumed for future revenue bond issuances, which is more conservative than the City's internal policy of a 1.20 coverage ratio.

11.5 Operating Costs

The financial plan can only provide a qualified assurance of financial feasibility if it considers the total system costs of providing wastewater services, both operating and capital. The operating costs identify ongoing, annual non-capital costs associated with the operation, maintenance and administration of the wastewater system.

Operating costs are initially developed from 2014 budget documents. Future costs are adjusted annually for inflationary increases. Any known future changes such as new or enhanced programs, increased operating costs and/or additional staffing needs are added in the years they are planned. The following is a list of the key expense factors and assumptions used to develop the financial forecast.

- **Annual Operating Expenditures Inflation Factors** – General cost inflation ranges from 2.5% - 3.0% per year; labor and benefits cost inflation is 3% and 6% per year respectively; construction cost inflation ranges from 3% - 4% per year.

- **Additional Staffing Costs:** Based on future staffing recommendations found in Chapter 10, City staff projected that one FTE would be added in 2017 starting at $100,000 per year.

- **Fund Earnings Rate** – Assumed to begin at 0.15% and gradually increase to 1% during the study period.

- **Existing Debt** – The City currently does not have any debt.

- **Revenue Bond Assumption** – If revenue bonds are needed for capital financing, a 20-year term is assumed with a 4.5% interest rate with a 1% issuance cost. The interest rate is based upon an analysis of the Bond Buyer Index during the time of initial analysis (early 2014).

- **System Reinvestment Funding** – The City's current practice funds approximately 17% of depreciation through a fixed dollar amount of each monthly charge. As rates increase, this fixed amount remains unchanged; therefore the effectiveness of this policy erodes over time. As mentioned previously, it is our recommendation that this policy be linked to a growing percentage of depreciation (net of any outstanding debt). The funding level is increased annually and is projected to fund 50% of annual depreciation through user rates by the end of the six-year planning period and 100% of depreciation by 2029. This phase-in strategy serves to help mitigate volatile rate impacts in a single year and reduces the utility's need for debt financing in the future.

Annual operating costs are funded through ongoing revenue received from user fees and charges. The following is a list of the key revenue factors and assumptions:

- **Revenue** – The City has two general operating revenue sources: revenue from charges for service (rate revenue) and miscellaneous (non-rate) revenue. Rate revenue is expected to increase with customer growth and in the event of a forecasted annual shortfall, rates can be increased to meet the annual revenue requirement. Non-rate revenues are forecasted to increase with customer growth or remain the same, depending on the nature of the specific revenue.

- **Growth** – Although a higher growth rate is used for engineering planning purposes for this Plan, rate revenue was escalated based on a more financially conservative figure of 1.25 percent annual growth rate. This growth rate matches the customer growth rate assumed for the recently adopted Water utility's financial rate study. The lower growth rate for revenue is more financially conservative (we do not want to overestimate revenues), while the higher growth rate for capital planning used throughout the comprehensive plan is more conservative engineering-wise (engineers do not want to under-build system capacity).

- **General Facilities Charge (GFC)** – This represents a one-time charge to new customers connecting to the system. The GFC revenue for this plan is initially based on the City's 2014 GFC of $3,218 per Equivalent Residential Unit (ERU). The City's municipal code has historically provided for an annual inflationary adjustment based on the greater of the Construction Cost Index (CCI) or 6%.

Based on the recommendations of this study, the City Council revised the GFC annual adjustment policy to be based solely on the annual CCI adjustments. This change is reflected in Ordinance 1450, adopted in December 2014.

The CCI has ranged from 3% to 4% over the past ten years. The financial plan assumes 3% in the early years of the study period and then increasing to 4% for the latter years.

Additional annual ERUs are projected using the customer growth rate of 1.25% as mentioned above and GFC revenue is calculated by applying the current year's charge to the incremental ERUs.

11.6 Capital Costs (Six-Year Planning Period)

The CIP developed for this Comprehensive Plan identifies the total capital obligations for the planning period. Once the capital costs are identified, a capital funding plan defines a strategy for funding the CIP considering available funding sources such as existing reserves, GFC revenue, external contributions from grants/developers and new debt proceeds, if required.

Table 11-3 presents the estimated capital expenditures plan.

Table 11-3 : Projected CIP Costs

Year	2014 $	Inflated
2014	$ 3,892,012	$ 3,892,012
2015	$ 4,961,410	$ 5,110,252
2016	$ 4,855,000	$ 5,200,676
2017	$ 2,373,000	$ 2,643,636
2018	$ 3,457,000	$ 4,005,314
2019	$ 3,470,000	$ 4,181,191
6-Year Total	**$ 23,008,422**	**$ 25,033,082**
2020-2033	$ 27,705,000	$ 46,625,436
Grand Total	**$ 50,713,422**	**$ 71,658,518**

11.6.1 Capital Financing Strategy

An ideal capital funding strategy would include the use of grants and low-cost loans when debt issuance is required. However, these resources are very limited and competitive in nature and do not provide a reliable source of funding for planning purposes. For this reason we are assuming bond financing if the City's available cash resources are insufficient. The capital financing strategy developed to fund the CIP identified in this plan assumes the following funding resources:

- Accumulated capital cash reserves
- Annual revenue collections from GFCs
- Annual cash from rates earmarked for system reinvestment funding
- Annual debt repayments from the Water utility for the Interfund loan[1]
- Annual transfers of excess cash (over minimum balance targets) from the operating fund, if any
- Low-cost loan or revenue bond financing (if applicable)

[1] Current outstanding principal is approximately $7 million with minimum annual payments of approximately $400K. Recent annual budgeted repayments have exceeded $600K.

Based on information provided by the City, the Wastewater Capital Fund began 2014 with $7.9 million in capital cash reserves. The GFC generated approximately $1.1 million in 2013 and is anticipated to generate revenues of between $800,000 and $1.1 million per year during the six-year plan (2014 – 2019) based on customer growth and charge escalation factors.

The System reinvestment funding level ("replacement sales") was approximately $315,000 in 2013 (about 17% of depreciation). This level of funding is phased into 50% of depreciation (net of debt principal payments) per year by the end of the 6-year study period (approximately $1 million per year). This funding source becomes significant throughout the study period and reduces the amount of debt that would otherwise be needed. It is assumed in the analysis that the City continues to increase this level of funding until a 100% level is achieved by 2029.

The capital funding strategy developed for this financial plan shows the need to issue revenue bonds beginning in 2016. Total net debt issues are projected to be approximately $5.6 million by the end of the study period in 2019. Total annual debt service on these issues is projected to begin at $140,000 in 2016 and increases to over $470,000 by 2019. Debt is a more significant tool in the near term, when annual capital needs are higher relative to later years, as well when the system reinvestment policy is being phased in. When appropriate, the City may want to consider issuing debt in larger, multi-year groupings rather than smaller, single-year issuances.

As shown in Table 11-4, it's projected that the City will need to issue $428,000 in additional debt beyond 2019. As the system reinvestment policy increases in significance year by year, the City can cash fund a majority of its capital projects in the 2020-2032 years, an intended result of this funding policy. Table 11-4 summarizes the capital funding plan, with the "Cash Funding" column combining existing reserves, GFC revenues, and rate funded system reinvestment.

Table 11-4: Capital Funding Strategy

Year	Capital Expenditures 2014 $	Capital Expenditures Inflated	Revenue Bond Financing	Cash Funding	Total Financial Resources
2014	$ 3,892,012	$ 3,892,012	$ -	$ 3,892,012	**$ 3,892,012**
2015	$ 4,961,410	$ 5,110,252	$ -	$ 5,110,252	**$ 5,110,252**
2016	$ 4,855,000	$ 5,200,676	$ 1,646,861	$ 3,553,815	**$ 5,200,676**
2017	$ 2,373,000	$ 2,643,636	$ 370,766	$ 2,272,870	**$ 2,643,636**
2018	$ 3,457,000	$ 4,005,314	$ 1,778,013	$ 2,227,302	**$ 4,005,314**
2019	$ 3,470,000	$ 4,181,191	$ 1,804,388	$ 2,376,803	**$ 4,181,191**
6-Year Total	**$ 23,008,422**	**$ 25,033,082**	**$ 5,600,028**	**$ 19,433,054**	**$ 25,033,082**
2020-2032	$ 27,705,000	$ 46,625,436	$ 428,306	$ 46,197,130	**$ 46,625,436**
Grand Total	**$ 50,713,422**	**$ 71,658,518**	**$ 6,028,334**	**$ 65,630,184**	**$ 71,658,518**

The capital funding plan assumes that capital is funded from cash available in reserves and from annual rate funding. New debt financing is assumed only when other resources are depleted. Treating capital funding in this manner minimizes rate impacts from annual capital funding needs. Capital funding only impacts rates directly through the level of rate funded system reinvestment assumed and through annual debt service as a result of new debt being issued.

11.7 Financial Forecast

The financial forecast, or "revenue requirement", projects the amount of operating and capital expenditures to determine the annual amount of revenue required. The objective of the financial forecast is to evaluate the sufficiency of the current level of rates in meeting the total revenue requirements of the system. In addition to annual operating costs, the revenue of the utility must also meet debt covenant requirements and minimum reserve level targets.

The rate strategy focuses on the planning period of 2014 through 2019. It is imperative that the City review the proposed rates and rate assumptions annually to ensure that the rate projections developed remain adequate. Any significant changes should be incorporated into the financial plan and future rates should be adjusted as needed.

Table 11-5 summarizes the annual revenue requirement for the six-year horizon based on the forecast of revenues, expenditures, fund balances, fiscal policies, and capital funding from debt.

Table 11-5: Six-Year Financial Forecast

Revenue Requirements	2014	2015	2016	2017	2018	2019
Revenues						
Local Rate Revenues Under Existing Rates	$ 4,176,951	$ 4,229,163	$ 4,282,027	$ 4,335,553	$ 4,389,747	$ 4,444,619
Non-Rate Revenues (Includes LOTT)	9,036,567	9,376,095	9,774,851	10,192,041	10,623,736	11,071,317
Total Revenues	**$13,213,518**	**$13,605,257**	**$14,056,879**	**$14,527,593**	**$15,013,483**	**$15,515,936**
Expenses						
Cash Operating Expenses	$12,709,553	$12,993,004	$13,514,849	$14,158,356	$14,727,453	$15,320,196
Existing Debt Service	-	-	-	-	-	-
New Debt Service	-	-	138,650	169,865	319,556	471,468
Rate-Funded System Reinvestment	459,352	574,574	685,987	819,378	916,184	1,023,427
Total Expenses	**$13,168,905**	**$13,567,578**	**$14,339,485**	**$15,147,599**	**$15,963,193**	**$16,815,091**
Annual Surplus / (Deficiency)	**$ 44,613**	**$ 37,679**	**$ (282,606)**	**$ (620,006)**	**$ (949,710)**	**$ (1,299,155)**
Net Local Rate Revenue from Rate Increases	202,807	388,610	586,912	798,435	1,023,941	1,264,235
Use of Operating Reserves	(247,420)	(426,289)	(304,306)	(178,430)	(74,232)	34,920
Net Surplus / (Deficiency)	**$ 0**	**$ (0)**	**$ -**	**$ (0)**	**$ 0**	**$ (0)**
Annual Rate Adjustment	**5.00%**	**4.25%**	**4.25%**	**4.25%**	**4.25%**	**4.25%**
Cumulative Annual Rate Adjustment	**5.00%**	**9.46%**	**14.11%**	**18.96%**	**24.02%**	**29.29%**
Coverage After Rate Increases	**n/a**	**n/a**	**8.31**	**6.99**	**4.17**	**3.15**

The City Council adopted a rate increase of 5.0% for 2014 and then adopted the proposed five-year rate increase schedule of 4.25% annual increases from 2015 to 2019 (Ordinance 1450).

These rate increases will help fund the future staffing recommendations discussed in Chapter 10, new debt service payments, and policy objectives.

11.7.1 Funds and Reserves

Table 11-6 shows a summary of the projected Operating, Capital, and Debt Fund ending balances through 2019. As discussed previously, the Operating Fund has a target of 45 days to 60 days of O&M expenses, and the Capital Fund minimum target balance is between 1 and 2 percent of fixed assets. All funds are projected to meet or exceed their targeted ranges at the end of the study period.

Table 11-6: Ending Cash Balance Summary

Ending Cash Balances	2014	2015	2016	2017	2018	2019
Operating Fund	$ 2,089,242	$ 2,135,836	$ 2,215,549	$ 2,393,978	$ 2,468,210	$ 2,433,290
Capital Fund	$ 6,390,853	$ 3,553,815	$ 2,272,870	$ 2,227,302	$ 2,376,803	$ 2,539,159
Debt Reserve Fund	$ 31	$ 31	$ 138,680	$ 169,895	$ 319,587	$ 471,499
Total	**$ 8,480,125**	**$ 5,689,682**	**$ 4,627,099**	**$ 4,791,176**	**$ 5,164,600**	**$ 5,443,948**
*Combined Minimum Target Balance**	*$ 3,458,704*	*$ 3,595,855*	*$ 3,898,302*	*$ 4,066,279*	*$ 4,366,239*	*$ 4,674,853*

**Incorporates a Capital Fund minimum target balance of 2% of fixed assets*

11.8 Current and Projected Rates

11.8.1 Current Rates

The City's current rate structure is composed of an ERU charge comprised of two components: the treatment charge from LOTT and the local charge unique to Lacey's collection system. This ERU unit for each customer class is delineated below per Lacey Municipal Code (13.16.027):

- Single family residences and mobile homes: One ERU per living unit
- Duplex residences: Two ERUs
- Residences containing more than two living units (E.g. Triplex, Fourplex, Multifamily apartments): 7/10 of an ERU per living unit
- Commercial, industrial, and other customers: One ERU for each estimated 900 cubic feet of water consumed per month with a minimum monthly charge of one ERU

The City also offers a Low Income Senior/Disabled rate equal to 50% of the single family rate. Table 11-7 provides a summary of the rate structure in 2014.

Table 11-7: 2014 Rate Structure

Customer Description	Per Account Charges		
	LOTT Treatment	Local Sewer	Total
Single-Family	$35.01	$17.30	**$52.31**
Single-Family: Senior / Low-Income	$17.51	$8.65	**$26.16**
Multi-Family	$24.51	$12.12	**$36.63**
Mobile Home	$35.01	$17.30	**$52.31**
Duplex	$70.02	$34.60	**$104.62**
Commercial	$35.01	$17.30	**$52.31**

** Commercial accounts charged an additional $52.31 per 900 cubic feet water consumption reported*

11.8.2 Projected Rates

Table 11-8 shows the impact of the adopted rate increases to the local portion of the rate schedule on a per ERU basis. The ERU definitions for various rate classes are described in Section 11.8.1.

Table 11-8: Projected Rate Schedule (Local Charge Only)

Basic Sewer Service Charge	Actual 2014	Adopted 2015	Adopted 2016	Adopted 2017	Adopted 2018	Adopted 2019
Projected Across-the-Board Rate Increases: Local Sewer	5.00%	4.25%	4.25%	4.25%	4.25%	4.25%
Basic Sewer Service Charge per ERU	$17.30	$18.04	$18.80	$19.60	$20.43	$21.30

Table 11-9 shows the monthly impact to a single family residential customer when including the monthly LOTT charge, which is assumed to stay at its currently adopted 2015 level throughout the study period. The LOTT charge may increase each year, but without an adopted schedule, the 2015 charge is assumed.

Table 11-9: Rate Impact to Single-Family Customer

Single-Family Customer	2014	2015	2016	2017	2018	2019
Local Sewer	$17.30	$18.04	$18.80	$19.60	$20.43	$21.30
LOTT	$35.01	$36.06	$36.06	$36.06	$36.06	$36.06
Total	**$52.31**	**$54.10**	**$54.86**	**$55.66**	**$56.49**	**$57.36**
Local Dollar Increase		$0.74	$0.77	$0.80	$0.83	$0.87

Note: Assumes LOTT Stays at current level beyond 2015

11.9 Affordability

The Washington State Department of Health and Public Works Board has historically used an affordability index to prioritize low-cost loan awards depending on whether a system's rates exceed 2.0 percent of the median household income for the demographic area. As a result, if monthly bills are less than 2.0% of the median household income for the demographic area, they are generally considered affordable.

The median household income for the City of Lacey in 2012 was $58,963 according to the U.S. Census Bureau's 2008-2012 American Community Survey 5-Year Estimates. This is assumed to be the 2012 figure and is inflated annually. Table 11-10 presents the City's total sewer rate with the projected rate increases for the forecast period. The affordability mark (Monthly Bill*12 ÷ Median Income) is approximately 1% throughout the study period. As shown in the following table, the City's sewer rates remain within the affordability range. Without an adopted schedule, the LOTT charge included is assumed to remain at 2015 levels throughout this table, although even if it was inflated annually, the affordability benchmark would not likely be materially affected.

Table 11-10: Affordability Test				
Year	Inflation	Median HH Income	Projected Monthly Bill	% of Median HH Income
2012		$ 58,963	$49.00	1.00%
2013	2.50%	$ 60,437	$50.47	1.00%
2014	2.50%	$ 61,948	$52.31	1.01%
2015	2.50%	$ 63,497	$54.10	1.02%
2016	3.00%	$ 65,402	$54.86	1.01%
2017	3.00%	$ 67,364	$55.66	0.99%
2018	3.00%	$ 69,385	$56.49	0.98%
2019	3.00%	$ 71,466	$57.36	0.96%

Note: Bill includes LOTT charge, assume LOTT remains at 2015 levels

11.10 Available Funding Resources and Funding Assistance

Feasible long-term capital funding strategies should be defined to ensure that adequate resources are available to fund the CIP identified in this plan. In addition to utility resources such as accumulated cash reserves, capital revenues, and rate revenues designated for capital purposes, capital needs can be met from outside sources such as grants, low-interest loans, and bond financing. The following is a summary of the City's internal sewer utility resources and outside resources (government programs and bond issuances).

11.10.1 Internal Utility Resources

Sewer utility resources appropriate for funding capital needs include accumulated cash in the capital reserve, rate revenues designated for capital spending purposes, and capital-related charges such as general facilities charges and other connection fees. The first two resources were discussed in greater detail in the Fiscal Policies section.

General Facilities Charge

A general facilities charge (GFC) as provided for by RCW 35.92.025, refers to a one-time charge imposed on new customers as a condition of connection to the utility system. The purpose of the GFC is two-fold: (1) to promote equity between new and existing customers; and (2) to provide a source of revenue to fund future capital projects. Equity is served by providing a vehicle for new customers to share in the capital costs incurred to support their addition to the system. GFC revenues provide a source of cash flow used to support utility capital needs; revenue can only be used to fund utility capital projects or to pay debt service incurred to finance those projects.

In the absence of a GFC, growth-related capital costs must be borne in large part by existing customers. In addition, the net investment in the utility already collected from existing customers, whether through rates, charges and/or assessments, would be diluted by the addition of new customers, effectively subsidizing new customers with prior customers' payments. To establish equity, a GFC should recover a proportionate share of the existing and future infrastructure costs from a new customer. From a financial perspective, a new customer should become financially equivalent to an existing customer by paying the GFC.

The city's GFC is levied on a per equivalent residential unit (ERU) basis, as defined in City code section 13.16.027. The GFC in 2014 was $3,218 per ERU.

Local Facilities Charges

While a GFC is the manner in which new customers pay their share of general facilities costs, local facilities funding is used to pay the costs of local facilities that connect each property to the system's infrastructure. Local facilities funding is often overlooked in a rate forecast since it is funded upfront by either connecting customers, developers, or through an assessment to properties - but never from rates. Although these funding mechanisms do not provide a capital revenue source toward funding CIP costs, the discussion of these charges is included in this section, as they are an impact to the new customer of the system.

There are a number of mechanisms that can be considered toward funding local facilities. One of the following scenarios typically occurs: (a) the utility charges a connection fee based on the cost of the local facilities (under the same authority as the GFC); (b) a developer funds extension of the system to their development and turns those facilities over to the utility (contributed capital); or (c) a local assessment is set up called a Utility Local Improvement District (ULID/LID) which collects tax revenue from benefited properties.

A *Local Facilities Charge (LFC)* is a variation of the connection charge authorized through RCW 35.92.025. It is a city-imposed charge to recover the cost related to service extension to local properties. Often called a front-footage charge and imposed on the basis of footage of main "fronting" a particular property, it is usually implemented as a reimbursement mechanism to a city for the cost of a local facility that directly serves a property. It is a form of connection charge and, as such, can accumulate up to 10 years of interest. It typically applies to instances where no developer-installed facilities are needed through developer extension due to the prior existence of available mains already serving the developing property.

A *Developer Extension* is a requirement that a developer install onsite and sometimes offsite improvements as a condition of extending service. These are in addition to the GFC required and must be built to city standards. Cities are authorized to enter into developer extension agreements under RCW 35.91.020. Part of the agreement between a city and developer for the developer to extend service might include a late-comer agreement, resulting in a late-comer charge to new connections to the developer extension.

Latecomer Charges are a variation of developer extensions whereby a new customer connecting to a developer-installed improvement makes a payment to a city based on their share of the developers cost (RCW 35.91.020). The city passes this on to the developer who installed the facilities. This is part of the developer extension process, and defines the allocation of costs and records latecomer obligations on the title of affected properties. No interest is allowed, and the reimbursement agreement is in effect for a period of 20 years, unless a longer duration is approved by the City.

LID/ULID is another mechanism for funding infrastructure that assesses benefited properties based on the special benefit received by the construction of specific facilities (RCW 35.43.042). Most often used for local facilities, some ULIDs also recover related general facilities costs. Substantial legal and procedural requirements can make this a relatively expensive process, and there are mechanisms by which a ULID can be rejected by a majority of property ownership within the assessment district boundary.

Utility Funds and Cash Reserves

User charges (rates) paid by the utility's customers are the primary funding source for all utility activities. The rates cover total annual costs associated with operation and maintenance of the wastewater system, and other ongoing costs of providing wastewater services. Rates can pay for capital improvement projects in two ways: either paying for debt service or directly paying for capital projects. Although funding the capital costs directly through rates does not result in the additional interest expense associated with issuing debt, this approach can cause large and/or volatile rate increases.

11.10.2 Government Programs

Historically, federal and state grant programs were available to local utilities for capital funding assistance. However due to budgetary constraints in light of recent economic events, these assistance programs have been either eliminated, substantially reduced in scope and amount, or replaced by loan programs. Remaining miscellaneous grant programs are generally lightly funded and heavily subscribed. Nonetheless, the benefit of even the very low-interest loans makes the effort of applying worthwhile. Major funding sources are as follows:

Department of Ecology: Grants and Loans through the Annual Integrated Water Quality Financial Assistance Process

The Washington Department of Ecology (Ecology) administers an integrated funding program for three state and federal financial assistance programs to improve and protect water quality. Each funding cycle begins in the fall when Ecology accepts project applications. Ecology rates and ranks applications based on the highest-priority needs. Eligible projects may include the following: upgrades and expansions of sewer plants and collection systems, septic system improvements, water re-use facilities, water cleanup projects, stormwater and groundwater projects, stream-side protection and restoration projects, and public clean water education projects. The amount of available grant and loan funding varies from year to year based on the state's biennial budget appropriation process and the annual congressional federal budget.

Further detail is available at:

- http://www.ecy.wa.gov/programs/wq/funding/funding.html
- http://www.ecy.wa.gov/news/news.html

Community Economic Revitalization Board (CERB)

CERB, a division of the Washington State Department of Commerce, primarily offers low cost loans; grants are made available only to the extent that a loan is not reasonably possible. The CERB targets public facility funding for economically disadvantaged communities, specifically for job creation and retention. Priority criteria include the unemployment rates, number of jobs created and/or retained, wage rates, projected private investment, and estimated state and local revenues generated by the project. According to their website, "CERB funds a variety of projects that create jobs including (but not limited to) domestic and industrial water, storm and sewer water projects, telecommunications and port facilities." Eligible applicants include cities, towns, port districts, special purpose districts, federally recognized Indian tribes and municipal corporations.

Funding details for the 2013 – 2015 Program are as follows per the Washington Commerce website: "$9 million was appropriated to CERB for the 2013-2015 Biennium. By state law, CERB must award 75% of this funding to projects in rural counties. The Board has also allocated $2,182,500 to be available for construction and planning grants on a first-come, first-served basis."

Program	Funding Limitations
Committed Private Sector Partner Construction	• $2 million per project loan award limit • Up to $300,000 or 50% of total award, **whichever is less**, may be grant funds. • 20% cash match required (minimum, percent of total project cost)
Prospective Development Construction	Available to rural communities only. • $2 million per project loan award limit • Up to $300,000 or 50% of total award, **whichever is less**, may be grant funds. • 50% cash match required (minimum, percent of total project cost)
Planning/Economic Feasibility Studies	• $50,000 grant per project award limit • 25% cash match required (minimum, percent of total project cost)

Further detail is available at:

- http://www.commerce.wa.gov/commissions/CommunityEconomicRevitalizationBoard/
- http://www.commerce.wa.gov/Documents/2013-15_Policies.pdf
- http://www.commerce.wa.gov/commissions/CommunityEconomicRevitalizationBoard/Pages/CERB-Traditional-Programs.aspx

Public Works Board (PWB) Financial Assistance

The Boards overarching goals is to provide community access to financial and technical resources that help sustain local infrastructure. Cities, towns, counties and special purpose districts are eligible to receive financial assistance for qualifying projects (including sanitary sewer projects). When funding is available, the following tools are accessible:

- ***Construction Loan Program:***
  - Funding Cycle: The Governor's proposed 2015-17 budget offers $69.7M for 19 projects.
  - Program Description: Low-interest loans for local governments to finance public infrastructure construction and rehabilitation. Eligible projects must improve public health and safety, respond to environmental issues, promote economic development, or upgrade system performance.
  - Terms: No local match is required, loans with terms less than five years have a rate of 1.28% and loans between 5 year and 20 year have a rate of 2.55%.

- ***Pre-Construction Loan Program:***
  - Funding Cycle: No funding has been allocated to the Pre-construction loan program for the 2013-15 biennium.
  - Program Description: Local governments may apply for low interest loans to finance pre-construction activities to prepare a project for construction.
  - Terms: Terms are limited to a five year repayment period (the loan term may be converted to 20-years once the project has secured construction funding) with a 1% interest rate.

- ***Emergency Loan Program:***
  - Funding Cycle: No funding has been allocated to the Emergency loan program for the 2013-15 biennium.
  - Program Description: The Emergency Loan Program provides funding to address public works emergencies, thereby helping provide immediate restoration of critical public works services and facilities.
  - Terms: Funds are limited to $500,000 per jurisdiction per biennium, and come with a 20-year term (or the life of the project), and a 3% interest rate. No local match is required.

- ***Energy and Water Efficiency Loan Program:***
  - Funding Cycle: No funding has been allocated to the Energy and Water Efficiency (EWE) loan program for the 2013-15 biennium.
  - Program Description: The EWE program is designed to encourage energy, water, and efficiency upgrades to existing infrastructure by providing low-cost loans.
  - Terms: The maximum loan amount is $1,000,000. The interest rate is dependent upon the term of the loan. Loans less than 5 years receive a 0.50% rate. Loans between 5 and 10 years receive a 1% interest rate. Loans between 11 and 20 years receive a 1.50% interest rate.

Further detail is available at:

- http://www.pwb.wa.gov/financial-assistance/Pages/default.aspx
- http://www.pwb.wa.gov/Documents/FINAL-MASTER-GUIDELINES.pdf

11.10.3 Public Debt Financing

General Obligation Bonds

General obligation (G.O.) bonds are bonds secured by the full faith and credit of the issuing agency, committing all available tax and revenue resources to debt repayment. With this high level of commitment, G.O. bonds have relatively low interest rates and few financial restrictions. However, the authority to issue councilmanic G.O. bonds is restricted in terms of the amount and use of the funds, as defined by the Washington State constitution and statute. Specifically, the amount of debt that can be issued without a public vote is linked to assessed valuation.

RCW 39.36.020 states:

> *"(ii) Counties, cities, and towns are limited to an indebtedness amount not exceeding one and one-half percent of the value of the taxable property in such counties, cities, or towns without the assent of three-fifths of the voters therein voting at an election held for that purpose.*
>
> *(b) In cases requiring such assent counties, cities, towns, and public hospital districts are limited to a total indebtedness of two and one-half percent of the value of the taxable property therein."*

While bonding capacity can limit availability of councilmanic G.O. bonds for utility purposes, these can sometimes play a valuable role in project financing. A rate savings may be realized through two avenues: the lower interest rate and related bond costs; and the extension of the

repayment obligation to all tax-paying properties (not just developed properties) through the authorization of an ad valorem property tax levy.

Revenue Bonds

Revenue bonds are commonly used to fund utility capital improvements. The debt is secured by the rate revenues of the issuing utility and the debt obligation does not extend to the City's other revenue sources. With this limited commitment, revenue bonds typically bear higher interest rates than G.O. bonds and also require security conditions related to the maintenance of dedicated reserves (a bond reserve) and financial performance (added bond debt service coverage). The City agrees to satisfy these requirements by ordinance as a condition of bond sale.

Revenue bonds can be issued in Washington without a public vote. There is no bonding limit, except perhaps the practical limit of the utility's ability to generate sufficient revenue to repay the debt and provide coverage. In some cases, poor credit might make issuing bonds problematic.

11.11 Summary

The City Council adopted a rate increase of 5.0% for 2014 and then adopted the proposed five-year rate increase schedule of 4.25% annual increases from 2015 to 2019 (Ordinance 1450). These rate increases will help fund the future staffing recommendations discussed in Chapter 10, new debt service payments, and policy objectives.

It is recommended that the City regularly review and update key underlying assumptions that serve as the foundation of the multi-year financial plan to ensure that adequate revenues are collected to meet the total wastewater utility financial obligations.

Appendix A

Interlocal Agreement

INTERLOCAL COOPERATION ACT AGREEMENT FOR WASTEWATER MANAGEMENT BY THE LOTT WASTEWATER ALLIANCE

by and among

City of Lacey, City of Olympia, City of Tumwater, and Thurston County ("Partners")

November 5, 1999

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INTERLOCAL COOPERATION ACT AGREEMENT FOR WASTEWATER MANAGEMENT BY THE LOTT WASTEWATER ALLIANCE

THIS AGREEMENT ("Agreement"), dated _____, 1999, is entered into by and between the City of Lacey, Washington ("Lacey"); the City of Olympia, Washington ("Olympia"); the City of Tumwater, Washington ("Tumwater"); and Thurston County, Washington (the "County") pursuant to Chapter 39.34 RCW. The parties are herein individually referred to as "Partner" and collectively as the "Partners."

RECITALS

WHEREAS, pursuant to the Intergovernmental Contract for Wastewater Facilities Management dated November 1976, as amended ("1976 Intergovernmental Contract") the LOTT Partners have for more than two decades cooperated successfully in financing, constructing, maintaining and operating joint facilities to provide wastewater treatment and discharge services for the citizens of the urban area of northeast Thurston County; and

WHEREAS, said 1976 Intergovernmental Contract has been modified from time to time to provide for changing environmental and technical requirements, increased service demands and revised public health and environmental protection policies initiated by Partner governments, the Washington State Department of Ecology ("Ecology") and the federal government; and

WHEREAS, since 1976, the Partners have managed the construction and expansion of wastewater treatment and discharge facilities for the region through The Advisory Committee ("TAC") and have relied on Olympia as the lead agency for LOTT contracting and financing; and

WHEREAS, Olympia issued certain water and sewer revenue bonds (the "Bonds" as defined in Section 1.5) to provide funds to finance or refinance the Existing Facilities and local facilities, and, so long as the Bonds are outstanding, Olympia is obligated to comply with its covenants to owners of such Bonds, including covenants not to dispose of the Existing Facilities, as hereinafter defined, without repaying the Bonds or to take any action that would impact the tax-exempt status of the Bonds; and

WHEREAS, in March 1995, TAC authorized the development of a new comprehensive plan known as the LOTT Wastewater Resource Management Plan ("Plan") to provide for the region's future wastewater needs and initiated an environmental review process to assess all reasonable and feasible alternatives for wastewater management; and

WHEREAS, the Plan, as developed by LOTT with the assistance of community, Partner, and Ecology input, provides for the development of future treatment capacity on an incremental basis utilizing new joint use reclamation and groundwater recharge facilities located throughout

the LOTT service area but connected to the main LOTT treatment and marine discharge facilities; and

WHEREAS, the development of such new joint reclamation facilities must be planned and implemented on a cooperative basis so that increments of capacity are added no sooner than necessary but in sufficient time to meet NPDES permit limits and public health requirements; and

WHEREAS, to this point financing and contracting obligations for LOTT have been assumed by Olympia on behalf of the LOTT Partners; and

WHEREAS, the Partners have agreed that an independent, nonprofit corporate entity should be established pursuant to Chapters 36.34 and 24.03 RCW to enable LOTT to directly contract for the services and construction necessary to develop and manage new joint use facilities in response to the Plan; and

WHEREAS, the Partners will exercise control of the new non-profit corporate entity, called the "LOTT Wastewater Alliance" (or "LOTT Alliance"), through appointment of board members by and from their legislative bodies, who will represent their respective local governments; and

WHEREAS, by December 31, 1999, the Partners intend to transfer all joint use facilities developed or identified under the 1976 Intergovernmental Contract to the LOTT Wastewater Alliance and to terminate the 1976 Intergovernmental Contract, so that the LOTT System is exclusively managed by the LOTT Wastewater Alliance Board of Directors pursuant to this Agreement (a series of events termed "Consolidation");

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, the Partners hereby agree as follows:

ARTICLE I
PURPOSE AND SCOPE

Section 1.1 PURPOSE OF AGREEMENT

The purpose of this Agreement is to provide for a new governance structure to carry out the Plan, which anticipates development of additional treatment capacity for the LOTT Partners through innovative wastewater reclamation and management facilities. The new facilities implemented pursuant to this Agreement, together with the facilities and improvements identified or developed as Existing Joint Facilities pursuant to the 1976 Intergovernmental Contract, shall be operated as a combined system for the benefit of all the Partners in the manner set forth herein.

The Partners intend to form a new nonprofit corporate entity, to be known as the LOTT Wastewater Alliance, pursuant to Chapter 39.34 and Chapter 24.03 RCW. The LOTT Wastewater Alliance shall be solely controlled by Partner representatives and its primary function shall be to carry out the public purposes expressed in the Plan and this Agreement, as both may be amended or supplemented from time to time. The Partners intend for the LOTT Wastewater Alliance to function as a regional agency that provides wholesale wastewater resource treatment and management services in the public interest.

The Partners intend to consolidate the ownership and management of all Existing Joint Facilities and related properties and interests in the LOTT Wastewater Alliance so that the entire LOTT System is under its sole management and control. This "Consolidation" can occur only after the Bonds have been paid or defeased and when it is otherwise legally feasible. The Partners herein commit to work together in good faith, to use their best efforts, and to take all necessary actions to accomplish Consolidation as provided herein. The Partners recognize that a transition period will be necessary to identify and accomplish all required and appropriate Consolidation steps and to coordinate the assumption by the LOTT Board of TAC responsibilities and legal obligations related to the LOTT System. The 1976 Intergovernmental Contract, as amended, will continue in effect until the Consolidation is completed as determined by the LOTT Board, and then the 1976 Intergovernmental Contract will terminate.

Section 1.2 COMMITMENT & ACCESS TO JOINT FACILITIES

Consistent with their covenants in the 1976 Intergovernmental Contract, in this Agreement the Partners commit to deliver all sewage flows in their Local Systems within the LOTT Plan area (see Exhibit E) to the Joint Facilities for treatment and disposal or reuse. Each Partner foregoes the opportunity to treat and dispose or reuse its sewage flows individually and decides to share control of access to and capacity in sewerage facilities within its community. Because this Agreement and the 1976 Intergovernmental Contract contemplate that all Partners will be using Joint Facilities and because most, if not all, Partners will be transporting sewage flows collected in their Local Systems through the political jurisdictions of one or more other Partners, the Partners declare and confirm i) that this Agreement is not intended as an instrument to permit one Partner to control the sewer collection services furnished by another Partner, and ii) that each Partner will cooperate to provide the others with access for sewage flow to the Joint

Facilities either by sharing Local System capacity, if reasonably available, or by facilitating the acquisition of necessary rights-of-way, franchises, and permits through and under public streets, rights-of-way, and property under reasonable conditions for such access.

Section 1.3 PARTNER CONTRIBUTIONS

The Partners recognize that they have jointly developed and maintained the LOTT System to serve all the Partner governments. Although precise legal and equitable interests of the Partners in specific Existing Joint Facilities cannot be defined, the Partners hereby reconfirm that they each have an unquantified interest in the Existing Joint Facilities based on the rights and obligations of all Partners under the 1976 Intergovernmental Contract and past financial contributions to the development, operation and maintenance of the facilities. In this Agreement, the Partners commit to transfer all right, title and interest in and to Existing Joint Facilities to the LOTT Wastewater Alliance. In consideration for the mutual promises and covenants and establishment of a new LOTT governance structure, each Partner waives all potential claims against the other Partners as to ownership of Existing Joint Facilities and as to monetary reimbursement or compensation arising from the ownership of Existing Joint Facilities or its transfer to the LOTT Wastewater Alliance, except for the purchase of City of Lacey facilities as provided in the Agreement Regarding Additional LOTT Joint Facilities of June 21, 1999 (see Exhibit I).

Section 1.4 CONTRACT DOCUMENTS

The following exhibits are incorporated by reference into this Agreement as though fully set forth herein:

Exhibit A — List of all agreements comprising the 1976 Intergovemmental Contract

Exhibit B — List of Existing Joint Facilities

Exhibit C — Articles of Incorporation of LOTT Wastewater Alliance

Exhibit D — Bylaws of LOTT Wastewater Alliance

Exhibit E — LOTT System Service Area (Urban Growth Area Boundary, Ch. 36.70 RCW)

Exhibit F — Allocation of Costs to New Connections and Monthly Rates

Exhibit G — LOTT Discharge and Industrial Pretreatment Regulations

Exhibit H — O & M Contract

Exhibit I — Agreement Regarding Additional LOTT Joint Facilities of June 21, 1999

Exhibit J — Intergovernmental Contract for Inflow and Infiltration Management and New Capacity Planning of March 27, 1995

Exhibit K — Interlocal Cooperation Agreement Between Thurston County and the Cities of Lacey, Olympia, and Tumwater Regarding Joint Wastewater Flow Reduction and Water Conservation Projects of May 28, 1997 (with attachments)

Exhibit L — Administrative and Treasury Services Contract

Section 1.5 DEFINITIONS

For purposes of this Agreement, the following terms shall have the meanings set out below.

"Bonds" means City of Olympia Water and Sewer Revenue Refunding Bonds, 1993 (LOTT Series), Water and Sewer Revenue Bonds, 1997A and Water and Sewer Revenue Refunding Bonds, 1997 (Series B).

"Capacity Development Charge" means the one-time connection charge collected at issuance of building permit for each new connection to a Local System or directly to the LOTT System.

"Consolidation" means the point at which the LOTT Wastewater Alliance has been formed and is capable of functioning as an independent wastewater treatment and management entity and all significant steps necessary to concentrate ownership or control of Existing Joint Facilities and the LOTT System in the LOTT Wastewater Alliance, including defeasance of the Bonds, have been accomplished.

"Debt Service" means the principal of, interest on, sinking fund requirements, reserve account requirements and any coverage requirement required by a resolution authorizing the issuance of LOTT Debt.

"Equivalent Residential Unit" or "ERU" means:

1) One separate single family residence;
2) With respect to residential duplexes, one per single family unit;
3) With respect to each residential structure having more than two single family residential units, each single family unit shall equal 0.70 ERU (or, for these structures, one ERU equals 1.43 single family units);
4) With respect to mobile home and trailer parks, one per each mobile home or trailer unit; or
5) With respect to the Wastewater Service Charge for uses other than residential uses, the monthly discharge of sewage in units of 900 cubic feet measured at the source either by water consumption or sewage discharge, and with respect to determining the ERU number used to calculate the Capacity Development charge for other than

residential uses, the monthly discharge of sewage in units of 900 cubic feet estimated pursuant to guidelines established by the Advisory Committee and based on the then current or most recent experience of the type and character of the proposed service requested.

"Existing Joint Facilities" means any "Joint Facilities" as defined in or developed pursuant to the 1976 Intergovernmental Contract that are in existence and operation or are designated as LOTT Joint Facilities as of the effective date of this Agreement. The Existing Joint Facilities are identified in Exhibit B.

"General Pretreatment Regulations" shall mean the United States Environmental Protection Administration General Pretreatment Regulations for existing and new sources as set forth in 40 CFR part 403.

"I/I Study" means the LOTT Infiltration and Inflow Removal Study (Gibbs & Olson 1994).

"Joint Facilities" means Existing Joint Facilities and LOTT Wastewater Alliance Joint Facilities.

"Joint Facilities Maintenance and Operation Expenses" means all costs and expenses relating to labor, fringe benefits, power, light, water, heat, chemicals, equipment including repair and replacement thereof, tools, materials, supplies, insurance premiums, contract services, inspections and taxes and "in lieu of taxes" directly and properly chargeable to the operation and maintenance of the Joint Facilities plus administrative overhead expenses, and any other similar costs chargeable to the Joint Facilities.

"LOTT Wastewater Alliance Joint Facilities" means all sewerage or wastewater treatment or reclaimed water facilities or conveyance acquired or developed after the effective date of this Agreement by the LOTT Wastewater Alliance including but not limited to trunk sewer lines, sewage pumping stations, sewage force mains, sewage treatment facilities and outfall lines, resource management basins, reclamation and groundwater recharge facilities, flow reduction improvements, and other improvements, properties, rights, or interests used or useful in the conveyance, treatment, disposal, storage, or management of sewage or wastewater flows or reclaimed wastewater or water products, including any appurtenances thereto, and any improvements or replacements of Existing Joint Facilities.

"Local System" means sewer or wastewater facilities other than Joint Facilities that are owned or operated by a Partner for the local collection, pretreatment, transmission, and delivery of sewage or wastewater flows to Joint Facilities.

"LOTT" means the LOTT Partnership created by the 1976 Intergovernmental Contract and the LOTT Wastewater Alliance created pursuant to this Agreement, and the "LOTT System" means all Joint Facilities that are owned, operated, or controlled by one or more of the Partners or by LOTT or that are used or useful in the performance of LOTT's

functions, including all contracts, permits, rights, and interests that are necessary or useful for operation of said facilities.

"LOTT Board" or "Board of Directors" means the board of directors created pursuant to Chapter 24.03 RCW to manage and oversee the LOTT Wastewater Alliance non-profit corporation.

"LOTT Debt" means any notes, bonds or other obligation of the LOTT Wastewater Alliance issued to finance or refinance improvements, betterments, or extensions to Joint Facilities or any other costs related to the LOTT System and the State of Washington loan to LOTT, evidenced by the Olympia Water and Sewer Revenue Bonds (1992) ultimately issued in a principal amount of $36,579,836.19.

"LOTT Discharge and Industrial Pretreatment Regulations" shall mean the regulations attached as Exhibit G to this Agreement, which may be amended from time to time by a unanimous vote of the LOTT Board.

"LOTT System" (see "LOTT")

"LOTT Wastewater Alliance" or "LOTT Alliance" means the non-profit corporation to be created by the Partners pursuant to Chapter 24.03 RCW and this Agreement.

"1976 Intergovernmental Contract" means the Intergovernmental Contract for Wastewater Facilities Management, dated November 30, 1976, together with all later amendments, all of which are listed in Exhibit A.

"O & M Contract" means the agreement for operation and maintenance of the wastewater treatment plant and other Joint Facilities to be entered by the LOTT Wastewater Alliance and Olympia pursuant to Section 10.3.

"Plan" means the LOTT Wastewater Resource Management Plan dated November, 1999 and approved by the Partners, as may be amended from time to time.

"TAC" means The Advisory Committee formed pursuant to the 1976 Intergovernmental Contract that operates to advise the development and operation of Existing Joint Facilities.

"TSC" means the Technical Subcommittee formed by TAC in response to the requirements of the 1976 Intergovernmental Contract and also made part of the LOTT Wastewater Alliance. The TSC is composed of one public works executive manager from each Partner; the person responsible for management of LOTT treatment plant and facility operations; the LOTT staff engineer; and the LOTT administrator appointed by TAC or the LOTT Board. The LOTT administrator shall chair the TSC.

"Wastewater Service Charge" means the LOTT monthly rate charged for each Equivalent Residential Unit (ERU) connected to Local Systems or directly to the LOTT System.

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ARTICLE II
LOTT WASTEWATER ALLIANCE: NONPROFIT CORPORATION GOVERNANCE

Section 2.1 LOTT WASTEWATER ALLIANCE

As soon as practical after this Agreement takes effect, the Partners shall act to form a nonprofit corporation under Chapter 24.03 RCW to be formally called the "LOTT Wastewater Alliance." A form of articles of incorporation and bylaws are attached as Exhibits C and D respectively, and the Partners shall use articles of incorporation and bylaws substantially in the form set out in Exhibits C and D to create the nonprofit corporation.

Section 2.2 POWERS.

The LOTT Wastewater Alliance, an independent legal entity, acting through its Board of Directors and duly authorized employees and agents, shall have all the powers of a nonprofit corporation organized under Chapter 24.03 RCW. Among its powers, the LOTT Wastewater Alliance shall have the full power and authority to:

a) Acquire, construct, receive, own, manage, lease, sell, and otherwise dispose of real property, personal property, intangible property, and Joint Facilities;

b) Plan, develop, replace, operate and maintain Joint Facilities;

c) Enter into contracts for goods, services, work, or other benefits to the LOTT Wastewater Alliance;

d) Borrow money and issue debt instruments or provide for the borrowing of money and issuance of debt instruments;

e) Receive gifts or grants for the planning, design, development, construction, or operation of Joint Facilities, or assets or programs to further LOTT's purposes, or for other purposes necessary to carry out LOTT's purposes;

f) Lend money or provide services or facilities to any Partner or other governmental utility or governmental service provider in furtherance of LOTT's purposes;

g) Invest its funds;

h) Sue and be sued;

i) Hire and fire employees of the LOTT Wastewater Alliance;

j) Fix salaries, wages and other compensation of officers and employees;

k) Employ or retain engineering, legal, financial or other specialized personnel and consultants as may be necessary to carry out the purposes of the LOTT Wastewater Alliance;

l) Impose, alter, regulate, control, and collect rates, charges, and assessments;

m) Purchase insurance and participate in pooled insurance and self-insurance programs;

n) Indemnify the Partners and their officers and employees in accordance with law;

o) Establish policies, guidelines, or rules to carry out its powers and responsibilities;

p) Exercise all other powers within the authority of and that may be exercised individually by all of the Partners with respect to sewage or wastewater conveyance, treatment, disposal, reclamation, reuse, conservation, or other LOTT purposes or functions as set forth herein; and

q) Take any other actions as the LOTT Board deems necessary to implement the Plan, to protect and advance the interests of the LOTT System, its Partners, and its ratepayers that are consistent with this Agreement, Chapter 39.34 RCW, and other applicable law.

Section 2.3 PUBLIC ACCOUNTABILITY.

The Partners intend for the LOTT Wastewater Alliance to operate and function as a public agency. The LOTT Board shall conduct its deliberations and take action openly. Therefore, the LOTT Wastewater Alliance shall operate and conduct its business subject to the Open Public Meetings Act (Ch. 42.30 RCW, as may be amended), the Public Disclosure Act (Ch. 42.17 RCW, as may be amended), local government accountancy statutes (RCW 43.09.200 et seq., as may be amended), and other applicable laws, regulations, and self-imposed policies.

Section 2.4 NO EFFECT ON PARTNER POLICE POWERS.

Nothing in this Agreement shall be deemed to limit the exercise of a Partner's police or regulatory powers as may be required or allowed by law. The Partners herein confirm that the LOTT Board has no local land use authority to direct growth or development within the LOTT service area as shown on Exhibit E. Instead, the LOTT Board shall manage the LOTT System in a way that is responsive to local land use planning and sewerage plans adopted by the Partners within LOTT's service area and consistent with applicable state and federal laws. However, the LOTT Board may comment on proposed changes by Partners to their land use plans and zoning codes where such changes could affect the amount, timing or characteristics of sewage or wastewater flows to be treated by the LOTT System.

Section 2.5 LOTT BOARD

a) Composition. The Board of Directors for the LOTT Wastewater Alliance shall consist of four (4) Directors and four (4) alternate Directors. One Director and one alternate Director shall be appointed by and from the legislative bodies of Lacey, Olympia, Tumwater and

Thurston County. The Director and alternate Director of each Partner appointed to the LOTT Board shall serve at the will and discretion of the legislative body of that Partner. Any Partner may remove its Director or Alternate Director from the LOTT Board at any time. In the event that a Partner's Director or alternate Director is so removed, is no longer qualified to serve on, or otherwise departs from the LOTT Board, that Partner's legislative body shall promptly appoint a new Director or alternate Director to the LOTT Board. It is the Partners' intent that a representative on the LOTT Board will represent his or her Partner local government in voting and acting as a LOTT Board member.

b) Local government representation. The Partners hereby agree that legislative oversight by their respective local governments shall not be required for any LOTT Board decisions in the management and operation of the LOTT System, except as expressly provided herein. LOTT Board members shall represent the interests of their respective local governments in carrying out their responsibilities to act in the best interests of the LOTT Wastewater Alliance.

c) Procedures and voting. Each Director shall have one vote. A Partner's alternate Director shall vote in place of that Partner's Director when the Director is absent or unavailable or when the Director position is vacant. Alternate Directors may also vote to resolve tie votes as provided below. The LOTT Board shall establish procedures for conducting its meetings consistent with Roberts Rules of Order and its decisions shall be by a majority vote except when a unanimous vote is required, as provided below.

d) Tie votes. In the event of a tie vote by the LOTT Board, the LOTT Board shall 1) randomly choose one alternate Director, and 2) table the matter to the following LOTT Board meeting which shall be scheduled as a special or regularly scheduled meeting within the next twenty-one (21) days or as soon thereafter as all LOTT Directors can be present together with the alternate Director randomly chosen to assist in resolving tie votes. At this meeting, all LOTT Directors, including the alternate Director chosen, shall participate in the discussion and voting on the matter or related matters until such time as the issue previously resulting in a tie vote has been resolved by a majority affirmative vote, defeated by a majority, or otherwise resolved. The LOTT Board shall select the alternate Director to resolve a tie vote by a random drawing of the Partners' names from a hat or other container; however, no Partner's alternate Director shall serve as a tie breaker in two consecutive tie vote matters.

e) Unanimous votes. For the actions that require unanimous votes identified below, proposed LOTT Board resolutions or motions must be distributed to the Clerk of each Partners' legislative body at least eighteen (18) calendar days in advance of final action by the LOTT Board. The following actions shall require unanimous votes by the LOTT Board:

i) Approval or amendment of the Plan;

ii) Revisions in the Articles of Incorporation or Bylaws or dissolution of the LOTT Wastewater Alliance non-profit corporation;

iii) Revision of the allocation of costs as to new connection charges and monthly rates; the allocation of costs in effect as of the effective date of this Agreement is set forth in Exhibit F;

iv) Modification or amendment of the LOTT Discharge and Industrial Pretreatment Regulations pursuant to Section 7.1 of this Agreement; and

v) Establishment or modification of pretreatment permit fees, charges, and actions pursuant to Section 7.2 of this Agreement.

f) Local government review and comment. The LOTT Board shall, in a timely manner, solicit the review and comment by its Partner local governments of proposed changes in LOTT comprehensive plans, annual budgets and annual capital programs. The LOTT Board shall consult with a Partner local government on any specific Joint Facility capital project proposed within the Partner jurisdiction prior to approving the final design for such project.

Section 2.6 COMMITTEES

The LOTT Board may form and convene committees and advisory bodies as it deems appropriate for Partner review and comment, public input, efficient staff and Board work, and other purposes. Initially, until the LOTT Board directs otherwise, the following standing committees shall exist to advise the LOTT Board: i) the Technical Subcommittee ("TSC"), and ii) the Legal Committee composed of an attorney chosen by each Partner and the LOTT Wastewater Alliance legal counsel to review legal matters as from time-to-time directed by the LOTT Board.

Section 2.7 BOOKS AND RECORDS.

Any member of the LOTT Board or a representative of such member may examine the books and records of any Partner or of the LOTT Wastewater Alliance that relate to the Joint Facilities, the administration thereof, this Agreement, or the 1976 Intergovernmental Contract. After provision of reasonable notice, such books and records may be examined at any reasonable time during business hours of that Partner. The LOTT Board may appoint an auditor or accountant to review any such books and records and the costs of such review shall be charged to LOTT which in turn may include such costs as a Joint Facilities Maintenance and Operations Expense.

ARTICLE III
LOTT WASTEWATER ALLIANCE: FINANCE

Section 3.1 LOTT RATES & CHARGES

The LOTT Wastewater Alliance shall establish rates and collect fees for wastewater service that will be at least sufficient to pay the expenses of maintenance and operation of the LOTT System and will meet the principal, interest and coverage requirements and other bond covenants of all obligations issued by the LOTT Wastewater Alliance or by a Partner on behalf of the LOTT Wastewater Alliance that are related to improvements and extensions to the LOTT System or refunding bonds issued for the LOTT System and that constitute a charge upon the revenue of such system.

Section 3.2 PARTNER COVENANTS TO MAKE PAYMENTS

a) Covenants to make payments. In consideration for the LOTT Wastewater Alliance maintaining and operating the Joint Facilities and as a condition for use thereof and service therefrom, each Partner irrevocably covenants, obligates and binds itself to timely bill, collect and pay the Wastewater Service Charge and the Capacity Development Charge provided for in this Article III. All such payments shall be made at the times and in the manner provided in this Article III. All such payments shall be made out of the gross revenues of each Partner's Local System or combined water/sewer system. Each Partner shall pay its share of costs attributable to Debt Service on and other costs associated with LOTT Debt throughout the term of this Agreement whether or not the Joint Facilities or the LOTT System is operating or operable and notwithstanding the performance or nonperformance of this Agreement by any Partner. Nothing in this Agreement shall be interpreted to cause the LOTT Wastewater Alliance not to charge the Partners for Debt Service or to relieve a Partner from paying its share of Debt Service.

b) Wastewater Service Charge. Commencing with the first complete month in which sewage flows are collected and delivered by the Partners to LOTT, each Partner shall pay to the LOTT Wastewater Alliance the Wastewater Service Charge established by the LOTT Board. Initially this uniform charge is $25.50 per month per ERU as approved by the LOTT Partners and made effective January 1, 1993. At least annually and more frequently as necessary, the LOTT Board shall consider the Wastewater Service Charge and confirm or adjust the amount of the Wastewater Service Charge as needed to cover costs. The Wastewater Service Charge paid by each Partner is based on the number of ERUs connected to its Local System, determined as follows.

i) Reporting and Payment of ERU count. By the 25th day of each month each Partner shall deliver to LOTT a statement specifying the amount of Wastewater Service Charge revenue collected and remitted to LOTT and the number of ERUs served or billed by it as of the last day of the immediate preceding month. An ERU shall be counted if it is either connected to or billed for availability of use by Local Facilities. If any Partner fails to furnish such count in a timely manner, LOTT may estimate such ERU count and bill that Partner according to that estimate. Any Partner by giving reasonable notice may examine the books and records of any

other Partner to determine the basis for the computation of any ERU figure used by that examined Partner. No dispute over any such charges shall relieve a Partner from its duty to pay a monthly bill. In the event an adjustment or correction must be made, it shall be effective for a credit or additional charges in the next succeeding month. In order to keep count of ERUs each Partner shall cause all nonresidential users to install meters measuring either all water usage or sewage discharge. Any Significant Industrial User (see Exhibit G Section 2 (JJ)) not covered by an Industrial Pretreatment Permit and covered by a separate discharge contract with any Partner or with the LOTT Wastewater Alliance shall have charges paid and reported consistent with its discharge contract and shall be exempt from the ERU requirements of this section.

ii) ERU payment reduction. A Partner may reduce the Wastewater Service Charge for each ERU qualifying under the Partner's sewer rate reduction program for elderly and handicapped low income persons, provided the program is consistent with applicable State law and regulations. The reduction in ERU payment will be equal to the percentage reduction allowed of the Partner's sewer collection system rate per ERU, but in no event may the reduction in ERU payment exceed 50% per qualifying ERU.

c) Capacity Development Charge. Each Partner shall collect a LOTT Wastewater Alliance Capacity Development Charge equal to the amount established by the LOTT Board for every additional structure connected to its Local System beginning with the effective date established by the LOTT Board. Upon change in the character in use of any structure connected to a Local System resulting in significantly increased sewage discharge, an additional LOTT Wastewater Alliance Capacity Development Charge shall be collected so as to account for actual use, giving appropriate credit for connection charges already paid. All Capacity Development Charges shall be paid to LOTT with the Partner's next monthly payment following the month in which the charges are collected. Initially the Capacity Development Charge is $3,000.00 per ERU as approved by the LOTT Partners and made effective July 1, 1999. At least annually and more frequently as necessary, the LOTT Board shall consider the Capacity Development Charge and confirm or adjust the amount of the Capacity Development Charge as needed to cover costs of additional conveyance, treatment and management capacity.

d) Local System Expenses. The Wastewater Service Charge shall be deemed a maintenance and operation expense to the maximum extent possible under existing bond resolutions and ordinances and shall expressly be made a part of the maintenance and operation expenses of the Local Systems of each Partner in any future bond issue or other financing payable in whole or in part from the revenues of such systems and shall be payable and constitute a charge prior and superior to any charge or lien of any revenue bonds, or any obligation, issued by the Partners payable from the net revenues (gross revenues less operations and maintenance expenses) of their respective systems.

Section 3.3 PARTNER COVENANTS TO MAINTAIN CHARGES

Each Partner irrevocably covenants and agrees to establish rates and collect fees for sewer service or sewer and water service, in the case of a combined utility, that will be at least sufficient to pay the charges to the LOTT Wastewater Alliance and to pay the other maintenance and operation expenses of their respective Local Systems.

Section 3.4 PARTNER BONDS

a) Future water and sewer bonds. On and after the effective date of this Agreement, no Partner shall issue any debt secured by existing or future LOTT sewerage charges or connection revenue, Joint Facilities, or any other LOTT revenues or assets; however, with the approval of the LOTT Board a Partner may issue such debt on behalf of or for the benefit of the LOTT Wastewater Alliance.

b) Outstanding local bonds. It is recognized that Olympia, Tumwater and Lacey presently have outstanding revenue bonds payable in whole or in part from the net sewer revenue of their Local Systems. Nothing in this Agreement is intended or shall be construed to violate any covenant of these outstanding bonds, and such covenants, to the extent there is a conflict between them and this Agreement, shall control with respect to such outstanding bonds and any debt issued on a parity with such bonds and required to have the same covenants as the outstanding bonds.

Section 3.5 BILLINGS AND PAYMENTS

For all charges prescribed in this Article III, the LOTT Wastewater Alliance shall bill each Partner on the first day of each calendar month for charges accrued to the first day of the immediately preceding month, unless already paid as provided in Section 3.2. Each Partner shall pay such charges so billed by the twentieth day of the month such bill is received, after which time such billing shall be delinquent. Charges omitted in one month may be billed in the following months. Delinquent charges shall accrue interest on the unpaid balance at a rate equal to the current one year Treasury Bill rate plus 1% from date of delinquency until paid.

Section 3.6 ADMINISTRATIVE AND TREASURY SERVICES

As provided in Section 11.4, the LOTT Wastewater Alliance and Olympia shall enter into an Administrative and Treasury Services Contract to provide for Olympia to continue to provide such services for an initial period of time. Prior to giving notice of termination of all or part of the Administrative and Treasury Services Contract, the LOTT Board shall consider and document Olympia's and alternative administrative and treasury service costs and practices. After this consideration, the LOTT Board shall determine whether to continue under the Administrative and Treasury Services Contract, to terminate all or part of the Administrative and Treasury Services Contract and make other arrangements for such services, or take such other action as the Board finds necessary and appropriate. After the Administrative and Treasury Services Contract terminates, the LOTT Wastewater Alliance may, in its sole discretion, decide to operate and maintain the administrative and treasury services through its own staff or through a contract or contracts with others, including any of the Partners.

The LOTT Board shall control and direct the disposition of all LOTT funds and monies. The contractor shall establish a separate fund to hold LOTT funds, establish special accounts within the LOTT Fund, and keep separate and adequate books and records of the same, all as required by law and regulations of the State Auditor and as the LOTT Board may direct. The

contractor shall also be responsible for investment of LOTT funds consistent with the investment policy adopted by the LOTT Board.

Section 3.7 LOTT BUDGETING

a) Annual LOTT budget.

i) By each June 1, the LOTT Board shall notify each Partner of its proposed budget and capital improvement program for the Joint Facilities showing its estimate of the debt service and reserve requirements for debt obligations incurred to finance the LOTT Existing Joint Facilities, LOTT Wastewater Alliance Joint Facilities, Joint Facilities Maintenance and Operation Expenses, and the coverage requirements of such obligations per ERU for the ensuing calendar year and shall furnish forthwith to those Partners upon request for inspection the data and records supporting such estimate. Each Partner shall furnish LOTT with its recommendations and comments by July 31. Thereafter LOTT shall adopt its final annual budget and capital improvement program for the forthcoming calendar year on or before August 31. Subject to adjustment as provided in this subparagraph, the ERU charges for the Partners under this subparagraph shall be based on the final budget.

ii) By March 1 of each year, LOTT shall determine and notify the other Partners of the actual debt service and reserve requirements of the LOTT Debt, the actual Joint Facilities Maintenance and Operation Expenses, the actual requirements for LOTT Wastewater Alliance obligations and any other payment requirements for the immediately preceding calendar year, or part thereof, covered by this Agreement.

iii) The annual schedule of budget events is summarized as follows:

March 1st	Notice of previous year's reconciliation
March 15th	Preliminary flow estimate for next calendar year provided by LOTT
April 15th	Partners respond to preliminary flow estimates for next calendar year
May 1st	LOTT provides final flow estimate for next calendar year
June 1st	LOTT provides proposed budget and capital improvement program for next calendar year
July 31st	Partners and public comment on proposed LOTT budget and capital improvement program for next calendar year
August 31st	LOTT adopts budget and capital improvement program for next calendar and advises Partners of LOTT rates to take effect January 1st

iv) To respond to special circumstances, the LOTT Board shall have the authority to alter the annual budget schedule in a given year.

b) LOTT Joint Facilities budget adjustments. The LOTT Wastewater Alliance shall operate within its annual budget. Should debt service and reserve requirements for the LOTT Debt , or Joint Facilities Maintenance and Operation Expenses, or coverage requirements increase above budget estimates, or should the money in the Operations Account of the LOTT Joint Facilities Fund or the LOTT Wastewater Alliance Joint Facilities Fund be insufficient to meet and pay those requirements and expenses in that calendar year, the LOTT Wastewater Alliance may amend its budget and increase the Wastewater Service Charge after first submitting the proposed budget amendment and Wastewater Service Charge increase to the Partners for comments.

Section 3.8 SHORT-TERM FINANCIAL ASSISTANCE FOR EMERGENCY SEWER REPAIRS

a) Upon request from a Partner, the LOTT Wastewater Alliance shall consider providing short-term financial assistance to any Partner facing an emergent need to repair or replace failed sewer facilities when that emergency involves a threat to public health or public safety, poses a significant threat to the natural environment, or presents a threat to or operational difficulty for the LOTT System. In dealing with such emergencies, time is of the essence. The temporary financing is intended to provide financial assistance between the time of the emergency and the time when the requesting Partner has opportunity to secure other financing. It is understood the requesting Partner will make all reasonable efforts to effectively use its own financial resources and any other available funding to assure minimum use of assistance from LOTT.

b) LOTT resources available for use in providing emergency repair assistance to a requesting Partner shall be limited to LOTT funds in excess of that required by bond covenants and other debt and that which is not otherwise committed or programmed according to the adopted current LOTT budget and Capital Improvement Program during the term of the requested temporary financing. The amount of the requested temporary financing may not exceed the total cost of the engineering and construction of repairs necessary to restore sewer service, end the public health or safety emergency, end the threat to the natural environment, or end the threat to or operational difficulty for Joint Facilities plus the cost of liquidation losses and interest as provided herein.

c) Temporary financing for emergency repairs may be extended for a term of up to eighteen months from the time of first withdrawal at which time it will be due and payable in full including the principal amount, the added cost of losses due to liquidation, and all interest. Any Partner using LOTT funds under this Section 3.8 is subject to the same obligations for payment as for the charges set forth in this Article III.

d) The Partners hereby recognize that, due to the emergency nature of the financial assistance covered by this agreement, invested LOTT money may be subject to losses due to liquidation of investments as a result of providing for temporary financing assistance. Every reasonable effort will be made to avoid such losses; however, the amount of these losses will be added to the principal amount of the temporary financing and will be subject to interest charges as described herein.

e) Interest will be charged on temporary financing for emergency repairs at a rate equal to the net earnings rate of the State of Washington Local Government Investment Pool. The interest period will begin with the effective date of the issuance of funds to the requesting Partner.

f) Because time is of the essence when dealing with temporary financing for emergency sewer repairs, the following procedure will guide processing of a request. First, the requesting Partner will, by letter addressed to the LOTT Board, describe the emergency for which a temporary financing is being requested, state the amount requested, and propose a date to meet with LOTT and its treasurer to negotiate a schedule of dates and amounts of withdrawals and repayment. If time permits, the LOTT Board may refer the request to a committee for review and recommendation. In any event, the LOTT Board shall attempt to act on the request in a timely fashion.

Section 3.9 TAXES

In recognition of the LOTT Wastewater Alliance as a public entity, the Partners shall not impose any tax on the gross receipts of the LOTT Wastewater Alliance. Each Partner may levy a gross receipts tax on its utility, including receipts representing the Wastewater Service Charge.

ARTICLE IV
LOTT WASTEWATER ALLIANCE: WASTEWATER CONVEYANCE AND TREATMENT

Section 4.1 LOTT SERVICE OBLIGATION IN SERVICE AREA

LOTT shall accept all Partner sewage flows delivered to Joint Facilities within the LOTT System service area (shown on Exhibit E), subject to the conditions and limitations stated herein. The service area shall be the Lacey-Olympia-Tumwater Urban Growth Area in effect when this Agreement takes effect. The LOTT Wastewater Alliance shall not directly accept sewage or wastes from any person, firm or corporation that is located within the boundaries of or is delivering its sewage flows to the Local System of a Partner without the written consent of that Partner.

If the Lacey-Olympia-Tumwater Urban Growth Area is expanded beyond that shown on Exhibit E, the LOTT System service area shall be expanded only if the Partner requesting the expansion remits a connection charge that includes all capacity development costs including those otherwise allocated to monthly rates (Wastewater Service Charge). The foregoing sentence shall not apply to service expansions outside the Lacey-Olympia-Tumwater Urban Growth Area that correct identified health hazards or water quality problems in high density developments consistent with the Thurston County Sewerage General Plan of 1990, and the cost of such expansions shall be allocated pursuant to Exhibit F.

Section 4.2 PARTNER OBLIGATION TO DELIVER FLOWS

Each Partner shall deliver all sewage and wastewater flows collected by its Local System to the LOTT System. Each Partner shall deliver its Local System flows at such locations in the LOTT System and pursuant to such connection procedures and other terms and conditions as may be established by the LOTT Board. Except as provided in Section 4.4 of this Agreement, a Partner shall not deliver sewage or wastewater flows generated in the LOTT System service area to an agency other than LOTT for treatment and disposal or treat such flows at its own sewage treatment facilities without the consent of the LOTT Board.

Section 4.3 LOTT SYSTEM CAPACITY

a) **Acceptance of Partner flows.** The LOTT System shall be available to receive and treat sewage flows delivered to Joint Facilities by the Partners so long as the LOTT System has capacity to accept, treat, and manage such flows. The LOTT Wastewater Alliance shall use its best efforts to provide for increased capacity pursuant to the Plan, in a manner designed to allow the LOTT System to accept, treat, and manage all flows proposed to be delivered to the Joint Facilities by the Partners. Flows from the Partners' Local Systems shall be accepted on a "first-come, first-served" basis. The LOTT Board shall have the authority to limit flows from the Partners only to ensure preservation of public health and compliance with applicable laws, regulations, permits and provisions of the LOTT Plan. However, in the event that flows are proposed from a single non-residential user which will impair, for a significant period of time,

any Partner's capacity to accommodate growth projected by the Thurston Regional Planning Council in its service area, the LOTT Board shall have the authority to delay the delivery of flows or portions thereof from the single non-residential user until, through the best efforts of the LOTT Board, a plan is in place which will be implemented in time to avoid such projected impairment. Any such flow limitation shall not in any way excuse or reduce any Partner's obligation to make payments to the LOTT Wastewater Alliance under this Agreement.

b) Annual flow predictions. The LOTT Board shall annually provide to the Partners by March 15th a preliminary estimate of flows to be produced within each Partner local government during the following calendar year based on data from the Thurston County Regional Planning Council forecasting population and employment. Each Partner, within thirty (30) days of receipt of the estimate, shall a) estimate and provide to LOTT the expected building activity within its jurisdiction for the following calendar year based on plats and/or building permits approved or pending immediate approval and b) provide to LOTT any other information that it would like LOTT to consider in establishing a final estimate of the capacity available during the following calendar year. After receiving such comments and information from the Partners, the LOTT Board shall publish a final estimate no later than each May 1st identifying the total estimated capacity available for the following year in the LOTT System and the percentage of such capacity expected to be utilized during such year.

c) No default. The LOTT Wastewater Alliance shall not be in default of its obligations under this Agreement or any other intergovernmental contract in the event that the LOTT Board determines that insufficient capacity exists to accept, treat, and manage sewerage flows, despite using best efforts to develop sufficient capacity. The existence of a capacity constraint or the unavailability of additional capacity shall not excuse or reduce any Partner's obligation to make payments to the LOTT Wastewater Alliance under this Agreement.

Section 4.4 PARTNER OPTIONS IN THE EVENT OF CAPACITY CONSTRAINT

In the event that the LOTT Board limits additional Partner flows to the LOTT System pursuant to Section 4.3, the following exclusive remedies are available to the Partners, but only for the duration of such limitation.

i) A Partner may deliver additional sewage flows to an agency other than LOTT for treatment and disposal; and

ii) A Partner may develop its own sewage treatment facilities to serve new demand; provided that such facilities are sized no larger than reasonably necessary to serve customers connecting during the expected duration of the capacity constraint.

The foregoing remedies are the exclusive remedies available to a Partner as to the LOTT Wastewater Alliance and the other Partners in the event of a LOTT System capacity constraint, except that the Partners shall not be limited to such exclusive remedies in the event the LOTT Wastewater Alliance is in default of its obligations under this Agreement.

ARTICLE V
LOTT WASTEWATER ALLIANCE: COOPERATION IN MANAGEMENT & DEVELOPMENT OF WASTEWATER FACILITIES

Section 5.1 RESPONSIBILITY FOR JOINT FACILITIES AND LOCAL SYSTEMS

a) Joint Facilities. The LOTT Wastewater Alliance shall plan, construct, acquire, replace, operate, and maintain all Joint Facilities such that the entire LOTT System and the Joint Facilities are built, operated and maintained as an integrated sewerage system in accordance with high engineering standards and in conformity with the sewer standards of American Public Works Association, the Water Environment Federation and requirements of the state, federal and local agencies having jurisdiction over the same. The LOTT Wastewater Alliance shall in its sole discretion determine the name, location, and time of construction of LOTT Wastewater Alliance Joint Facilities. The LOTT Wastewater Alliance shall maintain through responsible insurers including insurance pools public liability insurance for Joint Facilities operations and responsibilities in accordance with industry standards.

b) Local Systems. The Partners shall maintain and operate their respective Local Systems in accordance with high engineering standards and in conformity with the standards established by the state and federal agencies having jurisdiction over the same. Modifications and additions to Local Systems shall be constructed and operated in accordance with the sewer standards of American Public Works Association, the Water Environment Federation and requirements of the state and federal agencies having jurisdiction over the same. The Partners shall secure and maintain with responsible insurers including insurance pools all such insurance as is customarily maintained with respect to sewage systems of like character against loss of or damage to the Local Systems against public and other liability to the extent that such insurance can be secured and maintained at reasonable cost.

c) Liability. Any liability incurred by the LOTT Wastewater Alliance as a result of the operation of the LOTT System shall be the sole liability of the LOTT Wastewater Alliance and any liability incurred by a Partner as a result of the operation of its Local System shall be the sole liability of that Partner.

Section 5.2 JOINT FACILITIES OPERATIONS

As provided in Section 11.3, LOTT and Olympia shall enter into an O&M Contract to provide for Olympia to continue to operate the Joint Facilities for an initial period of time. Prior to giving notice of termination of the O&M Contract, the LOTT Board shall prepare a study of Olympia's and alternative operating costs and practices. After completion of the study, the LOTT Board shall determine whether to continue under the O&M Contract, to terminate the O&M Contract and make other arrangements for facilities operations, or take such other action as the Board finds necessary and appropriate. If termination of the O&M Contract with Olympia occurs, the LOTT Board will provide for an orderly, smooth transition which fairly takes into account the effect on Olympia employees. The Partners shall work together in good faith and cooperate with the LOTT Wastewater Alliance in preparation of the study and in developing new

arrangements, if any, for facilities operations to succeed the O&M Contract. After the O&M Contract terminates, the LOTT Wastewater Alliance may, in its sole discretion, decide to operate and maintain the Joint Facilities through its own staff or through a contract or contracts with others, including any of the Partners.

Section 5.3 RELATIONSHIP TO LOCAL PLANNING

a) Land use. The development of LOTT Wastewater Alliance Joint Facilities shall be consistent with the Plan, with applicable laws, regulations and permits, and with the Partners' zoning and land use requirements. The LOTT Wastewater Alliance does not have any land use or police powers as a non-profit corporation even though it exists for the benefit of its governmental Partners and their citizens. LOTT shall follow applicable Partner zoning and land use requirements to secure conditional use and other permits and approvals necessary for the development of new LOTT Wastewater Alliance Joint Facilities or modification of Existing Joint Facilities.

b) Partner and GMA sewerage plans. The Plan shall be consistent with and responsive to land use plans adopted both individually and collectively by the Partners at the time this Agreement is adopted and whenever the Plan is amended. Future land use plans or modifications proposed individually or collectively by the Partners that affect wastewater treatment shall be offered to the LOTT Board for review and comment regarding their relationship to current LOTT plans prior to their adoption. Further, the Plan shall be consistent with the general sewer plans of the Cities of Lacey, Olympia and Tumwater and the sewerage general plan of Thurston County in force at the time this Agreement is adopted. Before adopting any new or modified general sewer plan or sewerage general plan, each Partner shall forward any such plan proposal to the LOTT Board for review and comment.

Section 5.4 PARTNER COMMITMENTS TO ASSIST LOTT

To the extent legally feasible, each Partner agrees to give good faith consideration to LOTT requests for necessary zoning, land use, eminent domain proceedings and other permits and approvals to implement the Plan. In the event that a Partner completes an eminent domain proceeding for the benefit of the LOTT Wastewater Alliance to secure property or property rights for Joint Facilities, the LOTT Wastewater Alliance shall compensate the Partner for its expenses and for just compensation paid for such property and property rights.

ARTICLE VI
STATE ENVIRONMENTAL POLICY ACT

Section 6.1 COORDINATION OF ENVIRONMENTAL REVIEW & SEPA REQUIREMENTS

The Partners and the LOTT Wastewater Alliance are obligated to identify and consider environmental impacts, alternatives and mitigation measures in the development of plans, programs and facilities relating to wastewater management. The State Environmental Policy Act, Ch. 43.21C RCW, and the regulations and ordinances promulgated under it ("SEPA"), establishes procedures for preparing environmental documents and obtaining input from citizens and agencies, and requires identification of a lead agency to prepare the environmental documents and administer the environmental review process. SEPA also requires agencies to integrate environmental review at the earliest time in the decision making process to ensure that planning and decisions reflect environmental values. The Partners agree that it is generally in the public interest for the LOTT Wastewater Alliance to directly manage environmental review of LOTT proposals and actions to assure the early consideration of environmental factors.

For purposes of this Article VI, "action" has the meaning given it in WAC 197-11-704, and "proposal" has the meaning provided in WAC 197-11-784.

Section 6.2 SEPA COMPLIANCE

a) LOTT as an Agency under SEPA. The LOTT Wastewater Alliance shall fulfill the responsibilities of an agency pursuant to SEPA in connection with all proposals and actions which it undertakes. By carrying out the responsibilities of an agency under SEPA, the LOTT Wastewater Alliance shall satisfy any SEPA obligations that apply directly to the LOTT Wastewater Alliance as well as any that may apply to indirectly due to the Alliance's acting on the Partners' behalf.

b) Procedural Responsibilities as Lead Agency. With respect to LOTT proposals and actions, the LOTT Wastewater Alliance shall carry out the Partners' lead agency procedural responsibilities under SEPA, including the procedural functions of a "lead agency" under SEPA, WAC 197-11-758; however, the Partners retain their legal authority to assert lead agency status for projects located within their respective jurisdictions as permitted under SEPA, including, for example, by WAC 197-11-340(2)(e) and 197-11-948. This includes, without limitation, authority to adopt agency SEPA rules, to establish an administrative appeals process, to enter into lead agency agreements pursuant to WAC 197-11-944, and to appoint a "responsible official."

Section 6.3 RETENTION OF SUBSTANTIVE AUTHORITY

The LOTT Wastewater Alliance's authority under this Article VI is to implement the procedural requirements of SEPA for LOTT proposals and actions. The Partners retain their respective substantive authorities to condition or deny such proposals and actions in their respective jurisdictions as part of their zoning, land use, SEPA, or other permitting processes.

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ARTICLE VII
PRETREATMENT

Section 7.1 Pretreatment Program

Pursuant to this Agreement, the LOTT Wastewater Alliance will own and operate the LOTT System, and will hold permits required to operate the LOTT System, including the NPDES waste discharge permit for the LOTT Treatment Plant.

Various facilities located within the Partners' respective jurisdictions currently contribute wastewater which includes commercial and industrial waste to the LOTT System. Such facilities are referred to in this Article as "Industrial Users."

The LOTT Wastewater Alliance must implement and enforce a pretreatment program to control discharges from all Industrial Users of the LOTT System pursuant to requirements set out in 40 CFR Part 403, Ch. 173-208 WAC, and the NPDES Permit. In this Article, the Partners agree to adopt and maintain sewer use ordinances that subject Industrial Users within their respective boundaries to the necessary pretreatment controls, and to implement and enforce such sewer use ordinances.

The Partners stipulate their willingness and ability to assume enforcement powers of the Washington State Department of Ecology, and shall adopt, maintain, and actually enforce the LOTT Discharge and Industrial Pretreatment Regulations (the "LOTT Regulations") as contained in Exhibit "G" of this Agreement, and as the LOTT Regulations may be amended from time to time by the LOTT Board. No Partner shall retain or adopt any ordinance provisions conflicting with or superseding the LOTT Regulations.

The LOTT Wastewater Alliance shall conduct an annual review of the LOTT Regulations and prepare any revisions necessary to provide adequate protection of the LOTT System and maintain compliance with Federal General Pretreatment Regulations and applicable state regulations. Any proposed revisions shall be submitted to the LOTT Board for approval. The LOTT Regulations shall not be modified or amended except by unanimous agreement of the LOTT Board. The Partners agree to immediately consider for adoption any revisions to the LOTT Regulations approved by the LOTT Board. The Partners agree to consider and act upon such revisions within ninety (90) days of approval by the LOTT Board.

Section 7.2 Pretreatment Charges and Permits

Where the LOTT Regulations call for the development of permits, permit fees, charges for discharge violations, and/or enforcement actions, the Partners agree to establish these permits, fees, charges and actions through their annual review of the LOTT operating budget based on predicted costs developed using information provided by the LOTT Wastewater Alliance. Such permit fees, charges and actions shall become effective upon unanimous approval by the LOTT Board. Permits for Industrial Users shall be issued by the Partners. Partners shall provide the LOTT Wastewater Alliance with fourteen (14) days' written notice

before issuing permits so that LOTT Wastewater Alliance personnel can review and comment on the proposed terms and conditions of such permits.

Section 7.3 Inspections; Imminent Danger

The Partners agree that LOTT Wastewater Alliance personnel, or the LOTT Wastewater Alliance's agents, shall coordinate with the appropriate Partner jurisdiction personnel to conduct activities within each Partner's jurisdiction to collect information on compliance with the LOTT Regulation, Federal General Pretreatment Regulation, and state requirements. These activities shall include, among others, coordination with the Department of Ecology Pretreatment Program, updating the industrial waste survey, developing industrial discharge permits and compliance schedules, conducting compliance monitoring and inspections, reviewing industrial self monitoring reports, and notifying the Partners of instances of non-compliance. In order to accomplish these requirements the Partners agree that:

a) Agents of the LOTT Wastewater Alliance may, following reasonable notice to the Partner, enter and inspect at any reasonable time any part of the Local System of any Partner, and any records pertaining to the Partner's pretreatment program.

b) To the extent allowed by law, duly authorized agents of the LOTT Wastewater Alliance, in coordination with Partner personnel, shall be permitted to enter onto private property to inspect Industrial Users. Upon the request of the LOTT Wastewater Alliance, the Partners shall promptly make all necessary legal and administrative arrangements for these inspections.

c) Where a discharge to the wastewater treatment system reasonably appears to present an imminent danger to the health and welfare of persons, or an imminent danger to the environment, or threatens to interfere with the operation of the wastewater treatment system, the LOTT Wastewater Alliance may, in cooperation with a Partner, immediately initiate steps to identify the source of the discharge and to halt or prevent the discharge.

Section 7.4 Enforcement

Whenever provided notice that a discharger has failed or has refused to fulfill any requirements of either the LOTT Regulations, an Industrial Discharge Permit, or a Compliance Schedule, the Partner with jurisdiction over the discharger shall use its legal authority to enforce the applicable regulations. Such enforcement may include collection of permit fees and industrial surcharges, application of fines and/or civil penalties, seeking injunctive relief, and /or interruption of sewer services.

Should a dispute arise between any Partner and personnel or agents of the LOTT Wastewater Alliance regarding any application of the LOTT Regulations, the issue shall be submitted to the LOTT Board. The determination of a majority of the LOTT Board shall be given in writing and the recommended action shall be followed by all Partners.

Section 7.5 Accountability

A majority of the LOTT Board may penalize any single Partner for failure to apply and enforce the LOTT Regulations. This penalty may include requiring that the total of all fines, fees and other charges which are due and payable be paid by the offending Partner to LOTT for each day the Partner fails to apply and enforce the regulations. The offending Partner shall indemnify and hold harmless the LOTT Wastewater Alliance against any damages, penalties or other losses incurred as a result of the Partner's failure to enforce the LOTT Regulations. Without limitation, the LOTT Wastewater Alliance may obtain the remedy of specific performance from a court of competent jurisdiction to require the offending Partner to enforce the LOTT Regulations.

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ARTICLE VIII
FLOW REDUCTION & PREVENTION OF CAPACITY DEGRADATION

Section 8.1 PRIOR AGREEMENTS RELATING TO INFLOW AND INFILTRATION AND JOINT FLOW REDUCTION PROJECTS.

The Intergovernmental Contract for Inflow and Infiltration Management and New Capacity Planning, dated March 27, 1995 (see Exhibit J) and the Interlocal Cooperation Agreement Between Thurston County and the Cities of Lacey, Olympia, and Tumwater Regarding Joint Wastewater Flow Reduction and Water Conservation Projects (with attachments), dated May 28, 1997 (see Exhibit K) shall continue in force according to their terms, subject to amendment, modification, or termination by the Partners. With approval of this Agreement the "December 31, 1999" dates in the second paragraph of Section 4 (c) of the Intergovernmental Contract for Inflow and Infiltration Management and New Capacity Planning, dated March 27, 1995 (Exhibit J) are amended to "December 31, 2001." This amendment is reflected in Exhibit J.

Section 8.2 Commitment to Support Volume Based Billing by the Partners

As early as practical, but in no event later than one year after Consolidation, the LOTT Board will develop economic incentives that assist individual Partners choosing to implement residential sewer rates based in some degree on wastewater discharge volumes and designed to encourage lower residential wastewater discharge.

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ARTICLE IX
[RESERVED]

[Reserved for additional subject]

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ARTICLE X
LEGAL RELATIONS

Section 10.1 EFFECTIVE DATE & TERM OF AGREEMENT

a) Effective date. This Agreement shall become effective on the first date when all of the following events have occurred: i) the Agreement has been duly executed by all of the Partners; ii) the Agreement has been filed with the Thurston County Auditor pursuant to RCW 39.34.040; and iii) the Agreement has been approved pursuant to RCW 39.34.050.

b) Duration. Commencing on the effective date specified above, this Agreement shall be for a term of 35 years or such longer period as any LOTT Debt is outstanding or the payment thereof is not fully provided for, secured and funded.

Section 10.2 WITHDRAWAL BY A PARTNER

Any Partner may individually withdraw from the obligations of this Agreement with the consent of all of the other Partners, which consent shall not be unreasonably withheld, after all LOTT Debt is retired or payment thereof is fully provided for, secured and funded, and the remaining Partners shall continue to be bound by this Agreement as it may be amended.

Section 10.3 AMENDMENT OF AGREEMENT AND ORGANIZATION

This Agreement may be amended with the approval of the legislative bodies of the Partners. The LOTT Wastewater Alliance may be converted into a separate municipal corporation if and as permitted by law. Upon the creation of such a separate municipal corporation, all LOTT Wastewater Alliance rights and obligations under this Agreement shall transfer to that new municipal corporation.

Section 10.4 NOTICE

Notices required to be given to Partners shall be deemed given when served on the respective City Clerks and the Clerk of the Board of County Commissioners of the County. When members of the LOTT Board must be notified, notice to one member thereof from each Partner shall be sufficient compliance, but reasonable efforts shall be made to give notice to every member.

Section 10.5 RELATIONSHIP TO 1976 INTERGOVERNMENTAL CONTRACT

As detailed in Article XI, the 1976 Intergovernmental Contract remains in force until Consolidation. Upon Consolidation, the 1976 Intergovernmental Contract as described in Exhibit A terminates in its entirety.

Section 10.6 RESOLUTION OF LEGAL DISPUTES

a) To effect a quick and efficient resolution of legal disputes that may arise under this Agreement, the Partners establish the following procedure. All claims or disputes concerning the interpretation or application of this Agreement or breach thereof ("Dispute") shall be decided exclusively by the following dispute resolution procedure unless all Partners agree in writing otherwise. This dispute resolution procedure applies only to disputes of a legal nature, and shall not be construed to apply to legislative or policy matters that are within the discretion or authority of the LOTT Board or the Partners.

b) Each Partner shall use its best efforts to resolve issues prior to giving Notice of Dispute and invoking the procedures set forth in this Section. In the event that any Partner is not satisfied with the results of the resolution, that Partner, acting through its representative on the LOTT Board, shall give prompt written notice of any Dispute to the other Partners' representatives on the LOTT Board, with a copy to the LOTT administrator or executive director. This notice, herein referred to as a "Notice of Dispute," shall clearly state the subject matter of the unresolved issues and the relief requested.

c) Level I. Within ten (10) working days of receipt of a Notice of Dispute, each Partner's representative on the LOTT Board shall designate a representative and the designated representatives shall meet and confer and attempt to resolve the Dispute for a period not to exceed five (5) working days. If the Dispute is not resolved at the close of the Level I meeting, the designated representatives shall prepare before adjournment of the meeting a written memorandum summarizing the matters that remain at issue.

d) Level II. If the Dispute is not resolved within 48 hours of the close of the Level I meeting, each designated representative shall meet with that Partner's representative on the LOTT Board to discuss the Dispute and the memorandum. Within ten (10) working days of the close of the Level I meeting, the designated representatives of the Partners shall meet and confer and attempt to resolve the Dispute for an additional period not to exceed five (5) working days. Attendance by LOTT Board members at the Level II meeting is optional. If the Partners are not able to resolve the Dispute in the Level II meeting, the designated representatives shall discuss the use of mediation, arbitration, or other altemative dispute resolution process before concluding the Level II meeting.

e) The terms of the resolution of all Disputes concluded in Level I or II meetings shall be memorialized in writing and signed by each Partner's representative on the LOTT Board.

f) If the Dispute is not resolved within 48 hours of the close of the Level II meeting, then a) the Partners may mediate the issue; b) the Partners may submit the dispute to the Superior Court of Thurston County for arbitration proceedings provided by Chapter 7.04 RCW; or c) any Partner may commence a civil action to resolve the Dispute, unless the Parties agree otherwise in writing. The Superior Court of Thurston County shall be the exclusive venue for the filing of any action, and this Agreement shall be governed by Washington law. Any mediation or arbitration shall be limited to the interpretation and application of this Agreement and may not

impair the contract and debt obligations of LOTT or the powers of LOTT to fix the budget for and determine the methods used in the management of the Joint Facilities.

Section 10.7 Partner Obligation pending Resolution of Disputes

The initiation or existence of a dispute between the Partners or between one or more Partners and the LOTT Wastewater Alliance arising out of or relating to this Agreement shall not relieve or authorize the deferral of the Partners' duty to make payments to the LOTT Wastewater Alliance as provided herein.

Section 10.8 Survival of Obligations

The Partners' obligations under Section 11.2(b) of this Agreement shall survive the expiration or earlier termination of this Agreement.

Section 10.9 Interpretation of Agreement

a) Governing law. This Agreement shall be governed by the laws of the State of Washington. The exclusive jurisdiction and venue for any lawsuit between the Partners arising out of this Agreement shall be in Thurston County Superior Court.

b) Assignment. This Agreement shall be binding on each Partner and the successors to them and may not be assigned in any respect without the consent of all Partners.

c) Third party beneficiaries. The Partners expressly do not intend to create any right, obligation or liability, or promise any performance, to any third party. The Partners have not created any right for any third party to enforce this Agreement.

d) Severability. It is the belief of the Partners that all provisions of this Agreement are lawful. If any covenant or provision of this Agreement shall be finally adjudicated by a court of competent jurisdiction to be invalid or unenforceable, such adjudication shall not affect the validity, obligation or performance of any other covenant or provision, or part thereof, which in itself is valid if such remainder conforms to the terms and requirements of applicable law and the intent of this Agreement. In such event, the Partners shall enter into immediate negotiations for the purpose of arriving at a mutually satisfactory replacement of such covenant or provision.

e) Entire Agreement. This Agreement embodies the Partners' entire agreement on the issues covered by it, except as supplemented by subsequent written agreements that the Parties make. All prior negotiations and draft written agreements are merged into and superseded by this Agreement.

f) Counterparts. This Agreement may be executed in counterparts, each of which shall be considered for all purposes as an original.

Section 10.10 WAIVER

No waiver by any party of any term or condition of this Agreement shall be deemed or construed as a waiver of any other term or condition, nor shall a waiver of any breach be deemed to constitute a waiver of any subsequent breach whether of the same or a different provision of this Agreement.

Section 10.11 REMEDIES

In addition to the remedies provided by law, this Agreement shall be specifically enforceable by any party.

ARTICLE XI
COOPERATION THROUGH CONSOLIDATION PERIOD

Section 11.1 COORDINATION: LOTT BOARD & TAC

a) Parallel oversight. This Agreement is intended to facilitate the operation of the LOTT System, including the integration of the Existing Joint Facilities and new LOTT Wastewater Alliance Joint Facilities, under the management of the LOTT Wastewater Alliance Board of Directors. During the period from the effective date of the Agreement until the date of Consolidation, the LOTT System shall be administered by two parallel organizations composed of members appointed by the Partners who will concurrently serve as TAC members under the 1976 Intergovernmental Contract and as the Board of Directors of the LOTT Wastewater Alliance. The same Partner representatives will serve as TAC members and as LOTT Board members. Therefore, the Partner representatives may be called upon to act as TAC, in their role under the 1976 Intergovernmental Contract, or as the LOTT Board, in their role under this Agreement, or in a joint capacity, as circumstances may determine.

b) Extraordinary cooperative efforts. The Partners recognize that, during at least the initial twelve months after the effective date of this Agreement, extraordinary cooperative efforts will be required to coordinate the legal and service obligations of the LOTT System and to complete all of the legal and administrative steps necessary to consolidate the TAC and LOTT Wastewater Alliance operations.

i) The TAC and the LOTT Board shall coordinate the LOTT functions under the two legal instruments so that the ratepayers are not disadvantaged by the use of concurrent agreements.

ii) The Partners shall cooperate as may be necessary to enable the LOTT Board to operate as a legal and independent entity.

iii) During the initial twelve month period under this Agreement, the LOTT Board shall make quarterly reports to the Partners' legislative bodies on the progress made on implementing an independent LOTT entity and any steps taken to assume legal obligations and achieve Consolidation.

Section 11.2 TRANSFER AND RELEASE

a) Transfer of Existing Joint Facilities. Each Partner agrees to transfer all right, title, and interest in and to the Existing Joint Facilities to the LOTT Wastewater Alliance. Each Partner further agrees to execute or approve any and all deeds, leases, instruments, documents and resolutions or ordinances necessary to give effect to the terms of this Agreement.

b) Release of Claims. Each Partner hereby releases and agrees to hold each other Partner harmless from any and all claims, demands, and causes of action arising from or relating to the legal or equitable ownership of Existing Joint Facilities prior to effective date of this

Agreement, including the extent or nature of such ownership and related claims to reimbursement or compensation, except as provided in the Agreement Regarding Additional LOTT Joint Facilities of June 21, 1999 (see Exhibit I) concerning City of Lacey facilities.

Section 11.3 O & M CONTRACT WITH OLYMPIA.

To provide for an orderly transition of facilities operations, the LOTT Wastewater Alliance and Olympia shall enter into an O&M Contract generally in the form set out in Exhibit H. This contract does not include administrative staff reporting directly to the LOTT Board. The term of the O&M Contract shall commence on the date of Consolidation and terminate one year after the LOTT Board provides notice of termination to Olympia, which notice shall not be given earlier than December 31, 1999. This Section shall not preclude other contracts with Olympia at the LOTT Board's discretion.

Section 11.4 ADMINISTRATIVE AND TREASURY SERVICES CONTRACT WITH OLYMPIA.

To provide for an orderly transition of administrative and treasury services, the LOTT Wastewater Alliance and Olympia shall enter into an Administrative and Treasury Services Contract generally in the form set out in Exhibit L. The term of the Administrative and Treasury Services Contract shall commence on the date of Consolidation and terminate one year after the LOTT Board provides notice of termination to Olympia, which notice shall not be given earlier than December 31, 1999. This Section shall not preclude other contracts with Olympia at the LOTT Board's discretion.

Section 11.5 CONSOLIDATION PRINCIPLES AND OBJECTIVES

The Partners shall use their best efforts and work together in good faith to achieve Consolidation by meeting the following objectives:

a) **LOTT Wastewater Alliance.** The LOTT Wastewater Alliance shall have been formed, obtained Section 501(c)(3) status from the Internal Revenue Service, and demonstrated its capability of carrying out its responsibilities under this Agreement.

b) **Olympia Bonds.** All of the Bonds shall have been paid or defeased under a financing arrangement where LOTT funds pay for all transaction costs, 88 percent of which shall be paid using Capacity Development Charge receipts and 12 percent using Wastewater Service Charge receipts. In addition, the State of Washington loan to LOTT, evidenced by the Olympia Water and Sewer Revenue Bonds (1992) ultimately issued in a principal amount of $36,579,836.19, shall be assumed, assigned or otherwise transferred from Olympia to the LOTT Wastewater Alliance. The LOTT Wastewater Alliance shall pay the bonds and meet all covenants set forth in Olympia ordinances authorizing the bonds.

c) **Rates.** The Partners shall have approved and imposed the rates and charges specified in Article III of this Agreement, and the proceeds are under the control of and available for use by the LOTT Wastewater Alliance.

d) Transfer of Existing Joint Facilities. All of the Existing Joint Facilities, as identified in Exhibit B, shall have been transferred to the LOTT Wastewater Alliance by an appropriate instrument or legislative action, or such transfers shall have been substantially provided for to the satisfaction of the LOTT Board.

e) O&M Contract. The LOTT Wastewater Alliance and Olympia shall have entered the O&M Contract to take effect upon Consolidation.

f) Administrative and Treasury Services Contract. The LOTT Wastewater Alliance and Olympia shall have entered the Administrative and Treasury Services Contract to take effect upon Consolidation.

g) Vendor contracts. Olympia shall have assigned to the LOTT Wastewater Alliance all consulting, service, supply, utility and other similar contracts relating to Existing Joint Facilities or the LOTT System, unless such assignment is not legally feasible or would represent any significant additional costs or risk to Olympia or unless the O&M Contract provides for Olympia to continue to administer or to enter such contracts relating to Joint Facilities. If contracts held by Olympia for the benefit of LOTT cannot be so assigned or terminated and then assumed by the LOTT Wastewater Alliance without cost or risk to Olympia, then such contracts shall be allowed to expire at the end of their normal term and the LOTT Wastewater Alliance shall secure such services, supplies, materials or construction in the future under separate agreements.

h) Permits. Olympia and the other Partners have assigned or transferred the LOTT Wastewater Alliance NPDES permits and all other permits, certificates, and licenses necessary or useful in ownership, operation, or control of the LOTT System or Existing Joint Facilities.

i) Other necessary steps. As determined by the LOTT Board, the Partners shall take such other steps and actions as are necessary and appropriate to concentrate ownership and control of Existing Joint Facilities and the LOTT System in the LOTT Wastewater Alliance and to enable the LOTT Wastewater Alliance to function as a comprehensive wastewater treatment and management entity.

Section 11.6 CONSOLIDATION EVENT

a) LOTT Board finding. When it determines that the Consolidation objectives set out in Section 11.5 have been substantially achieved, the LOTT Board shall adopt a resolution that finds and declares that Consolidation has been achieved. The Partners acknowledge that the LOTT Board may make a finding of Consolidation that reflects substantial attainment of the objectives.

b) Effect on 1976 Intergovernmental Contract and TAC. Upon the LOTT Board's adoption of the Consolidation resolution pursuant to paragraph (a) of this section, the following events shall be deemed to occur:

i) 1976 Intergovernmental Contract shall terminate as provided in Section 10.5;
ii) TAC shall be dissolved;
iii) The O & M Contract shall enter into force; and
iv) The Administrative and Treasury Services Contract shall enter into force.

IN WITNESS WHEREOF, each Party has caused this Agreement to be signed by its duly authorized officer or representative as of the date set forth below its signature.

CITY OF OLYMPIA

By _____

Its: _____

Date: _____

Attest: By _____

CITY OF LACEY

By _____

Its: _____

Date: _____

Attest: By _____

CITY OF TUMWATER

By _____

Its: _____

Date: _____

Attest: By _____

THURSTON COUNTY

By _____

Its: _____

Date: _____

Attest: _____

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Exhibit A

1976 INTERGOVERNMENTAL AGREEMENT, AS AMENDED
TABLE OF CONTENTS

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Exhibit B

EXISTING JOINT FACILITIES

Existing Joint Facilities are comprised of the following facilities:

1) All facilities designated as Joint Facilities in the 1976 Intergovernmental Contract.

2) Modifications to the LOTT Wastewater Treatment Plant and outfalls.

3) The 1990 and 1998 modifications to Joint Facilities in the vicinity of Henderson Blvd./Plum. Street and Union Avenue

4) Modifications to Joint Facilities in Martin Way.

5) Planned modifications to the Capitol Lake Pump Station and force main.

6) Lacey's interceptor extending north and east from the LOTT joint facilities at Martin Way and Sleater-Kinney Road to the intersection of Martin Way and Marvin Road including Lacey's Martin Village Pump Station.

7) Planned Southern Connection south from the Capitol Lake Pump Station to a point on the eastern boundary of Tumwater Falls Park on Capitol Boulevard south of the bridge across the Deschutes River.

All Existing Joint Facilities include any and all easements, rights of way, permits and approvals, licenses, franchises, and other property interests necessary or useful in the ownership or operation of the specific facility.

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Exhibit C

ARTICLES OF INCORPORATION

of the

LOTT WASTEWATER ALLIANCE

The undersigned, to form a nonprofit corporation under the provisions of the Washington Nonprofit Corporation Act (Chapter 24.03 of the Revised Code of Washington), as amended, hereby submit the following Articles of Incorporation.

Article 1. NAME

The name of the corporation shall be the LOTT Wastewater Alliance (the "Corporation").

Article 2. DURATION

The Corporation shall have perpetual existence.

Article 3. PURPOSES AND POWERS

Section 3.1. Purposes.

This Corporation is organized exclusively for one or more of the purposes specified in Section 501(c)(3) of the Internal Revenue Code of 1986, as amended. The Corporation shall exist for the primary purpose of lessening the burdens of the various municipal governments that require wastewater or other governmental services in the area to be served by the Corporation. The Corporation was created pursuant to that certain Interlocal Cooperation Act Agreement for Wastewater Facilities Management by LOTT Alliance by and between the City of Olympia, Washington ("Olympia"); the City of Lacey, Washington ("Lacey"); the City of Tumwater, Washington ("Tumwater"); and Thurston County, Washington (the "County"), dated _____, _____ ("Agreement"). By way of illustration, and not by way of limitation, the Corporation intends to lessen the burdens of government by implementing a wastewater resource management plan, which anticipates the development of additional wastewater treatment capacity, and operating and maintaining all or part of the wastewater facilities.

In furtherance of such purposes, this Corporation shall have the following additional purposes and powers:

(a) implement and otherwise effectuate the Agreement;

(b) administer property, including without limitation, selling, leasing, exchanging or otherwise distributing real and personal property;

(c) contract for services and work and enter into other legal instruments binding the Corporation or provide for benefits to be secured by the Corporation;

(d) aid, support, and assist by contributions or otherwise, other organizations organized and operated exclusively for purposes specified in Section 501(c)(3) of the Internal Revenue Code of 1986, as amended, no part of the net earnings of which inures to the benefit of any private shareholder or individual, and no substantial part of the activities of which is carrying on propaganda, or otherwise attempting to influence legislation; and

(e) engage in any and all lawful activities which may be necessary, useful or desirable for the furtherance, accomplishment, fostering or attainment of the foregoing purposes, either directly or indirectly and either alone or in conjunction or cooperation with others, whether such others be persons or organizations of any kind or nature, such as corporations, firms, associations, trusts, institutions, foundations, or governmental bureaus, departments, or agencies.

Section 3.2. Powers.

In general, and subject to such limitations and conditions as are or may be prescribed by law, these Articles of Incorporation or the Corporation's Bylaws, the Corporation shall have all powers which now or hereafter are conferred by law upon a corporation organized for the purposes set forth above, are necessary or incidental to the powers so conferred, or are conducive to the attainment of the Corporation's purposes.

Article 4. LIMITATIONS

All of the purposes and powers of the Corporation shall be exercised exclusively for charitable purposes in such manner that the Corporation shall qualify as an exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1986 or the corresponding provision of any future United States Internal Revenue law, and that contributions to the Corporation shall be deductible under Section 170(c)(2) of the Internal Revenue Code of 1986, or the corresponding provision of any future United States Internal Revenue law.

No substantial part of the activities of the Corporation shall be the carrying on of propaganda, or otherwise attempting to influence legislation, except as otherwise permitted by an organization described in Section 501(c)(3) of the Internal Revenue Code of 1986, or the corresponding provision of any future United States Internal Revenue law. The Corporation shall not participate in, nor intervene in any political campaign, including the publishing or distribution of statements, on behalf of or in opposition to any candidate for public office.

Notwithstanding any other provisions of these Articles, the Corporation shall not carry on any activities not permitted to be carried on (a) by a corporation exempt from federal and state income taxes under Section 501(c)(3) of the Internal Revenue Code of 1986 or the corresponding provision of any future United States Internal Revenue law, or (b) by a corporation, contributions to which are deductible under Section 170(c)(2) of the Internal Revenue Code of 1986, or the corresponding provision of any future United States Internal Revenue law.

No part of the net earnings of the Corporation shall inure to the benefit of, or be distributable to, its members (if any), directors, trustees, officers, or other private persons, except

that the Corporation is authorized or empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of its purposes.

Article 5. DISSOLUTION

Upon the winding up and dissolution of the Corporation, the assets of the Corporation remaining after payment, or provision for payment, of all debts and liabilities of the Corporation, shall be distributed in trust to either a governmental entity or municipal corporation in such a manner as to best accomplish the goals of the Corporation as provided in a plan of final liquidation and dissolution as may be approved by the Corporation's Board of Directors. If, however, (i) such distribution would not be in compliance with Section 501(c)(3) of the Internal Revenue Code of 1986; (ii) no such governmental entity or municipal corporation is willing or able to accept the distribution; or (iii) if such distribution is not otherwise possible, then the distribution shall be made to an organization or organizations recognized as exempt from taxation under Section 501(c)(3) of the Internal Revenue Code of 1986, or the corresponding provision of any future United States Internal Revenue law (to be used exclusively to accomplish the purposes for which this Corporation is organized) as may be provided in a plan of final liquidation and dissolution approved by the Corporation's Board of Directors.

Article 6. MEMBERS

The qualifications of members, the property, voting and other rights, privileges, and responsibilities of members shall be set forth in the Bylaws.

Article 7. DIRECTORS

The management of the Corporation shall be vested in a Board of Directors pursuant to the Washington Nonprofit Corporation Act, these Articles of Incorporation and the Corporation's Bylaws. The Board shall consist of directors and alternate directors. The powers, duties, number, qualifications, terms of office, manner of election, time and criteria for removal, and time and place of meetings of the directors and alternate directors shall be as set forth in the Bylaws of the Corporation.

The names and addresses of the persons who are to serve as the initial directors of the Corporation are as follows:

Name	Address

The names and addresses of the persons who are to serve as the initial alternate directors of the Corporation are as follows:

Name (Alternate For)	Address

For purposes of these Articles of Incorporation, and unless the context otherwise clearly indicates, the term "director" shall include both directors and alternate directors.

Article 8. DIRECTOR LIABILITY LIMITATIONS

A director shall have no liability to the Corporation for monetary damages for conduct as a director, except for acts or omissions that involve intentional misconduct by the director, or for any transaction from which the director will personally receive a benefit in money, property or services to which the director is not legally entitled. If the Washington Nonprofit Corporation Act is hereafter amended to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of a director shall be eliminated or limited to the full extent permitted by the Washington Nonprofit Corporation Act, as so amended without need for further amendment of these Articles by the Corporation's Board of Directors. Any repeal or modification of this Article shall not adversely affect any right or protection of a director of the Corporation existing at the time of such repeal or modification for or with respect to an act or omission of such director occurring prior to such repeal or modification.

Directors of the Corporation shall not be personally liable to the Corporation or its members, if any, for monetary damages for conduct as a director, except for acts or omissions that involve intentional misconduct by a director or a knowing violation of law by a director, where the director votes or assents to a distribution which is unlawful or violates the requirements of these Articles of Incorporation, or for any transaction from which the director will personally receive a benefit in money, property, or services to which the director is not legally entitled.

Article 9. INDEMNIFICATION

Section 9.1. Right to Indemnification.

Each person who was, or is threatened to be made a party to or is otherwise involved (including, without limitation, as a witness) in any actual or threatened action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he or she is or was a director or officer of the Corporation or, while a director or officer, he or she is or was serving at the request of the Corporation as a director, director, officer, employee or agent of another corporation or of a partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans (whether the basis of such proceeding is an alleged action

in an official capacity as a director, trustee, officer, employee or agent or in any other capacity while serving as a director, trustee, officer, employee or agent), shall be indemnified and held harmless by the Corporation, to the full extent permitted by applicable law as then in effect, against all expense, liability and loss (including attorney's fees, judgments, fines, ERISA excise taxes or penalties and amounts to be paid in settlement) actually and reasonably incurred or suffered by such person in connection therewith, and such indemnification shall continue as to a person who has ceased to be a director, trustee, officer, employee or agent and shall inure to the benefit of his or her heirs, executors and administrators; however, except as provided in Section 9.2 with respect to proceedings seeking solely to enforce rights to indemnification, the Corporation shall indemnify any such person seeking indemnification in connection with a proceeding (or part thereof) initiated by such person only if such proceeding (or part thereof) was authorized by the Board of Directors of the Corporation. The right to indemnification conferred in this Section 9.1 shall be a contract right and shall include the right to be paid by the Corporation the expenses incurred in defending any such proceeding in advance of its final disposition; however, the payment of such expenses in advance of the final disposition of a proceeding shall be made only upon delivery to the Corporation of an undertaking, by or on behalf of such director or officer, to repay all amounts so advanced if it shall ultimately be determined that such director or officer is not entitled to be indemnified under this Section 9.1 or otherwise.

Section 9.2. Right of Claimant to Bring Suit.

If a claim for which indemnification is required under Section 9.1 is not paid in full by the Corporation within sixty (60) days after a written claim has been received by the Corporation, except in the case of a claim for expenses incurred in defending a proceeding in advance of its final disposition, in which case the applicable period shall be twenty (20) days, the claimant may at any time thereafter bring suit against the Corporation to recover the unpaid amount of the claim and, to the extent successful in whole or in part, the claimant shall also be entitled to be paid the expense of prosecuting such claim. The claimant shall be presumed to be entitled to indemnification under this Article upon submission of a written claim (and, in an action brought to enforce a claim for expenses incurred in defending any proceeding in advance of its final disposition, where the required undertaking has been tendered to the Corporation), and thereafter the Corporation shall have the burden of proof to overcome the presumption that the claimant is not so entitled. Neither the failure of the Corporation (including its Board of Directors, independent legal counsel or its members, if any) to have made a determination prior to the commencement of such action that indemnification, or the reimbursement or advancement of expenses of the claimant is proper in the circumstances, nor an actual determination by the Corporation (including its Board of Directors, independent legal counsel or its members, if any) that the claimant is not entitled to indemnification or the reimbursement or advancement of expenses, shall be a defense to the action or create a presumption that the claimant is not so entitled.

Section 9.3. Nonexclusivity of Right.

The right to indemnification and the payment of expenses incurred in defending a proceeding in advance of its final disposition conferred in this Article shall not be exclusive of any other right which any person may have or hereafter acquire under any statute, provision of

these Articles of Incorporation, Bylaws, agreement, vote of members, if any, or disinterested directors or otherwise.

Section 9.4. Indemnification of Members.

The Corporation shall hold Corporation members harmless and defend all claims for personal injury or property damage arising out of the Corporation's activities in the same manner as provided for directors and officers under Sections 9.1, 9.2, and 9.3, and only to the extent that such claims, damages, and injuries are not caused by the negligent act or omission of a member to perform required maintenance or other operations or by any member violation of applicable laws or regulations.

Section 9.5. Insurance, Contracts, and Funding.

The Corporation may maintain insurance at its expense to protect itself and any director, trustee, officer, employee, agent or member of the Corporation or another corporation, partnership, joint venture, trust or other enterprise against any expense, liability or loss, whether or not the Corporation would have the power to indemnify such persons against such expense, liability or loss under the Washington Business Corporation Act, as applied to nonprofit corporations. The Corporation may, without further action of the Corporation's members, enter into contracts with any director or officer of the Corporation in furtherance of the provisions of this Article and may create a trust fund, grant a security interest or use other means (including, without limitation, a letter of credit) to ensure the payment of such amounts as may be necessary to effect indemnification as provided in this Article.

Section 9.6. Indemnification of Employees and Agents of the Corporation.

The Corporation may, by action of its Board of Directors, provide indemnification and pay expenses in advance of the final disposition of a proceeding to employees and agents of the Corporation with the same scope and effect as the provisions of this Article with respect to the indemnification and advancement of expenses of directors and officers of the Corporation or pursuant to rights granted pursuant to, or provided by, the Washington Business Corporation Act, as applied to nonprofit corporations, or otherwise.

Article 10. BYLAWS

Bylaws of the Corporation may be adopted by the Board of Directors at any regular meeting or any special meeting called for that purpose, so long as they are not inconsistent with the provisions of these Articles of Incorporation. The authority to make, alter, amend or repeal Bylaws is vested in the Board of Directors and may be exercised at any regular or special meeting of the Board of Directors.

Article 11. INCORPORATORS

The name and address of the incorporators of the Corporation are:

Name	Address

Article 12. REGISTERED OFFICE AND AGENT

The address of the initial registered office of the Corporation shall be _____, Washington 98_____. The name of the initial registered agent of the Corporation at such address shall be _____.

Article 13. AMENDMENTS

These Articles of Incorporation may be amended as allowed by the Washington Non-profit Corporation Act and pursuant to a unanimous vote of the Board of Directors.

IN WITNESS WHEREOF, the undersigned have signed these Articles of Incorporation:

_____	_____
(Signature)	(Signature)
Print name: _____	Print name: _____
Date: _____	Date: _____
_____	_____
(Signature)	(Signature)
Print name: _____	Print name: _____
Date: _____	Date: _____

CONSENT TO SERVE AS REGISTERED AGENT

I, _____, hereby consent to serve as Registered Agent in the State of Washington for the LOTT Alliance. I understand that as agent for the corporation, it will be my responsibility to receive service of process in the name of the corporation; to forward all mail to the corporation; and to immediately notify the Office of the Secretary of State in the event of my resignation or of any changes in the registered office of the corporation for which I am agent.

DATED: _____.

_____
(Signature of agent)

Address of Registered Office and Agent:

Exhibit D

BYLAWS

of the

LOTT WASTEWATER ALLIANCE

The Board of Directors of the LOTT Wastewater Alliance (the "Corporation") hereby adopts the following Bylaws:

Article 1. OFFICES

Section 1.1. Principal Office.

The principal office of the Corporation shall be located at its principal place of business or such other place as the Board of Directors may designate. The Corporation may have such other offices, either within or outside of the State of Washington, as the Board of Directors may designate or as the business of the Corporation may require.

Section 1.2. Registered Office and Agent.

The Corporation's initial registered office and registered agent shall be as set forth in the Articles of Incorporation. The registered agent and the address of the registered office may be changed by the Board of Directors.

Article 2. MEMBERSHIP

Section 2.1. Members.

The Corporation shall have one class of members consisting of four Members. The four Members of the Corporation shall be the City of Olympia, Washington ("Olympia"); the City of Lacey, Washington ("Lacey"); the City of Tumwater, Washington ("Tumwater"); and Thurston County, Washington (the "County").

Section 2.2. No Voting Rights.

Except as expressly provided in this Section 2.2, the Members of the Corporation shall not be members within the meaning of RCW 24.03 and shall not have the authority to manage or vote on any matters related to the business and affairs of the Corporation. Each Member shall have the right to appoint one Director and one Alternate Director to represent such Member on the Board of Directors.

Section 2.3. Meetings.

Because Members do not have voting rights and because each Member appoints a representative Director and Alternate Director to the Board of Directors, there shall be no annual or special meetings of the membership.

Article 3. BOARD OF DIRECTORS

Section 3.1. General Powers.

The business and affairs of the Corporation shall be managed by a Board of Directors. The actions of the Board shall be consistent with and shall effectuate the terms of that certain Interlocal Cooperation Act Agreement for Wastewater Facilities Management by LOTT Wastewater Alliance by and between the Members, dated _____, _____ ("Agreement"), including without limitation, adopting the revenue allocation formula set forth in the Agreement. The Board shall have the power to do, but shall not be limited to, the following:

(a) Acquire, construct, receive, own, manage, lease, sell, and otherwise dispose of real property, personal property, intangible property, and the facilities of the Corporation;

(b) Plan, develop, operate, replace, and maintain the facilities of the Corporation;

(c) Enter into contracts for goods, services, work, or other benefits to the Corporation;

(d) Borrow money and issue debt instruments or provide for the borrowing of money and issuance of debt instruments;

(e) Receive gifts or grants for the planning, design, development, construction, or operation of the facilities of the Corporation, or for the assets or programs to further the Corporation's purposes, or for other purposes necessary to carry out the purposes of the Corporation;

(f) Lend money or provide services or facilities to any Member or other governmental utility or governmental service provider in furtherance of the Corporation's purposes;

(g) Invest Corporate funds;

(h) Sue and be sued;

(i) Hire and fire employees of the Corporation;

(j) Fix salaries, wages and other compensation of officers and employees;

(k) Employ or retain engineering, legal, financial or other specialized personnel and consultants as may be necessary to carry out the purposes of the Corporation;

(l) Impose, alter, regulate, control, and collect rates, charges, and assessments;

(m) Purchase insurance and participate in pooled insurance and self-insurance programs

(n) Indemnify Members, officers, and employees in accordance with applicable law;

(o) Establish policies, guidelines, or rules to carry out the Corporation's powers and responsibilities;

(p) Convene or appoint committees and advisory bodies as the Board deems appropriate for Member or public review and comment on Corporate matters, efficient staff and Board work, or any other purpose in the best interests of the Corporation and consistent with applicable law;

(q) Exercise all other powers within the authority of, and that may be exercised individually by all of, the Members with respect to sewage or wastewater conveyance, treatment, disposal, reclamation, reuse, conservation, or other Corporate purposes or functions as set forth in the Agreement; and

(r) Take any other actions as the Board deems necessary to implement a comprehensive plan and to protect and advance the interests of the Corporation, its property and other assets, its Members, and its ratepayers that are consistent with the Agreement, Chapter 39.34 RCW, and other applicable law.

Section 3.2. Number and Types.

The Board of Directors shall consist of four (4) Directors and (4) Alternate Directors. Each Member shall appoint an Alternate Director to represent such Member at meetings of the Board of Directors in which such Member's Director is not present.

Section 3.3. Qualification and Representation.

Each Director and each Alternate Director must be serving as a member of the legislative body of the Member that has appointed that Director or Alternate Director. Each Director and Alternate Director shall serve at the will and discretion of the legislative body of the Member that appointed the respective Director or Alternate Director. Each Director and Alternate Director shall represent his or her Member in carrying out his or her responsibility to act in the best interests of the Corporation. The Alternate Director appointed by each Member shall be entitled to attend meetings of the Board and to receive notice of such meetings as provided in these Bylaws but shall not be entitled to vote unless the Director appointed by such Member is absent or unless selected to break a tie vote.

Section 3.4. Appointment of Directors.

Subsection 3.4.1. Initial Directors.

Each initial Director and Alternate Director named in the Articles of Incorporation shall serve until he or she resigns, becomes disqualified to serve as a Director or Alternate Director, or is removed or replaced by the legislative body of the Member that he or she represents.

Subsection 3.4.2. Successor Directors.

Each Director and Alternate Director shall be appointed by the legislative body of the Member that each respective Director and Alternate Director is to represent.

Section 3.5. Vacancies.

A vacancy in a Director or an Alternate Director position shall be filled promptly by the legislative body of the Member who appointed the predecessor Director or Alternate Director. Vacancies may occur or arise by removal, disqualification, or resignation, as described below, or by other means.

Subsection 3.5.1. Removal.

A Director or Alternate Director may be removed at any time by, and at the sole discretion of, the legislative body of the Member that appointed the respective Director or Alternate Director. The removal of a Director or Alternate Director shall constitute a vacancy of that position.

Subsection 3.5.2. Disqualification.

Whenever a Director or Alternate Director is no longer qualified to serve as a Director or Alternate Director pursuant to these Bylaws, that Director or Alternate Director shall cease to be a Director or Alternate Director and his or her position shall be considered vacant.

Subsection 3.5.3. Resignation.

Any Director or Alternate Director may resign at any time by delivering written notice to the President or the Secretary of the Corporation at the principal office or registered office of the Corporation, or by giving written notice at any meeting of the Board of Directors. Any such resignation shall take effect at the time specified in the notice, or if the time is not specified, upon delivery of the notice. Upon the effective date of the resignation, that position shall be considered vacant. Unless otherwise specified in the notice, the acceptance of such resignation shall not be necessary to make it effective.

Section 3.6. Compensation and Expenses.

Directors and Alternate Directors shall not receive compensation for their service as Directors and Alternate Directors. Consistent with any applicable law, Directors and Alternate Directors may receive reimbursement for expenditures incurred on behalf of the Corporation.

Article 4. ACTIONS OF BOARD OF DIRECTORS

Section 4.1. Regular Meetings.

Regular meetings of the Board of Directors shall be specified as to the date, time and place for the holding of such regular meetings by the adoption of a resolution of the Board of Directors.

Section 4.2. Special Meetings.

Special meetings of the Board of Directors may be called by or at the written request of the President or any two (2) Directors. Notice of special meetings of the Board of Directors shall be made as set forth in Section 4.6.

Section 4.3. Meetings by Telephone.

Members of the Board of Directors may participate in a meeting of such Board of Directors by means of a conference telephone or similar communication equipment if all persons participating in the meeting can hear each other at the same time and the participation complies with the Open Public Meetings Act, Chapter 42.30, as may be amended. Participation by such means shall constitute presence in person at a meeting.

Section 4.4. Place of Meetings.

All meetings shall be held at the principal office of the Corporation or at such other place within the State of Washington designated by the Board of Directors, by any persons entitled to call a meeting, or by a waiver of notice signed by all of the Directors and Alternate Directors.

Section 4.5. Notice of Meetings.

Where notice of a meeting of the Board of Directors is required by the Articles of Incorporation or these Bylaws, such notice shall be given to each Director and Alternate Director in writing or by personal communication with Director or Alternate Director not less than five (5) calendar days before the meeting. Notices in writing may be hand delivered or sent by U.S. mail or facsimile transmission to the Director or Alternate Director at his or her address shown on the records of the Corporation. Neither the business to be transacted at, nor the purpose of, the meeting need be specified in the notice of such meeting, unless specifically required by the Articles of Incorporation or these Bylaws. If a notice is delivered by mail, the notice shall be deemed effected when deposited in the official government mail properly addressed with postage prepaid. If notice is given by facsimile transmission, the notice shall be deemed effective upon receipt of the facsimile transmission confirmation showing the facsimile transmission was received at the Director's or Alternate Director's facsimile number shown on the records of the Corporation. Facsimile transmission of any signed original document, and retransmission of any signed facsimile transmission shall be the same as delivery of an original document. At the request of the Secretary, any person will confirm facsimile transmitted signatures by signing an original document.

Section 4.6. Waiver of Notice.

Subsection 4.6.1. Written Waiver of Notice.

Whenever any notice is required to be given to any Director or Alternate Director under the provisions of these Bylaws, the Articles of Incorporation or applicable Washington law, a waiver thereof in writing, signed by the person or persons entitled to such notice, whether before or after the time stated therein, shall be deemed equivalent to the giving of such notice. Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the Board of Directors need be specified in the waiver of notice of such meeting.

Subsection 4.6.2. Waiver of Notice by Attendance.

The attendance of a Director or Alternate Director at a meeting shall constitute a waiver of notice of such meeting, except where a Director or Alternate Director attends a meeting for the express purpose of objecting to the transaction of any business because the meeting is not lawfully called or convened.

Section 4.7. Quorum.

The attendance of a majority of Directors (or their respective Alternate Directors) in office shall constitute a quorum for the transaction of business at any meeting of the Board of Directors. For purposes of these Bylaws, "majority" shall mean a number more than one-half. If a quorum is not present at a meeting, any one Director present may adjourn the meeting.

Section 4.8. Manner of Acting.

The act of the majority of the Directors (or their respective Alternate Directors) present at a meeting at which there is a quorum shall be the act of the Board of Directors, unless the vote of a greater number is required, or a tie-breaking procedure is provided by these Bylaws, the Articles of Incorporation, a valid Board resolution, or applicable Washington law.

Subsection 4.8.1. Tie-breaking procedure.

In the event of a tie vote on any matter requiring a majority vote of Directors, the Directors shall: (1) randomly choose an Alternate Director to assist in resolving the tie vote pursuant to these Bylaws; and (2) table the matter to the following Board of Directors meeting, which shall be calendared as a special or regularly scheduled meeting within the next twenty-one (21) days or as soon thereafter as all Directors can be present together with the randomly-chosen Alternate Director. At said meeting, all Directors, including the randomly-chosen Alternate Director, shall participate in the discussion and vote on the matter or related matters until such time as the issue has been resolved by a majority affirmative vote, defeated by a majority vote, or withdrawn.

Subsection 4.8.2. Alternate Director randomly chosen to serve in a tie-breaking situation.

The Board shall select the Alternate Director to assist in resolving a tie vote by a random drawing of the current Alternate Directors' names from a hat or other container; , however, no Alternate Director shall serve as a tie-breaker in two consecutive tie vote matters.

Subsection 4.8.3. Actions requiring unanimous votes.

In addition to any action required by the Articles of Incorporation or applicable Washington law to be by unanimous vote of the Board of Directors, the following actions shall be taken only by unanimous vote of the Board of Directors:

(a) Approval or amendment of the comprehensive plan for the Corporation;

(b) Revisions of or amendments to the Articles of Incorporation or Bylaws of the Corporation, or dissolution of the Corporation;

(c) Revision of the allocation of costs as to new connection charges and monthly rates set forth in the Agreement;

(d) Modification or amendment of the LOTT Discharge and Industrial Pretreatment Regulations pursuant to Section 7.1 of the Agreement; and

(e) Establishment or modification of pretreatment permit fees, charges, and actions pursuant to Section 7.2 of the Agreement.

At least eighteen (18) calendar days in advance of taking any such action, the Board shall distribute a proposed Board resolution or motion regarding such action to the Clerk of each Members' legislative body, by any reasonable method of distribution, including but not limited to, deposit in the U.S. Mail, facsimile, hand delivery, or electronic mail.

Section 4.9. Presumption of Assent.

A Director (or, where authorized by these Bylaws to cast a vote, an Alternate Director) of the Corporation present at a meeting of the Board of Directors at which action on any corporate matter is taken shall be presumed to have assented to the action taken, unless the Director's or Alternate Director's dissent or abstention is entered in the minutes of the meeting or the Director or Alternate Director files a written dissent or abstention to such action with the person acting as secretary of the meeting before the adjournment of the meeting or forwards such dissent or abstention by registered mail to the Secretary of the Corporation immediately after the adjournment of the meeting. Such right to dissent or abstain shall not apply to a Director or Alternate Director who voted in favor of such action.

Section 4.10. Open Pnblic Meetings.

Meetings of the Board are subject to the Open Public Meetings Act, Chapter 43.20 RCW. Accordingly, the Board shall ensure that its deliberations are conducted openly and that the

actions of the Corporation are taken openly.

Section 4.11. Procedure.

The Board shall conduct its meetings consistent with Robert's Rules of Order on Parliamentary Procedure, so far as applicable and when not inconsistent with these Bylaws, the Articles of Incorporation, the Agreement, or any resolution of the Board. The Board may adopt additional rules of procedure to govem the conduct of its meetings.

Article 5. OFFICERS

Section 5.1. Officers.

The officers of the Corporation shall be a President, one Vice President, a Secretary and a Treasurer, each of whom shall be elected by the Board of Directors. Other officers and assistant officers may be elected or appointed by the Board of Directors, such officers and assistant officers to hold office for such period, have such authority and perform such duties as are provided in these Bylaws or as may be provided by resolution of the Board of Directors. Any officer may be assigned by the Board of Directors any additional title that the Board of Directors deems appropriate. Any two or more offices may be held by the same person, except the offices of President and Secretary.

Section 5.2. Election and Term of Office.

The officers of the Corporation shall be elected annually by the Board of Directors. Unless an officer resigns or is removed or replaced, he or she shall hold office until the next annual election by the Board of Directors or until the officer's successor is elected and assumes the office, whichever is later.

Section 5.3. Vacancies.

A vacancy in any office created by the resignation, removal, replacement, or any other cause may be filled by the Board of Directors for the unexpired portion of the term or for a new term established by the Board of Directors.

Section 5.4. Resignation.

Any officer may resign at any time by delivering written notice to the President, a Vice President, the Secretary or the Board of Directors or by giving oral or written notice at any meeting of the Board of Directors. Any such resignation shall take effect at the time specified in the notice, or if the time is not specified, upon delivery of the notice and, unless otherwise specified in the notice, the acceptance of such resignation shall not be necessary to make it effective.

Section 5.5. Removal.

Any officer or agent elected or appointed by the Board of Directors may be removed from office by the Board of Directors whenever in its judgment the best interests of the

Corporation would be served thereby. Such removal shall be without prejudice to the contract rights, if any, of the person so removed.

Section 5.6. President.

The President shall preside over meetings of the Board of Directors. The President may sign deeds, mortgages, bonds, contracts or other instruments, except when the signing and execution thereof have been expressly delegated by the Board of Directors or by these Bylaws to some other officer or agent of the Corporation or are required by law to be otherwise signed or executed by some other officer or in some other manner. In general, the President shall perform all duties incident to the office of President and such other duties as are assigned to him or her by the Board of Directors.

Section 5.7. Vice President.

In the event of the death of the President or his or her inability to act, the Vice President shall perform the duties of the President, except as may be limited by resolution of the Board of Directors, with all the powers of, and subject to, all of the restrictions upon the President. The Vice President shall have, to the extent authorized by the President or the Board of Directors, the same powers as the President to sign deeds, mortgage, bonds, contracts or other instruments. The Vice President shall perfonn such other duties as from time to time may be assigned to him or her by the President or the Board of Directors.

Section 5.8. Secretary.

The Secretary shall: (a) keep the minutes of meetings of the members and the Board, and minutes which may be maintained by committees of the Board; (b) see that all notices are duly given in accordance with the provisions of these Bylaws or as required by law; (c) be custodian of the corporate records of the corporation; (d) keep records of the post office address of each member and Director and of the name and post office address of each officer; (e) sign with the President, or other officer authorized by the President or the Board, deeds, mortgages, bonds, contracts, or other instruments; and (f) in general perform all duties incident to the office of Secretary and such other duties as from time to time may be assigned to him or her by the President or the Board.

Section 5.9. Treasurer.

The Treasurer shall have charge and custody of and be responsible for all funds and securities of the corporation; receive and give receipts for moneys due and payable to the corporation from any source whatsoever, and deposit all such moneys in the name of the corporation in banks, trust companies or other depositories selected in accordance with the provisions of these Bylaws, the Agreement, and applicable law; and in general perform all of the duties incident to the office of Treasurer and such other duties as from time to time may be assigned to him or her by the President or the Board.

Section 5.10. Salaries.

The officers shall serve without salary unless they are employees of the Corporation. No officer shall be prevented from receiving a salary by reason of the fact that he or she is a Director or Alternate Director of the Corporation. Consistent with any applicable law, officers may receive reimbursement for expenditures incurred on behalf of the Corporation upon approval of the Board of Directors.

Article 6. EMPLOYEES

Subject to the other provisions of these Bylaws, the Board of Directors may establish such positions of employment as it deems desirable and shall fix the salaries for such positions; provided, there shall be created and maintained the position of Executive Director. This position shall be responsible for implementing Board policy and for general administration of the Alliance functions.

The Executive Director shall have sole authority to appoint persons to fill other positions created by the Board, or to dismiss or discipline such persons. The appointments shall be based on ability and training appropriate for the position. Except for the purpose of inquiry, the Board and its members shall deal with policy implementation or administrative services solely through the Executive Director and neither the Board nor any of its members shall give directions or orders to employees subordinate to the Executive Director. Nothing in this Article shall prevent the Board from freely and fully discussing with the Executive Director anything pertaining to appointments and removals of subordinate employees.

Article 7. ADMINISTRATIVE PROVISIONS

Section 7.1. Books and Records of the Corporation.

The Corporation shall keep at its principal or registered office copies of its current Articles of Incorporation and Bylaws; correct and adequate records of accounts and finances; minutes of its proceedings; records of the name and address of each Member, Director, Alternate Director, and officer; and such other records as may be necessary or advisable. All books and records of the Corporation shall be open at any reasonable time to inspection by any Director or Alternate Director.

Section 7.2. Books and Records of Members.

Any Director or a representative of that Director may examine the books and records of any Member which relate to the Corporation (including, but not limited to, the Corporation's assets, property, facilities, governance, and finance). After provision of reasonable notice, such books and records may be examined at any reasonable time during business hours of that Member. The Board may appoint an auditor or accountant to review any such books and records and the costs of such review shall be charged to the Corporation, which in turn may include such costs as an expense to be shared jointly among all Members.

Section 7.3. Accounting Year.

The accounting year of the Corporation shall be the twelve months ending December 31 of each year.

Article 8. AMENDMENTS

These Bylaws may be altered, amended or repealed and new Bylaws may be adopted by a unanimous vote of the Board of Directors.

THE FOREGOING BYLAWS were adopted by the Board of Directors on _____, _____.

_____

Secretary

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Exhibit E

LOTT System Service Area (Urban Growth Area Boundary, Ch. 36.70 RCW)

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Exhibit F

ALLOCATION OF COSTS TO NEW CONNECTIONS AND MONTHLY RATES

The INTERLOCAL COOPERATION ACT AGREEMENT FOR WASTEWATER MANAGEMENT BY THE LOTT WASTEWATER ALLIANCE recognizes two principal revenue sources for LOTT: 1) revenues from the one-time connection charge (Capacity Development Charge) received at issuance of building permit for each new connection to the LOTT System, and 2) monthly rate revenues (Wastewater Service Charge) received based on each Participant's number of Equivalent Residential Units (ERUs).

There are two types of capital facilities costs: 1) new capacity facilities or those capital expenditures necessary to provide additional wastewater management facilities to serve additional wastewater flows, and 2) system upgrades or capital modifications of existing facilities necessary to improve efficiency or meet higher water quality standards for water treated and discharged by LOTT. Certain capital projects could contain both cost types. In considering future facilities, LOTT chooses to associate new capacity costs primarily with connection charge revenues and system upgrade costs primarily with monthly rates to the extent those costs provide for connections existing at the time the upgrade is constructed. Accordingly, for each facility addition or upgrade project, there is an allocation of the facility cost to the two cost types LOTT is choosing to recognize.

Allocation for New Capacity Projects. Projects to create new capacity facilities are divided into four types. These project costs are to be paid using the allocation of revenue sources described in the following table follows:

Project Type	*% Capacity Development Charge*	*% Wastewater Service Charge*
Plants – Satellite wastewater treatment plants and associated downstream conveyance to send treated Class A water to polishing ponds	90%	10%
Ponds – Polishing ponds which further treat Class A water from satellite plants and serve to store Class A water for use, recharge basins which infiltrate unused Class A from polishing ponds, and associated conveyance	80%	20%
Pipes – New sewer interceptors, piping and existing pipe modifications necessary to convey wastewater to satellite wastewater treatment plants	100%	0%

Allocation for System Upgrades. Projects which upgrade or replace existing LOTT facilities are considered System Upgrades. Recognizing that these projects will usually include

provision for extra capacity, and based on a review of the incremental cost associated with this extra capacity for System Upgrade projects in the Plan, these project costs are to be paid using 9% Capacity Development Charge revenues and 91% Wastewater Service Charge revenues.

Exhibit G

LOTT DISCHARGE AND INDUSTRIAL PRETREATMENT REGULATIONS

1. PURPOSE AND POLICY.

This ordinance sets forth uniform requirements for direct and indirect contributors into the wastewater collection systems and the Regional Wastewater Treatment Facility for the Cities of Lacey, Olympia and Tumwater and for Thurston County. This ordinance enables the Cities of Lacey, Olympia, and Tumwater and Thurston County to comply with all applicable State and Federal laws required by the Clean Water Act of 1977, and amendments thereof, and the General Pretreatment Regulations (40 CFR, Part 403). The objectives of this ordinance are:

A. To prevent the introduction of pollutants into the POTW (Publicly Owned Treatment Works) which will interfere with the operation of the system or contaminate the resulting sludge;

B. To prevent the introduction of pollutants into the POTW which will pass through the system inadequately treated, into receiving waters or the atmosphere or otherwise be incompatible with the system;

C. To ensure that the quality of the wastewater treatment plant sludge is maintained at a level which allows its use and disposal in compliance with applicable statutes and regulations;

D. To provide for equitable distribution of wastewater costs among dischargers and establish a system of fees and charges that recovers the cost of the Industrial Pretreatment Program;

E. To protect POTW personnel who may be affected by wastewater and sludge in the course of their employment and to protect the general public;

Except as otherwise provided herein, the Plant Manager shall administer and implement the provisions of this ordinance, and shall conduct other activities as set forth in Sections 6,7 and 8 of the Intergovernmental Agreement for Industrial Waste Pretreatment Program of April 23, 1993. Any powers granted to or duties imposed upon the Plant Manager may be delegated by the Plant Manager to personnel under the Plant Manager's direction.

This ordinance shall apply to all users of the POTW. The ordinance authorizes the issuance of wastewater discharge permits; authorizes monitoring, compliance, and enforcement activities; establishes administrative review procedures; requires user reporting; and provides for the setting of fees for the equitable distribution of costs resulting from the program established herein.

2. DEFINITIONS.

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this ordinance, shall have the following meanings:

A. ACT - The Clean Water Act (33 U.S.C. 1251 et. seq.), as amended.

B. AKART - This is an acronym for All Known, Available, and Reasonable methods of prevention, control, and Treatment. AKART shall represent the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge. The concept of AKART applies to both point and nonpoint sources of pollution. The term "best management practices" is considered a subset of the AKART requirement.

C. APPLICABLE PRETREATMENT STANDARD - For any specified pollutant, prohibited discharge standards and discharge limitations as defined herein, State of Washington pretreatment standards, or EPA's Categorical Pretreatment Standards (when effective), whichever standard is appropriate or most stringent.

D. APPROVAL AUTHORITY - The Washington State Department of Ecology.

E. AUTHORIZED REPRESENTATIVE OF THE USER shall mean:

1. If the user is a corporation:

a. The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

b. The manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

2. If the user is a partnership or sole proprietorship: a general partner or proprietor, respectively;

3. If the user is a Federal, State, or local governmental facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or his/her designee;

4. The individuals described in paragraphs 1 through 3 above may designate another authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates or having overall responsibility for environmental matters for the company, and the written authorization is submitted to the Plant Manager.

F. BOD (denoting Biochemical Oxygen Demand) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20 degrees C., expressed in parts per million (mg/l) by weight.

G. CATEGORICAL PRETREATMENT STANDARDS shall mean any regulation containing pollutant discharge limits promulgated by the U.S. EPA in accordance with Section 307(b) and (c) of the Act which apply to a specific category of users and which appear in 40 CFR Chapter I, Subchapter N, Parts 405-471.

H. CATEGORICAL USER - a user covered by one of EPA's Categorical Pretreatment Standards.

I. COLOR - The optical density at the visual wave length of maximum absorption, relative to distilled water. One-hundred percent (100%) transmittance is equivalent to zero (0.0) optical density.

J. COOLING WATER/NON-CONTACT COOLING WATER - Water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product. Cooling water may be generated from any use, such as air conditioning, heat exchangers, cooling or refrigeration to which the only pollutant added is heat.

K. COMPOSITE SAMPLE - The sample resulting from the combination of individual wastewater samples taken at selected intervals based on an increment of either flow or time.

L. DOMESTIC USER (RESIDENTIAL USER) shall mean any person who contributes, causes, or allows the contribution of wastewater into the POTW that is of a similar volume and/or chemical make-up as that of a residential dwelling unit. Discharges from a residential dwelling unit include up to 900 cu.ft. of flow, with up to 300 mg/l of BOD, and 300 mg/l of TSS, per month.

M. ENVIRONMENTAL PROTECTION AGENCY (EPA) - The U.S. Environmental Protection Agency or, where appropriate, the Regional Water Division Director, or other duly authorized official of said agency.

N. EXISTING SOURCE - Any Categorical Industrial User whose construction or operation commenced prior to the publication by EPA of proposed Categorical Pretreatment Standards, which will be applicable to such source if the standard is thereafter promulgated in accordance with Section 307 of the Act.

O. EXISTING USER shall refer to all Industrial Users except Categorical Users which were discharging wastewater prior to the effective date of this ordinance. Any person that buys an existing facility that is discharging non-domestic wastewater will be considered an "Existing User" if no significant changes are made in the manufacturing operation.

P. GRAB SAMPLE - A sample which is taken from a wastestream on a one-time basis without regard to the flow in the wastestream and without consideration of time.

Q. INTERFERENCE - Any discharge which, alone or in conjunction with a discharge or discharges from other sources, either:

1. Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; or

2. Is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations); Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), or 40 CFR part 503, and including State Regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

R. MAXIMUM ALLOWABLE DISCHARGE LIMIT (DISCHARGE LIMITATION) - The maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of any discrete or composite sample collected, independent of the industrial flow rate and the duration of the sampling event.

S. MINOR INDUSTRIAL USER (MIU) - Any Industrial User which does not otherwise qualify as a Significant Industrial User of the POTW, identified by the Plant Manager as having the potential to spill or discharge chemicals or slugs of wastewater to the POTW, or the potential to discharge a waste stream that, when taken into account with the waste streams of other industrial users, may have a significant impact on the POTW.

T. NPDES - National Pollutant Discharge Elimination System permit program as administered by the U.S.EPA or State.

U. NEW SOURCE

1. Any building, structure, facility, or installation from which there is (or may be) a discharge of pollutants, the construction of which commenced after the publication of proposed pretreatment standards under Section 307(c) of the Act which will be applicable to such source if such standards are thereafter promulgated in accordance with that section, provided that:

a. The building, structure, facility, or installation is constructed at a site at which no other source is located; or

b. The building, structure, facility, or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

c. The production or wastewater generating process of the building, structure, facility, or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source, should be considered.

2. Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility, or installation

meeting the criteria of Part 1, b. or c. above but otherwise alters, replaces, or adds to existing process or production equipment.

3. Construction of a new source as defined under this paragraph has commenced if the owner or operator has:

a. Begun, or caused to begin as part of a continuous on-site construction program any placement, assembly, or installation of facilities or equipment; or significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities necessary for the placement, assembly, or installation of new source facilities or equipment; or

b. Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

V. NEW USER - Any Non-Categorical Industrial User that applies to the Participant for a new building permit or otherwise makes known their intentions to begin operations which will generate non-domestic wastes. This includes any person occupying existing buildings and planning to discharge wastewater to the POTW's collection system after the effective date of this ordinance. Also included are Industrial Users which have been previously overlooked or otherwise not identified by the Plant Manager as a Minor or Significant Industrial User.

W. pH - The logarithm of the reciprocal of the weight of hydrogen ions, in grams per liter of solution.

X. PARTICIPANT - means the City or County of _____ Washington, a municipal corporation or county organized and existing under and by virtue of the laws of the State of Washington. "WITHIN THE PARTICIPANT JURISDICTION" shall mean within the Participant jurisdiction boundaries as now or hereafter constituted.

Y. PASS THROUGH - Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Z. PERMITTEE - A Person or Industrial User issued a wastewater discharge permit.

AA. PERSON - Any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity; or their legal representatives, agents, or assigns. This definition includes all Federal, State, or local governmental entities.

BB. PLANT MANAGER shall mean the Manager of the regional Publicly Owned Treatment Works (POTW) facilities as described and built pursuant to the "Intergovernmental Contract for Wastewater Facilities Management" of November, 1976, and successor agreements, designated by the Participant as the person responsible determining Industrial User compliance with applicable pretreatment standards and requirements set forth in this ordinance, or that person's duly authorized representatives.

CC. POLLUTANT - Any substance discharged into the POTW which if discharged directly would alter the chemical, physical, biological, or radiological integrity of the water of the state. This includes, but is not limited to the priority pollutant list listed in 40 CFR Part 403.

DD. POTW shall mean the system of conduits, pumps, treatment plants, structures and properties, including without limitation all properties, interests, physical and intangible rights of every kind or nature owned or held by the Participant and all appurtenances thereto, however acquired, insofar as they relate to or concern drainage, transportation, storage, or treatment, in any manner whatsoever, of waste matter or storm and surface water of any nature now or hereafter permitted by this chapter to enter the POTW which is tributary to treatment facilities described in or built pursuant to the Intergovernmental Contract for Wastewater Facilities Management of November, 1976, and successor agreements. Sanitary Sewers and Storm Drains, separately and in combination, are, without limitation, included in the POTW.

EE. PREMISES shall be defined as a continuous tract of land, building, or group of adjacent buildings under a single control with respect to use of water and responsibility for payment therefore. Subdivision of such use or responsibility shall constitute a division into separate premises as herein defined, except where more than one dwelling is being served through the same water meter, in which case, each of said dwellings shall constitute a separate premises and shall be subject to the same separate charges as if separate single-family dwellings.

FF. PRETREATMENT - The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant

properties in waste water to a less harmful state, prior to or in lieu of discharging or otherwise introducing such pollutants to the POTW in order to be consistent with the discharge requirements of this Ordinance. This reduction or alteration can be obtained by physical, chemical, or biological processes; by process changes; or by other means except by diluting the concentration of the pollutants unless specifically allowed by an applicable pretreatment standard.

GG. PRETREATMENT REQUIREMENT(S) - Any substantive or procedural requirement related to pretreatment imposed on a user, other than a pretreatment standard. Pretreatment requirements shall include, but not be limited to all permit requirements, reporting requirements, and other requirements specified by the Plant Manager as necessary to comply with the provisions of this ordinance.

HH. PRIORITY POLLUTANT - Any of the substances so designated by the Washington State Department of Ecology or the United States Environmental Protection Administration such as the Priority Pollutants listed in 40 CFR Part 403.

II. SANITARY SEWERS shall mean only those portions of the POTW which are designated by the Participant to carry, treat or dispose of waste matter not constituting storm or surface water permitted by or under this ordinance to enter the POTW.

JJ. SIGNIFICANT INDUSTRIAL USER (SIU) - Any industrial user of the POTW who:

1. Is subject to categorical pretreatment standards; or

2. Has a process wastewater flow of 25,000 gallons or more per average work day; or

3. Has a discharge flow greater than 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant; or

4. Is designated as such by the Plant Manager on the basis that it has a reasonable potential, either singly or in combination with other contributing industries, for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement;

5. Upon a finding that a user meeting the criteria in Subsections 2-4 has no reasonable potential for adversely affecting the POTW's operation or for violating any applicable pretreatment standard or requirement, the Plant Manager may at any time, on his own

initiative or in response to a petition received from a user, and in accordance with procedures in 40 CFR 403.8(f)(6) determine that such user should not be considered a significant industrial user.

KK. SLUGLOAD shall mean any discharge of a non-routine, episodic nature including, but not limited to an accidental spill or non-customary batch discharge.

LL. STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODE - A classification pursuant to the "Standard Industrial Classification Manual" issued by the United States Office of Management and Budget.

MM. STORM DRAINS shall mean only those collection and conveyance systems which do, or are designated by the Participant to; detain or retain, carry or dispose of storm and surface water and such other waters as are not required by or under this ordinance or other applicable law to be disposed of through sanitary sewers, in accordance with the provisions hereinafter set forth. Storm drains shall, without limitation, include all properties, interests, and rights of the Participant insofar as they relate to or concern storm or surface water sewerage, whether natural or constructed, in and to the drainage or storage, or both, of storm or surface waters, or both, including without limitation through, under or over lands, landforms, watercourses, sloughs, streams, ponds, lakes, and swamps.

NN. STORM WATER - Any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt.

OO. TOTAL SUSPENDED SOLIDS (TSS) shall mean the total matter suspended in water removable by laboratory filtration using standard method 2540 D or equivalent, and expressed in mg/l.

PP. TOXIC POLLUTANT shall mean those pollutants, or combination of pollutants, including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the Plant Manager, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations, in such organisms or their offspring, including those listed as toxic in regulations promulgated by the U.S.EPA.

QQ. TREATMENT PLANT EFFLUENT - Discharge from the POTW into waters of the United States.

RR. UPSET shall mean an exceptional incident in which a user unintentionally and temporarily is in a state of noncompliance with the applicable pretreatment standards due to factors beyond the reasonable control of the user, and excluding noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation thereof.

SS. USER (INDUSTRIAL USER- IU) shall mean any Person with a source of discharge which does not qualify that person as a Domestic User who discharges an effluent into the POTW by means of pipes, conduits, pumping stations, force mains, tank trucks, constructed drainage ditches, intercepting ditches, and all constructed devices and appliances appurtenant thereto.

TT. WASTEWATER - Industrial waste, sewage, treated or untreated waters, or any other waste including that which may be combined with any ground water, surface water or storm water, that may be discharged to the POTW.

UU. WASTEWATER DISCHARGE PERMIT (INDUSTRIAL WASTEWATER DISCHARGE PERMIT, OR DISCHARGE PERMIT) - An authorization or equivalent control document issued by the Participant to users discharging wastewater to the POTW. The permit may contain appropriate pretreatment standards and requirements as set forth in this ordinance.

3. PROHIBITED DISCHARGE STANDARDS.

General Prohibitions:

No user shall introduce or cause to be introduced into the POTW any pollutant or wastewater which causes pass through or interference. These general prohibitions apply to all users of the POTW whether or not they are subject to categorical pretreatment standards or any other National, State, or local pretreatment standards or requirements.

Specific Prohibitions:

No person, business, industry or entity shall discharge or permit or cause the discharge of waste or wastewater of any kind or nature into the POTW with any of the following properties:

A. Any liquids, solids or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction to cause fire or

explosion, or which have closed-cup flash point of less than 140 degrees F (60 degrees C), or be injurious in any other way to the operation of the POTW. At no time shall two successive readings on a combustible gas meter, at the point of discharge into the system, (or at any point in the system) be more than five percent (5%) or any single reading over ten percent (10%) of the Lower Explosive Limit (LEL) of the meter.

B. Solid or viscous substances which will or may cause obstruction to the flow in a sewer or other interference with the operation of the POTW, including but not limited to, any garbage or putrescible material that has not been properly comminuted to one-fourth inch or less in any direction. Waste from garbage grinders shall not be discharged into the POTW except wastes generated in preparation of food normally consumed on the premises. Such grinders must shred the waste to such a degree that all particles are comminuted to one fourth inch or less in any direction and are carried freely under normal flow conditions prevailing in sanitary sewers. Garbage grinders shall be connected to an approved grease trap. No discharge permitted by this section may contain plastic, paper products, or inert material.

C. Any wastewater having a pH of less than 6 or greater than 9 or having any other corrosive property capable of causing damage or hazard to structures, equipment, or personnel of the system.

D. Any wastewater having a fat waste, oil, or grease (FOG) content, whether or not emulsified, in excess of fifty (50) milligrams per liter; or any substance which may solidify or become discernibly viscous at temperatures above zero degrees Centigrade (32 degrees F.) This restriction applies to non-biodegradable cutting oil, or products of mineral origin. FOG is defined as the combined total of vegetable, animal, and petroleum based fats, oils, and greases.

E. Any wastewater containing any pollutant, including oxygen demanding pollutants, in sufficient quantity, either singly or by interaction, to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, or be in violation of any applicable statute, rule, regulation or ordinance of any public agency, including U.S.EPA.

F. Any noxious or malodorous liquids, gases, or solids which either singly or by interaction are capable of creating a public nuisance or hazard to life or are sufficient to prevent entry into the sewers for their maintenance and repair, or capable of causing acute worker health or safety problems.

G. Any substance which may cause the POTW's treatment residues, sludges, or scums to be unsuitable for reclamation and reuse or permitted disposal or to interfere with the reclamation or disposal process. In no

case shall a substance be discharged to the POTW that will cause the POTW to be in noncompliance with sludge use or disposal criteria, guidelines or regulations developed under Section 503 of the Act; or with any criteria, guidelines, or regulations affecting sludge use or disposal developed pursuant to the Solid Waste Disposal Act; or with the Clean Air Act, the Toxic Substances Disposal Act, or State standards applicable to the sludge management method being used.

H. Any substance which will cause the POTW to violate its NPDES and/or other Disposal System Permits, or cause a violation of any state air or water quality standard or solid and hazardous waste regulation.

I. Any substance with objectionable color not removed in the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions.

J. Wastewater having a temperature which will inhibit biological activity in the treatment plant resulting in interference, in no case wastewater which causes the temperature at the introduction into the treatment plant to exceed 104 degrees F (40 degrees C) unless the Approval Authority, upon the request of the POTW, approves alternate temperature limits..

K. Any trucked or hauled pollutants, except at discharge points designated by the POTW, under permits issued by the Participant with the approval of the Plant Manager.

L. Any slugload of any type of pollutant, including Oxygen Demanding Pollutants.

M. Persistent pesticides and/or pesticides regulated by the Federal Insecticide Fungicide Rodenticide Act (FIFRA).

N. Concentrations of dissolved solids including but not limited to, sodium chloride, calcium chloride, or sodium sulfate which are so high as to constitute a danger to the wastewater treatment processes or equipment.

O. Concentrations of inert suspended solids such as, but not limited to, fuller's earth, lime slurries, lime residue, or fly ash which are so high as to constitute a danger to the POTW.

P. Any infectious wastes that, in the opinion of the County Health Officer, significantly increase the risk of disease transmission beyond the level of risk normally associated with domestic sewage.

Q. Wastewater containing any radioactive wastes or isotopes except under conditions developed by the Plant Manager in compliance with applicable State or Federal regulations. No person shall discharge or cause to be discharged any radioactive waste into the POTW except when that person is licensed for the use of those radioactive materials by the Department of Health and the waste meets all requirements of WAC 246-221-190, "Disposal By Release Into Sanitary Sewerage Systems", and the average concentration limits as defined in WAC 246-221-290 Appendix A, Table I, Column 2, and WAC 246-221-300 Appendix B and all other applicable local, State and Federal regulations.

R. Wastewater causing, alone or in conjunction with other sources, the treatment plant's effluent to fail a toxicity test.

4. PROHIBITIONS ON STORM DRAINAGE, GROUNDWATER AND UNPOLLUTED WATER.

Storm water, groundwater, rainwater, street drainage, subsurface drainage, yard drainage, roof drainage, or unpolluted water, including, but not limited to, non-contact cooling water, or blow-down from cooling towers or evaporative coolers, shall not be discharged through direct or indirect connection to any sanitary sewer. With the approval of the Plant Manager, the Participant may, but shall not be required to, permit such discharge when no reasonable alternative method of disposal is available. If a permit is granted for the discharge of such water into a sanitary sewer, the user shall pay the applicable charges and fees and meet such other conditions as required from time to time by the Participant.

5. DISCHARGE LIMITATIONS.

A. No person shall discharge wastewater containing in excess of (as measured on a daily average of composite samples):

mg/l		component
0.2	mg/l	arsenic
0.2	mg/l	cadmium
1.0	mg/l	chromium, total
0.25	mg/l	chromium, hexavalent
0.5	mg/l	copper
0.64	mg/l	cyanide, total
0.25	mg/l	cyanide, free
0.4	mg/l	lead
0.05	mg/l	mercury
0.5	mg/l	nickel

0.2	mg/l	non-halogenated phenols or cresols
0.2	mg/l	silver
1.0	mg/l	zinc

B. The above limits apply at the point where the wastewater is discharged to the POTW (end of pipe). All concentrations for metallic substances are for "total" metal unless indicated otherwise. The Plant Manager may develop mass limitations to be imposed in addition to, or in place of, the concentration-based limitations above. Where a user is subject to a categorical pretreatment standard and a discharge limitation as defined herein for a given pollutant, the more stringent limit or applicable pretreatment standard shall apply. A person will also be subject to more stringent and/or additional limits if required by the application of AKART.

C. No person, business, industry or entity shall increase the use of potable or process water in any way, nor mix separate waste streams for the purpose of diluting a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the standards set forth in this chapter.

D. The discharge into the POTW of any wastewater or wastes having:

1. A 5 day biochemical oxygen demand greater than three hundred (300) parts per million by weight.

2. Containing more than three hundred (300) parts per million by weight of suspended solids,

3. Containing any quantity of substances having the characteristics described above in this section; or

4. Having an average daily flow greater than two percent (2%) of the average daily flow of the POTW;

shall require the evaluation and concurrence of the Plant Manager and be subject to payment as determined by applicable fees for waste strength and flow.

E. The National categorical pretreatment standards found in 40 CFR Chapter I, Subchapter N, Parts 405-471, as amended, are incorporated herein by reference as though fully set forth and shall apply to industries subject to these standards whenever categorical standards are more stringent than applicable state or local discharge limitations.

6. LIMITATIONS ON POINT OF DISCHARGE.

No person shall discharge any substance directly into a manhole or other opening in the POTW other than through an approved building sewer, unless that person has been issued a permit by the Participant. If a permit is issued for such direct discharge, the user shall pay the applicable charges and fees and shall meet such other conditions as determined by the Plant Manager. Septage haulers shall comply with the limitations set forth in their permits, as specified by the Plant Manager and;

A. Septic tank waste may be introduced into the POTW only at a designated receiving structure within the treatment plant area, and at such times as are established by the Plant Manager. Such wastes shall not violate this section of the ordinance or any other requirements established or adopted by the Participant. Wastewater discharge permits for individual vehicles to use such facilities shall be issued by the City of Olympia.

B. Septage haulers may only discharge loads at locations specifically designated by the Plant Manager. No load may be discharged without prior consent of the Plant Manager. The Plant Manager may collect samples of each hauled load to ensure compliance with applicable pretreatment standards. The Plant Manager may require the hauler to provide a waste analysis of any load prior to discharge.

C. Septage haulers must provide a waste-tracking form for every load. This form shall include, at a minimum, the name and address of the waste hauler, permit number, truck identification, sources of waste, and volume and characteristics of waste.

D. Fees for dumping hauled wastes may be established as part of the user fee system as authorized within this ordinance.

E. Septic Haulers may not discharge material designated as hazardous or dangerous wastes as specified by 173.303 WAC or knowingly discharge septage mixed with hazardous and/or dangerous wastes.

7. MATTER EXCLUDED FROM STORM DRAINS.

Unpolluted water regulated by this ordinance including, but not limited to, cooling water, or blow-down from cooling towers or evaporative coolers may not be directed into a storm drain except under the authorization and direction of the Participant and under engineering and technical conditions set by the Plant Manager to carry out the purposes of this chapter.

8. SAMPLING AND TESTING OF WASTEWATER.

Users shall allow the Plant Manager or his/her designee ready access to all parts of the premises for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties.

A. Where a user has security measures in force which require proper identification and clearance before entry into its premises, the user shall make necessary arrangements with its security guards so that, upon presentation of suitable identification, the Plant Manager will be permitted to enter without delay for the purposes of performing specific responsibilities.

B. The Plant Manager shall have the right to set up on the user's property, or require installation of, such devices as are necessary to conduct sampling and/or metering of the user's operations.

C. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the user at the written or verbal request of the Plant Manager and shall not be replaced. The costs of clearing such access shall be born by the user.

D. Unreasonable delays in allowing the Plant Manager access to the user's premises shall be a violation of this ordinance.

E. Failure to allow inspection, sampling, monitoring, or metering as authorized by this section shall be grounds for revocation of the user's discharge permit.

F. Nothing herein shall be construed to limit the Participant's rights to obtain a criminal search warrant.

G. The Plant Manager will follow the sampling and testing procedures outlined in Section 26.

H. No person shall willfully or negligently break, damage, destroy, uncover, deface, tamper with, or prevent access to any structure, appurtenance or equipment, or other part of the POTW. Any person found in violation of this requirement shall be subject to the sanctions set out in this ordinance.

9. APPROVAL OF WASTEWATER DISCHARGES.

The Participant reserves the right to enter into special agreements with users setting out special terms under which they may discharge to the POTW. Any

such special agreements must be approved in advance by the Plant Manager. In no case will a special agreement waive compliance with a categorical pretreatment standard or federal pretreatment requirement. However, the user may request a net gross adjustment to a categorical standard in accordance with 40 CFR 403.15. They may also request a variance from the categorical pretreatment standard from the Approval Authority in accordance with 403.13. The Participant may allow discharge of high BOD, TSS, or flow rate for any permittee upon approval of the Plant Manager, and subject to charges as provided by section 14 of this ordinance.

10. PRETREATMENT OF INDUSTRIAL WASTES.

When at any time it becomes apparent to the Plant Manager or Participant that does not conform to the requirements outlined in Sections 3 through 7, or the applicable pretreatment standards or requirements; it is hereby required that before such matter may be discharged into the POTW, the producer thereof shall treat same at the producer's own expense to a degree that will produce an effluent which does conform to the said requirements.

A. Users shall provide all known, available, and reasonable methods of prevention, control and treatment (AKART) as required to comply with this ordinance and State and Federal regulations and shall achieve compliance with all applicable pretreatment standards and requirements within the time limitations as specified by appropriate statutes, regulations, chapters and ordinances. Any facilities required to treat wastewater to satisfy applicable pretreatment standards and requirements, shall be supplied, properly operated, and maintained at the user's expense. Such treatment plants may include, but shall not be limited to, grease traps, chemical or biochemical plants, sedimentation chambers, and any other devices which effect a change of any nature in the characteristics of the matter being treated toward the characteristics of matter permitted.

B. Detailed plans showing the pretreatment facilities shall be submitted to the Plant Manager for review and must be acceptable to the Plant Manager and the Participant, and meet the requirements of Chapter 173-240 WAC for Department of Ecology review, before construction of the facility. The review of such plans by the Participant shall in no way relieve the user from the responsibility of modifying its facility as necessary to produce an effluent acceptable to the Plant Manager under the provisions of this ordinance. The user shall obtain all necessary construction-operating permits from the Participant. Prior to completion of the Wastewater Treatment Facility, the user shall furnish its plan of operations and maintenance procedures for review. All treatment devices shall be subject to the approval of the Plant Manager.

11. TRAPS AND INTERCEPTORS.

Any non-residential occupancy shall install the proper type and capacity trap or interceptor to prevent materials from entering the sewer system that cause or may cause stoppages, impair the efficiency of the wastewater collection system, threaten collection system or treatment plant workers, or impair the efficiency of the wastewater treatment plant. Traps or interceptors shall be provided if required by the Uniform Plumbing Code or if determined necessary in the opinion of the Plant Manager.

When required, all non-residential occupancies handling any fats, oils, or greases shall install and maintain a fats, oils, and grease interceptor and/or trap to remove these materials prior to entrance into the sewer system. The use of biological or chemical treatment agents for the emulsification or separation of fats, oils, or greases shall be prohibited. Such non-residential occupancies include, but are not limited to restaurants, wash racks, vehicle service stations, engine or machinery repair shops, delis, cafes, slaughter houses, packing plants, bakeries, food processing operations and commercial, industrial or institutional cooking facilities.

When required, all non-residential occupancies handling flammable or combustible liquids shall install and maintain an oil and flammable liquids interceptor.

When required, all non-residential occupancies producing, handling or discharging solids shall provide adequate and approved sediment traps or interceptors. These traps or interceptors shall be used by, but not limited to, occupancies discharging, or with the potential to discharge, lint, rags, sand, grit, glass, metal, or any other dense material.

All interceptors shall be of a type and capacity approved by the Plant Manager and shall be located as to be readily and easily accessible for cleaning and inspection at the expense of the user or applicant. Where installed, all traps and interceptors shall be maintained by the owner, or at his expense, in a manner that will always prevent the above-mentioned wastes from being carried into the sewer system. Wastes removed from such a facility shall not be reintroduced or disposed of in sanitary or storm sewers.

12. MONITORING FACILITIES.

A. Each user shall provide and operate at its own expense a monitoring facility to allow inspection, sampling, and flow measurements of each sewer discharge to the POTW.

B. Each monitoring facility shall be situated on the user's premises, except where such a location would be impractical or cause undue hardship on

the user. The Participant may concur with the facility being constructed in the public street or sidewalk area, providing that the facility is located so that it will not be obstructed by landscaping or parked vehicles. The Plant Manager, whenever applicable, may specify the construction and maintenance of sampling facilities at other locations (for example, at the end of a manufacturing line or wastewater treatment system).

C. There shall be ample room in or near such sampling facility to allow accurate sampling and preparation of samples for analysis. Each user shall at all times maintain required facilities and sampling and measuring equipment in a safe and proper operating condition, at the user's own expense.

D. All monitoring facilities shall be constructed and maintained in accordance with all applicable local construction standards and specifications.

E. The Participant may require the user to install monitoring equipment determined by the Plant Manager to be necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition, by the user at its own expense. All devices used to measure wastewater flow and quality shall be calibrated to ensure their accuracy.

13. ACCIDENTAL DISCHARGE/SLUG CONTROL PLANS.

Each user shall provide protection from accidental discharge of prohibited or regulated materials or substances established by this ordinance. Where necessary, facilities to prevent accidental discharge of prohibited materials shall be provided and maintained at the user's own cost and expense. Detailed plans showing facilities and operating procedures to provide this protection shall be submitted as specified in this section.

Users shall immediately take action to correct the situation and verbally notify the LOTT facility console monitor upon the occurrence of a "slugload" or accidental discharge of substances prohibited by this ordinance. Written notification including location of the discharge, date and time thereof, type of waste, concentration and volume, and corrective actions must be filed with the Plant Manager within five days of the accidental discharge.

Any user who discharges a slugload of prohibited materials shall be liable for any expense, loss, or damage to the POTW, in addition to any other liabilities established by this ordinance and the amount of any fines imposed on the Participant and/or Plant Manager on account thereof under State or Federal law.

Signs shall be permanently posted in conspicuous places on the user's premises, advising employees whom to call in the event of a slug or accidental discharge. Employers shall instruct all employees who may cause or discover such a discharge with respect to emergency notification procedures.

The Participant may require any user to develop and implement an accidental discharge/slug control plan. Where deemed necessary by the Plant Manager or Participant, facilities to prevent accidental discharge or slug discharges of pollutants shall be provided and maintained at the user's cost and expense. An accidental discharge/slug control plan showing facilities and operating procedures to provide this protection shall be submitted to the Plant Manager for review and approval before implementation. The Plant Manager shall determine which user is required to develop a plan and require said plan to be submitted within 180 days after notification by the Plant Manager or Participant. Each user shall implement its accidental discharge/slug control plan as submitted or as modified after such plan has been reviewed and approved by the Plant Manager. Review and approval of such plans and operating procedures by the Plant Manager shall not relieve the user from the responsibility to modify its facility as necessary to meet the requirements of this Section.

A. Any user required to develop and implement an accidental discharge/slug control plan shall submit a plan which addresses, at a minimum, the following:

1. Description of discharge practices, including non-routine batch discharges;

2. Description of stored chemicals;

3. Procedures for immediately notifying the Plant Manager and Participant of any accidental or slug discharge. Such notification must also be given for any discharge which would violate any of the standards in Sections 3 through 7 of this ordinance; and

4. Procedures to prevent adverse impact from any accidental or slug discharge. Such procedures include, but are not limited to, inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment for emergency response.

14. EXCESS STRENGTH CHARGES.

For industrial waste or other discharges exceeding the BOD and/or Suspended Solids limits defined in Section 5., the following formula shall be used to determine the ERU equivalency of the waste flow. This formula applies only to BOD and/or SS concentrations in excess of 300 mg/l.

A. ERU Equivalent for High Strength Waste shall be the sum of the following:

1. Flow Calculation

$$(P\text{-}FLOW) \times \frac{\text{Industry flow, cu. ft./ Month}}{\text{900 cu. ft. /ERU}} = \text{FLOW ERUs}$$

2. BOD Calculation

$$(P\text{-}BOD) \times \frac{\text{Industry BOD, mg/l}}{\text{300 mg/l}} \times \frac{\text{Industry Flow, cu ft/Month}}{\text{900 cu ft/ERU}} = \text{BOD ERU}$$

3. Suspended Solids (SS) Calculation

$$(P\text{-}SS) \times \frac{\text{Industry SS, mg/l}}{\text{300 mg/l}} \times \frac{\text{Industry Flow, cu ft/Month}}{\text{900 cu ft/ERU}} = \text{SS ERUs}$$

B. Explanation of terms

1. (P-FLOW) = Percentage treatment costs associated with hydraulic flow

2. (P-BOD) = Percentage treatment costs associated with BOD

3. (P-SS) = Percentage treatment costs associated with SS

4. ERU: (Equivalent Residential Unit) equal to 900 cubic feet of wastewater containing a maximum of 300 mg/l of suspended solids and a maximum of 300 mg/l of BOD.

5. Wastewater Treatment costs used in items 1,2 and 3 above are calculated at years end. The ratios determined shall apply throughout the following year.

6. All monthly charges per ERU established by the LOTT Intergovernmental Contract for Wastewater Facilities Management of November 1976, as amended, shall apply to ERU's calculated by the above formulas.

15. DISCHARGE PERMIT FEES.

Annual discharge permit fees shall be levied on each Significant Industrial User (SIU) and each Minor Industrial User (MIU) based on three criteria: (1) permitted flowrate, (2) permit complexity and (3) potential danger to the collection system or POTW. Each permittee will be evaluated annually by the Plant Manager and placed in one of three categories; with Category III having the highest combination of flow, complexity and risk. The Plant Manager shall use the Permit Fee Category Criteria set forth in the following table:

PERMIT FEE CATEGORY CRITERIA

CRITERION	RANGE	DESCRIPTION	SCORE
FLOW:	High	>25,000 GPD	3
	Medium	1,000 – 25,000 GPD	2
	Low	<1,000 GPD	1
COMPLEXITY	High	Categorical SIU	3
	Medium	Non-Categorical SIU	2
	Low	MIU	1
POTENTIAL DANGER	High	Excess Strength Discharge, High Spill Potential, Large Quanty Of Toxic Materials, High Flows	3
	Medium	All Others	2
	Low	Low Spill Potential, No Excess Strength, Low Or No Toxics On Site, Low Flows	1

The total scores for all criteria determines the permit category and fee according to the following table:

PERMIT FEE TABLE

SCORE	CATEGORY	FEE
3-4	I	$200
5-7	II	$300
8-9	III	$400

These fees shall be indexed to the current ERU cost, rounded to the nearest $10. The base level ERU cost is currently $21. These discharge permit fees are in addition to the excess strength charges required in the previous ordinance section, and shall be collected by the Participant and remitted to the LOTT Fund prior to the end of the calender month following collection. To encourage reduction in the use of water and generation of wastewater, the annual discharge permit fee will be waived for any permittee that achieves zero industrial wastewater discharge to LOTT in the prior calendar year.

16. PERMITS REQUIRED.

A. Permits Required: No Significant Industrial User (SIU) shall discharge wastewater into the POTW without first obtaining a wastewater discharge permit from the Participant. Any violation of the terms and conditions of a wastewater discharge permit shall be deemed a violation of this ordinance and subject the permittee to the sanctions set out in this ordinance. Obtaining a wastewater discharge permit does not relieve a permittee of their obligation to comply with all Federal and State pretreatment standards or requirements or with any other requirements of Federal, State, and local law. Leachate from a solid waste landfill, and condensate from gas recovery systems at a solid waste landfill shall be considered an industrial wastewater and a permit shall be required by the Participant in accordance with this ordinance.

B. Others Regulated: The Plant Manager or Participant may require users not meeting the criteria for a SIU, including liquid waste haulers, to obtain wastewater discharge permits to carry out the purposes of this ordinance, and shall designate these users as Minor Industrial Users (MIUs).

C. Permits for Existing Industrial Users: Any SIU or MIU discharging wastewater into the POTW prior to the effective date of this ordinance, that wishes to continue such discharges, shall within 30 days after notification submit a permit application to the Plant Manager in accordance with Section 18 of this ordinance. Such Dischargers shall not cause or allow discharges to the POTW to continue after one hundred eighty (180) days of the effective date of this ordinance except in accordance with a wastewater discharge permit issued by the Participant.

D. Permits for New Sources and New Users: At least 90 days prior to anticipated start-up, New Sources and New Users that fit the definition of an SIU or MIU shall apply for a wastewater discharge permit and will be required to submit to the Plant Manager at least the information listed in paragraphs (A)-(E) of Section 18. A New Source or New User cannot discharge without first receiving a wastewater discharge permit from the Participant. New Sources and New Users shall give estimates of the information requested in paragraphs C, D, and E of Section 18.

E. Newly Promulgated or Recognized Categorical Wastestreams: Users with wastewater from processes for which applicable categorical pretreatment standards are promulgated and users which are recognized by the Plant Manager as being subject to any existing applicable categorical pretreatment standard will provide actual data for all information of section 18 within 180 days after the effective date of the applicable categorical standard, or within 90 days of being informed by the Plant Manager of applicable categorical standards, whichever is sooner. Such users may continue discharging, subject to the approval and conditions of the Plant Manager, until a permit is issued.

F. Extrajurisdictional Users: Any non-domestic user located within the Lacey, Olympia, Tumwater, and Thurston County service districts shall be required to follow the above procedures.

17. INDUSTRIAL USER SURVEY.

All persons, upon request, shall complete an Industrial User Survey. Each person will provide the survey information in the form prescribed by the Plant Manager or Participant, complete the form to the best of their ability, and return it to the Participant within the allotted time. This requirement is separate from any requirements under this ordinance to complete a permit application.

18. PERMIT APPLICATION.

All users required to obtain a wastewater discharge permit must submit, at a minimum, the following information. The Plant Manager shall approve a form to be used as a permit application. Categorical users submitting the following information shall have complied with 40 CFR 403.12 (b).

A. Identifying information. The user shall submit the name and address of the facility including the name of the operator and owners.

B. Permits. The user shall submit a list of any environmental control permits held by or for the facility.

C. Description of operations. The user shall submit a brief description of the nature, average rate of production, and Standard Industrial Classification of the operation(s) carried out by such Industrial User, including a list of all raw materials and chemicals used or stored at the facility which are, or could accidentally or intentionally be, discharged to the POTW; number and type of employees; hours of operation; each product produced by type, amount, process or processes, and rate of production; type and amount of raw materials processed (average and maximum per day) and the time and duration of discharges. This description should also include a schematic process diagram which indicates points of discharge to the POTW from the regulated or manufacturing processes. Disclosure of site plans, floor plans, mechanical and plumbing plans and details to show all sewers, sewer connections, inspection manholes, sampling chambers and appurtenances by size, location and elevation.

D. Flow Measurement.

1. Categorical User:

The user shall submit information showing the measured average daily and maximum daily flow, in gallons per day, to the POTW from each of the following:

a. Regulated or manufacturing process streams; and

b. Other streams as necessary to allow use of the combined wastestream formula of 40 CFR 403.6(e).

2. All other users:

The user shall submit information showing the measured average daily and maximum daily flow, in gallons per day, to the POTW from each of the following:

a. Total process flow, wastewater treatment plant flow, total plant flow or individual manufacturing process flow as specified by the Plant Manager.

The Plant Manager may accept verifiable estimates of these flows where justified by cost or feasibility considerations.

E. Measurements of pollutants.

1. Categorical User:

a. The user shall identify the applicable pretreatment standards for each regulated or manufacturing process.

b. In addition, the user shall submit the results of sampling and analysis identifying the nature and concentration (or mass), where required by the Categorical Pretreatment Standard or as specified by the Plant Manager, of regulated pollutants (including standards contained in Sections 3 through 7, as appropriate) in the discharge from each regulated or manufacturing process. Both daily maximum and average concentration (or mass, where required) shall be reported. The sample shall be representative of daily operations and shall conform to sampling and analytical procedures outlined in Section 26.

c. The user shall take a minimum of one representative sample to compile that data necessary to comply with the requirements of this paragraph.

d. Where an alternate concentration or mass limit has been calculated in accordance with 40 CFR 403.6(e) for a categorical user covered by a categorical pretreatment standard this adjusted limit along with supporting data shall be submitted as part of the application.

2. All other users:

a. The user shall identify the applicable pretreatment standards for its wastewater discharge.

b. In addition, the user shall submit the results of sampling and analysis identifying the nature and concentration (or mass) where specified by the Plant Manager, of regulated pollutants contained in Sections 3 through 7 as appropriate in the discharge. Both daily maximum and average concentration (or mass, where required) shall be reported. The sample shall be representative of daily operations and shall conform to sampling and analytical procedures outlined in Section 26.

c. The user shall take a minimum of one representative sample to compile that data necessary to comply with the requirements of this paragraph.

d. Where the Plant Manager has specified alternate concentration or mass limits because of dilution this adjusted limit along with supporting data shall be submitted as part of the application.

F. Certification. A statement, reviewed by an authorized representative of the user and certified by a qualified professional as outlined in subparagraph I of this section, indicating whether the applicable Pretreatment Standards are being met on a consistent basis, and, if not, whether additional operation and maintenance (O and M) and/or additional pretreatment is required for the user to meet the applicable Pretreatment Standards and Requirements;

G. Compliance Schedule. If additional pretreatment and/or O and M will be required to meet the applicable Pretreatment Standards; the shortest schedule by which the user will provide such additional pretreatment and/or O and M.

1. The schedule shall contain increments of progress in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment required for the user to meet the applicable pretreatment standards (e.g., hiring an engineer, completing preliminary plans, completing final plans, executing contract for major components, commencing construction, completing construction, etc.).

2. No increment referred to in paragraph (A) of this section shall exceed 9 months.

3. Not later than 14 days following each date in the schedule and the final date for compliance, the user shall submit a progress report to the Plant Manager including, at a minimum, whether or not it complied with the increment of progress to be met on such date and, if not, the date on which it expects to comply with this increment of progress, the reason for delay, and the steps being taken by the user to return the construction to the schedule established. In no event shall more than 9 months elapse between such progress reports.

4. Where the user's categorical Pretreatment Standard has been modified by the combined wastestream formula (40 CFR 403.6(e)), and/or a Fundamentally Different Factors variance (40 CFR 403.13)

at the time the user submits the report required by this paragraph, the information required by paragraphs (F) and (G) of this section shall pertain to the modified limits.

5. If the categorical Pretreatment Standard is modified by the combined wastestream formula (40 CFR 403.6(e)), and/or a Fundamentally Different Factors variance (40 CFR 403.13) after the user submits the report required by paragraphs (F) and (G) of this section; a new report pertaining to the modified limit shall be submitted by the user within 60 days after the modified limit is approved.

The completion date in this schedule shall not be later than the compliance date established pursuant to Section 20 of this Ordinance.

H. Any other information as may be deemed necessary by the Plant Manager to evaluate the wastewater discharge permit application.

I. All wastewater discharge permit applications and user reports must be signed by an authorized representative of the user and contain the following certification statement:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Incomplete or inaccurate applications will not be processed and will be returned to the user for revision.

The Plant Manager will evaluate the data furnished by the user and may require additional information. The Plant Manager will prepare a written recommendation regarding issuance or non-issuance of the permit and submit it to the Participant. Within 30 days of receipt of a complete wastewater discharge permit application, including the Plant Manager's recommendation, the Participant will determine whether or not to issue a wastewater discharge permit. Upon a determination to issue, the permit shall be issued within 30 days of full evaluation and acceptance of the data furnished. The Participant may deny any

application for a wastewater discharge permit. An Industrial User denied a discharge permit may petition the Participant to reconsider the issuance of a discharge permit as described in section 25 of this ordinance.

19. PERMIT MODIFICATIONS.

The Participant reserves the right to amend any Wastewater Discharge permit issued hereunder in order to assure compliance or continued compliance by the Participant with applicable laws and regulations. Within nine (9) months of the promulgation of a National Categorical Pretreatment Standard, but not later than the deadline for final compliance with a standard when such is specified, the Wastewater Discharge Permit of each user subject to such standards shall be revised to require compliance with such standards within the time frame prescribed by such standards.

Where a user, subject to a National Categorical Pretreatment Standard, has not previously submitted an application for a Wastewater Discharge Permit as required by section 18; the user shall apply for a Wastewater Discharge Permit from the Participant within 90 days after the promulgation of the applicable National Categorical Pretreatment Standards by the EPA. In addition, the user with an existing Wastewater Discharge Permit shall submit to the Plant Manager within 90 days after the promulgation of an applicable National Categorical Pretreatment Standard, the information required by paragraphs (C) and (H) of section 18. The user shall be informed of any proposed changes in its permit at least 30 days prior to the effective date of change. Any changes or new conditions upon the user may require modifications of the Wastewater Discharge Permit, as well as include a reasonable time schedule for compliance.

On approval by the Plant Manager, the Participant may modify a wastewater discharge permit for any good cause, including but not limited to the following:

A. To incorporate any new or revised Federal, State, or local pretreatment standards or requirements;

B. To address significant alterations or additions to the user's operation, processes, or wastewater volume or character since the time of wastewater discharge permit issuance;

C. A change in the POTW that requires either a temporary or permanent reduction or elimination of the authorized discharge;

D. Information indicating that the permitted discharge poses a threat to the Participant's, the POTW's, or other personnel, or the receiving waters:

E. Violation of any terms or conditions of the wastewater discharge permit;

F. Misrepresentations or failure to fully disclose all relevant facts in the wastewater discharge permit application or in any required reporting;

G. Revision of, or a grant of variance from, categorical pretreatment standards pursuant to 40 CFR 403.13;

H. To correct typographical or other errors in the wastewater discharge permit; or

I. To reflect a transfer of the facility ownership and/or operation to a new owner/operator.

20. PERMIT CONDITIONS.

Wastewater Discharge Permits for Significant Industrial Users shall specify no less than all of the following, and for Minor Industrial Users, shall specify the provisions from the following, as determined applicable by the Plant Manager:

A. Wastewater discharge permits must contain the following conditions:

1. A statement that indicates wastewater discharge permit duration, which in no event shall exceed five (5) years;

2. A statement that the wastewater discharge permits are transferable only upon compliance with section 22 of this ordinance, and provisions for furnishing the new owner or operator with a copy of the existing wastewater discharge permit;

3. Applicable pretreatment standards and requirements, including any special State requirements;

4. Self monitoring, sampling, reporting notification, submittal of technical reports, compliance schedules, and record-keeping requirements. These requirements shall include an identification of pollutants to be monitored, sampling location, sampling frequency, and sample type based on Federal, Sate, and local law; and

5. Requirement for immediate notification to the Plant Manager where self-monitoring results indicate non-compliance;

6. Requirement to report a by-pass or upset of a pretreatment facility;

7. Requirement for the SIU or MIU who reports non-compliance to repeat the sampling and analysis and submit results to the Plant Manager within 30 days after becoming aware of the violation;

8. A statement of applicable civil, criminal, and administrative penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule;

9. The requirement to apply AKART to all wastewaters discharged.

B. Wastewater discharge permits may contain, but need no be limited to, the following conditions:

1. Limits on the average and/or maximum rate of discharge, time of discharge, and/or requirements for flow regulation and equalization;

2. Requirements for the installation of pretreatment technology, pollution control, or construction of appropriate containment devices, designed b reduce, eliminate, or prevent the introduction of pollutants into the treatment works;

3. Requirements for developing and implementing spill control plans or other special conditions including management practices necessary to adequately prevent accidental, unanticipated, or routine discharges;

4. Development and implementation of waste minimization plans to reduce the amount of pollutants discharged to the POTW;

5. The unit charge or schedule of user charges and fees for the management of the wastewater discharged to the POTW;

6. Requirements for installation and maintenance of inspection and sampling facilities and equipment;

7. A statement that compliance with the wastewater discharge permit does not relieve the permittee of responsibility for compliance with all applicable Federal and State pretreatment standards and requirements, including those which become effective during the term of the wastewater discharge permit;

8. Any special agreements developed or continued between the Participant and user with the approval of the Plant Manager;

9. Compliance schedule(s) for meeting applicable pretreatment standards and requirements. Compliance schedules shall conform

to the requirements specified in Section 18 subparts G.1. through G.3. of this ordinance.

10. Other conditions as deemed appropriate by the Plant Manager to ensure compliance with this ordinance, and State and Federal laws, rules, and regulations.

C. Deadline for Compliance with Applicable Pretreatment Requirements

Compliance by existing users (categorical users) covered by Categorical Pretreatment Standards shall be within 3 years of the date the Standard is effective unless a shorter compliance time is specified in the appropriate Standard. The Plant Manager shall establish a final compliance deadline date for any existing user not covered by Categorical Pretreatment Standards or for any categorical user when the local limits for said user are more restrictive than EPA's Categorical Pretreatment Standards. New source users and new users are required to comply with applicable pretreatment standards within the shortest feasible time (not to exceed 90 days from the beginning of discharge). New sources and new users shall install and have in operating condition, and shall start-up all pollution control equipment required to meet applicable pretreatment standards before beginning to discharge. Any wastewater discharge permit issued to a categorical user shall not contain a compliance date beyond any deadline date established in EPA's Categorical Pretreatment Standards.

Any other existing user or a categorical user that must comply with a more stringent local limit, which is in non-compliance with any local limits shall be provided with a compliance schedule placed in an industrial wastewater permit to insure compliance within the shortest time feasible.

21. PERMIT DURATION AND REISSUANCE.

All wastewater discharge permits shall be issued for a period of five years, subject to appendment or revocation as provided in this ordinance. Under extraordinary circumstances, a permit may be issued for a shorter period or may be stated on its face to expire on a specific date.

A user, required to have a wastewater discharge permit, shall apply for wastewater discharge permit reissuance by submitting a complete wastewater discharge permit application, in accordance with Section 18 of this ordinance, a minimum of 90 days prior to the expiration of the user's existing wastewater discharge permit. A user, whose existing wastewater discharge permit has expired and has submitted its re-application in the time period specified herein, shall be deemed to have an effective wastewater discharge permit until the Participant issues or denies the new wastewater discharge permit. A user, whose existing wastewater discharge permit has expired and who failed to

submit its re-application in the time period specified herein, will be deemed to be discharging without a wastewater discharge permit.

22. LIMITATIONS ON PERMIT TRANSFER.

This permit is automatically transferred to a new owner or operator if:

A. A written agreement between the old and new owner or operator containing a specific date for transfer of permit responsibility, coverage, and liability is submitted to the Participant and the LOTT Industrial Waste Program Supervisor;
B. A copy of the permit is provided to the new owner; and
C. LOTT does not notify the Permittee of the need to modify the permit.

Unless this permit is automatically transferred according to section A above, this permit may be transferred only if it is modified to identify the new Permittee and to incorporate such other requirements as determined necessary by the Plant Manager.

23. PROPERTY RIGHTS.

The issuance of a permit shall not convey any property rights in either real or personal property, or any exclusive privileges, nor shall it authorize any invasion of personal rights nor any infringement of Federal, State or Local regulations.

24. PUBLIC NOTICE.

Public notice shall be given in accordance with Section 173-216-090 WAC. The Participant may initiate the Public Notice rather than requiring it of the user.

25. APPEAL OF PERMIT CONDITIONS.

Any person, including the user, may petition the Participant to reconsider the terms of a wastewater discharge permit within thirty (30) days of its issuance or denial.

A. Failure to submit a timely petition for review shall be deemed to be a waiver of the administrative appeal.

B. In its petition, the appealing party must indicate the wastewater discharge permit provisions objected to, the reasons for this objection, and the alternative condition, if any, it seeks to place in the wastewater discharge permit.

C. The effectiveness of the wastewater discharge permit shall not be stayed pending the appeal.

D. If the Participant fails to act within ninety (90) days, a request for reconsideration shall be deemed to be denied. Decisions not to reconsider a wastewater discharge permit, not to issue a wastewater discharge permit, or not to modify a wastewater discharge permit, shall be considered final administrative actions for purposes of judicial review.

E. Aggrieved parties seeking judicial review of the final administrative wastewater discharge permit decisions must do so by filing a petition with the Superior Court 10 days of final administrative action.

F. Industrial Users may request a meeting with the Plant Manager and Participant to present the petition required in this section. The Plant Manager shall arrange such a meeting within 30 days of the request by the Industrial User.

26. REPORTING REQUIREMENTS.

Reporting requirements specified in this section shall be inclusive of all Significant Industrial Users and shall also apply to those Minor Industrial Users as specifically required in their Waste Discharge Permits.

All reports of permittees shall contain all results of sampling and analysis of the discharge, including the flow and the nature and concentration or production and mass as specified by the Plant Manager. The frequency of monitoring by the user shall be as prescribed in the Wastewater Discharge Permit. All analyses shall be performed in accordance with 40 CFR, Part 136 and amendments thereto. Where 40 CFR, Part 136 does not include a sampling or analytical technique for the pollutant in question, sampling and analysis shall be performed in accordance with the procedures set forth in the EPA publication, "Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants", April 1977, and amendments thereto, or with any other sampling and analytical procedures approved by the Administrator of the EPA.

A. Initial Compliance Report.

Within 90 days following the date for final compliance with Applicable Pretreatment Standards and requirements set forth in this ordinance, or following commencement of the discharge of wastewaters into the POTW, any user subject to this ordinance shall submit a report to the Plant Manager that indicates compliance with Section 18, parts D through I, of this ordinance. The report shall state whether the Applicable Pretreatment

Standards or requirements are being met on a consistent basis and, if not, what additional O & M and/or pretreatment is necessary to bring the user into compliance with the Applicable Pretreatment Standards or requirements. This statement shall be signed by an authorized representative of the user. If permit conditions are not being met, the statement also must be signed by an engineer qualified in pretreatment system design.

For users subject to equivalent mass or concentration limits developed by the Plant Manager in accordance with procedures established in 40 CFR 403.6 (c), this report shall contain a reasonable measure of the user's long term production rate. For all other users subject to categorical pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the users's actual production during the appropriate sampling period.

B. Periodic Compliance Report.

Any user subject to the Pretreatment Standards set forth in this ordinance, after the compliance date of such Pretreatment Standard or, in the case of a new user, after commencement of the discharge to the POTW, shall submit to the Plant Manager during the months of May and November of each year, unless specified more frequently by the Plant Manager, a report indicating the nature and concentration of prohibited or regulated substances in the effluent which are limited by the Permit and/or Pretreatment Standards hereof. Industrial Users subject to mass limitations as provided for in this ordinance and/or the Federal Categorical Pretreatment Standards shall indicate the mass of pollutants regulated by Pretreatment Standards in the discharge from the Industrial User. For users subject to equivalent mass or concentration limits developed by the Plant Manager in accordance with procedures established in 40 CFR 403.6 (c), this report shall contain a reasonable measure of the user's long term production rate. For all other users subject to categorical pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the users's actual production during the appropriate sampling period.

In addition, this report shall include a record of all measured or estimated average and maximum daily flows during the reporting period specified in Section 20 hereof, and if a user monitors a pollutant more frequently than specified by the Plant Manager, using the procedures prescribed in 40 CFR part 136, the results of this monitoring shall be included in the report. Flows shall be reported on the basis of actual measurement, provided however, where cost or feasibility considerations justify, the Plant

Manager may accept reports of average and maximum flows estimated by verifiable techniques. The Plant Manager, for good cause shown, considering such factors as local high or bw flow rates, holidays, budget cycles, or other extenuating factors, may authorize the submission of said reports on months other than those specified above.

C. Notification of Significant Production Changes.

Any user operating under a wastewater discharge permit incorporating equivalent mass or concentration limits shall notify the Plant Manager within two (2) business days after the user has a reasonable basis to know that the production level will significantly change within the next calendar month. Any user not providing a notice of such anticipated change will be required to comply with the existing limits contained in its wastewater discharge permit.

D. Hazardous Waste Notification.

Any user that is discharging 15 kilograms of hazardous wastes as defined in 40 CFR 261 (listed or characteristic wastes) in a calendar month or any facility discharging any amount of acutely hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e) is required to provide a one time notification in writing to the Plant Manager, EPA Regional Waste Management Division Plant Manager, and Hazardous Waste Division of Ecology. Any existing user exempt from this notification shall comply with the requirements contained herein within 30 days of becoming aware of a discharge of 15 kilograms of hazardous wastes in a calendar month or the discharge of acutely hazardous wastes to the LOTT sewer system. Such notification shall include:

1. The name of the hazardous waste as set forth in 40 CFR Part 261,

2. The EPA Hazardous waste number; and

3. The type of discharge (continuous, batch, or other),

4. If an industrial user discharges more than 100 kilograms of such waste per calendar month to the sewer system, the notification shall also contain the following information to the extent it is known or readily available to the industrial user:

a. an identification of the hazardous constituents contained in the wastes,

b. an estimation of the mass and concentration of such constituents in the wastestreams discharged during that calendar month, and

c. an estimation of the mass of constituents in the wastestreams expected to be discharged during the following 12 months.

These notification requirements do not apply to pollutants already reported under the self-monitoring requirements. Whenever the EPA publishes final rules identifying additional hazardous wastes or new characteristics of hazardous waste, a user shall notify the Plant Manager of the discharge of such a substance within 90 days of the effective date of such regulations. In the case of any notification made under this paragraph, an industrial user shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical.

E. Notice of potential problems, including accidental spills and/or slug loadings.

Any user shall notify the Plant Manager immediately of all discharges that could cause problems to the POTW, including any slug loadings, as defined in Section 2. The notification shall include the concentration and volume and corrective action. Steps being taken to reduce any adverse impact should also be noted during the notification. Any user who discharges a slug (or slugs) of pollutants shall be liable for any expense, loss, or damage to the POTW, in addition to the amount of any fines imposed on the Participant or Plant Manager under State or Federal law.

F. Notification of Changed Discharge.

All users shall promptly notify the Plant Manager in advance of any substantial change in the volume or character of pollutants in their discharge, including significant manufacturing process changes, pretreatment modifications, and the listed or characteristic hazardous wastes for which the user has submitted initial notification under 40 CFR 403.12(p).

G. Users subject to equivalent mass or concentration limits.

For users subject to equivalent mass or concentration limits developed by the Plant Manager in accordance with procedures established in 40 CFR 403.6 (c), this report shall contain a reasonable measure of the user's long term production rate. For all other users subject to categorical

pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the users's actual production during the appropriate sampling period.

H. Non-Compliance Reporting.

If sampling performed by a user indicates a violation, the user shall notify the Plant Manager within 24 hours of becoming aware of the violation. The user shall also repeat the sampling within 5 days and submit the results of the report analysis to the Plant Manager within 30 days after becoming aware of the violation, except the user is not required to resample if:

1. The Plant Manager performs sampling at the user at a frequency of at least once per month, or

2. The Plant Manager performs sampling at the user between the time when the user performs its initial sampling and the time when the user receives the results of this sampling.

I. TTO Reporting.

Categorical users which are required by EPA to eliminate and/or reduce the levels of toxic organics (TTO's) discharged into the sewer system must follow the Categorical Pretreatment Standards for that industry. Those users must also meet the following three requirements:

1. Sample, as part of the application requirements, for all the organics listed under the TTO limit (no exceptions);

2. Either: routinely monitor for TTOs, (as specified in permit conditions), certify that no Toxic Organics are used at the facility, or develop a solvent management plan in lieu of required TTO monitoring;

3. Include a certification statement in self-monitoring reports that there has been no dumping of concentrated toxic organics into the wastewater and that it is implementing a solvent management plan as approved by the Plant Manager.

J. Reports from Minor Industrial Users.

Minor Industrial Users shall provide appropriate reports as the Plant Manager may require.

K. Reports for Unpermitted Users.

The Plant Manager may require non-domestic users which are otherwise not required to obtain a wastewater discharge permit or authorization to provide appropriate reports and complete Industrial User survey forms as necessary to properly implement the pretreatment program.

L. Sampling Requirements for Users.

A minimum of four (4) grab samples must be used for pH, cyanide, total phenols, oil and grease, sulfide, and volatile organics. The Plant Manager will determine on a case-by-case basis whether the user will be able to composite the individual grab samples. For all other pollutants, 24-hour composite samples must be obtained through flow-proportional composite sampling techniques where feasible.
The Plant Manager may waive flow-proportional composite sampling for any user that demonstrates that flow-proportional is infeasible. In such cases, samples may be obtained through time-proportional composite sampling techniques or through a minimum of four (4) grab samples where the user demonstrates that this will provide a representative sample of the effluent being discharged.

Samples should be taken immediately downstream from pretreatment facilities if such exist or immediately downstream from the regulated or manufacturing process if no pretreatment exists or as determined by the Plant Manager and contained in the user's wastewater discharge permit. For categorical users, if other wastewaters are mixed with the regulated wastewater prior to pretreatment the user should measure the flows and concentrations necessary to allow use of the combined wastestream formula of 40 CFR 403.6(e) in order to evaluate compliance with the Applicable Categorical Pretreatment Standards. For other SIUs, for which the Plant Manager has adjusted discharge limitations to factor out dilution flows, the user should measure the flows and concentrations necessary to evaluate compliance with the adjusted pretreatment standard(s).

All sample results shall indicate the time, date and place of sampling and methods of analysis and shall certify that such sampling and analysis is representative of normal work cycles and expected pollutant discharges from the user. If a user sampled and analyzed more frequently than was required in its wastewater discharge permit, using methodologies in 40 CFR Part 136, it must submit all results of sampling and analysis of the discharge as part of its self-monitoring report.

27. CONFIDENTIAL INFORMATION.

Information and data furnished to the Plant Manager and/or Participant with respect to the nature and frequency of discharge shall be available without restriction unless the user specifically requests and is able to demonstrate to the satisfaction of the Plant Manager and/or Participant that the release of such information would divulge information, processes or methods of production entitled to protection as trade secrets or proprietary information of the user under the laws or regulations of the State or Federal Government. If a user furnishing a report requests that information provided as part of a report or permit process be kept confidential, and the user marks said pages as confidential, then the portions of a report or other information which may disclose trade secrets or secret processes protected by State or Federal law shall not be made available for inspection by the public, subject to the provisions of RCW chapter 42.17, but shall be made available upon written request to governmental agencies for uses related to this ordinance, the National Pollutant Discharge Elimination System (NPDES) Permit, State Disposal System Permit and/or the Pretreatment Program; provided however that such portions of a report or other information shall be available for use by the State or any State Agency in judicial review or enforcement proceedings involving the user furnishing the report. Wastewater constituents and characteristics and other "effluent data" as defined by 40 CFR 2.302 will not be recognized as confidential information and will be available to the public without restriction.

Information accepted by the Plant Manager and/or Participant as confidential, shall not be transmitted to any governmental agency or to the general public by the Plant Manager and/or Participant until and unless a ten-day notification is given to the user. Once notice of intent to release information has been given to the user, if the user fails to contest the release, then any rights created by this section shall be deemed to have been waived.

28. BYPASS.

A. For the purposes of this section;

1. "Bypass" means the intentional diversion of wastestreams from any portion of a user's treatment facility.

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 which 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. A user may allow any bypass to occur which does not cause applicable pretreatment standards or requirements to be violated, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of paragraphs (C) and (D) of this section.

C. 1. If a user knows in advance of the need for a bypass, it shall submit prior notice to the Plant Manager, at least ten (10) days before the date of the bypass, if possible.

2. A user shall submit oral notice to the Plant Manager of an unanticipated bypass that exceeds applicable pretreatment standards within twenty four (24) hours from the time it becomes aware of the bypass. A written submission shall also be provided within five (5) days of the time the user becomes aware of the bypass. The written submission shall contain a description of the bypass and its cause; the duration of the bypass, including exact dates and times, and, if the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass. The Plant Manager may waive the written report on a case-by-case basis if the oral report has been received within twenty four (24) hours.

D. 1. Bypass is prohibited, and the Participant may take an enforcement action against a user for a bypass, unless:

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

b. 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 back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

c. The user submitted notices as required under paragraph (C) of this section.

2. The Participant may approve an anticipated bypass, after considering its adverse effects, if the Plant Manager determines that it will meet the three conditions listed in paragraph (D)(1) of this section.

29. EMERGENCY SUSPENSION OF SERVICE AND PERMIT.

The Participant may order the suspension of wastewater treatment service and of the Discharge Permit of a user without advance notice if it appears to the Plant Manager and/or Participant that an actual or potential discharge:

A. Presents or threatens a substantial danger to the health or welfare of persons or to the environment; or,

B. Threatens to interfere with the operation of the POTW or to violate any pretreatment limits imposed by this chapter or by any Discharge Permit issued pursuant to this ordinance.

Any user notified of the Participant's suspension order shall cease immediately all discharges.

Any user whose permit has been suspended pursuant to this section shall have the right to a post-suspension hearing to be conducted in accordance with the procedures set forth in Section 36. The Participant shall reinstate the Discharge Permit and wastewater treatment services upon proof by the user of the elimination of the risk of actual or potential discharge, unless the Participant has commenced proceedings for service termination and permit revocation pursuant to Section 30.

In addition to all other rights and remedies, the Participant shall have the authority to physically cap, block, or seal the side sewer line at its juncture with the sewer line or elsewhere (whether on public or private property) if the Plant Manager determines that such action is reasonably necessary to suspend service as authorized by this section. The Participant shall have the right of access onto the user's private property to accomplish such capping, blocking, or sealing of the sewer line.

If the Participant has invoked an emergency suspension of service, the user must file a written report to the Plant Manager, describing the causes of the harmful contribution, and the measures taken to prevent any future occurrence. This report is required before service can resume.

30. TERMINATION OF TREATMENT SERVICES, PERMIT REVOCATION.

The Participant shall have authority to terminate wastewater treatment services and to revoke the discharge permit of any user if it determines that the user has:

A. Failed to accurately report wastewater constituents and characteristics;

B. Failed to report significant changes in wastewater constituents, volume, characteristics, or user operations;

C. Refused reasonable access to the user's premises for purposes of inspection, sampling, or monitoring;

D. Violated conditions of the wastewater discharge permit;

E. Violated any of the provisions of this ordinance or regulations promulgated thereunder; or

F. Violated any lawful order of the Participant issued with respect to the user's permit or this ordinance.

The user shall be given written notice of the Participant's decision (and basis or bases therefore) to terminate wastewater services and shall have the right to a pre-termination hearing in accordance with the provisions of Section 36.

31. NOTIFICATION OF VIOLATION.

When the Plant Manager finds that a user has violated (or continues to violate) any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Participant may serve upon that user a written Notice of Violation, via certified letter. Within ten (10) days of the receipt of this notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted by the user to the Plant Manager. Submission of this plan in no way relieves the user of liability for any violations occurring before or after receipt of the Notice of Violation. Nothing in this section shall limit the authority of the Participant to take any action, including emergency actions or any other enforcement action, without first issuing a Notice of Violation.

32. CONSENT ORDERS.

The Participant may enter into Consent Orders, assurances of voluntary compliance, or other similar documents establishing an agreement with any user responsible for non-compliance. Such documents will include specific action to be taken by the user to correct the non-compliance within a time period specified by the document. Such documents shall have the same force and effect as the administrative orders issued pursuant to Sections 33 and 34 of this ordinance and shall be judicially enforceable. Use of a Consent Order shall not be a bar against, or prerequisite for, taking any other action against the user.

33. COMPLIANCE SCHEDULE ORDER.

When the Plant Manager finds that a user has violated or continues to violate any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Participant may issue an order to the user responsible for the discharge describing the nature of the violation; directing that the user come into compliance within a time specified in the order; and describing the method of appeal. The order shall be served by personal service or by mail to the user's last known address.

If the user does not come into compliance within the time specified in the order, sewer service may be discontinued unless adequate treatment facilities, devices, or other related appurtenances are installed and properly operated. Compliance orders may also contain other requirements to address the non-compliance, including additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the user. Compliance schedules shall conform to the requirements specified in Section 18 subparts G.1. through G.3. of this ordinance.

34. CEASE AND DESIST ORDERS.

When the Plant Manager finds that a user has violated (or continues to violate) any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, or that the user's past violations are likely to recur, the Participant may issue an order to the user directing it to cease and desist all such violations and directing the user to:

A. Immediately comply with all requirements; and

B. Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge.

Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the user.

35. ADMINISTRATIVE FINES.

A. When the Plant Manager finds that a user has violated or continues to violate any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or

requirement, the Participant may fine such user in an amount not to exceed $10,000. Such fines shall be assessed on a per violation, per day basis. In the case of monthly or other long term average discharge limits, fines shall be assessed for each day during the period of violation.

B. Unpaid charges, fines, and penalties shall, after thirty (30) calendar days, be assessed an additional penalty of fifteen percent (15%) of the unpaid balance, and interest shall accrue thereafter at a rate of ten percent (10%) per month. A lien against the user's property will be sought for unpaid charges, fines, and penalties.

C. Users desiring to dispute such fines must file a written request for the Participant to reconsider the fine along with full payment of the fine amount within fifteen (15) days of being notified of the fine. Where a request has merit, the Participant, in conjunction with the Plant Manager shall convene a hearing on the matter within fifteen (15) days of receiving the request from the user. In the event the user's appeal is successful, the payment, together with any interest accruing thereto, shall be returned to the user. The Participant may add the costs of preparing administrative enforcement actions, such as notices and orders, to the fine.

D. Issuance of an administrative fine shall not be a bar against, or a prerequisite for, taking any other action against the user.

36. ADMINISTRATIVE HEARING.

A. A user shall have the right to an administrative hearing to contest the Participant's determination:

1. To impose an enforcement action provided for by this ordinance;

2. That the user has violated a compliance schedule order.

B. Any hearing pursuant to this section must be requested by the user in writing within fifteen (15) business days after the user receives notice of the Participant's decision. The user's written request for hearing shall be filed with the Plant Manager.

The LOTT Technical Sub-Committee (TSC) shall conduct the hearing within fifteen (15) business days of the receipt of the request (or within five (5) business days if the user is contesting suspension of wastewater services and discharge permit.)

C. The administrative hearing authorized by this section shall be held before the TSC. Formal rules of evidence shall not apply but the user and the Participant shall have the right to present witnesses and other evidence. The TSC shall issue a written decision within fourteen (14) business days of the conclusion of the hearing.

D. Any user requesting a hearing shall have the right to make an electronic or stenographic record of the proceedings. Such record shall be made at the user's expense.

E. The TSC may by resolution or ordinance adopt additional rules for the conduct of hearings pursuant to this section.

F. The TSC shall serve notice, to the person requesting the hearing, of the meeting personally or by registered or certified mail (return receipt requested) at least five (5) days prior to the hearing. Such notice may be served on any authorized representative of the user.

G. The decision of the TSC shall be final.

37. INJUNCTIVE RELIEF.

When the Plant Manager finds that a user has violated (or continues to violate) any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, the Participant may petition the Superior Court for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels the specific performance of the wastewater discharge permit, order, or other requirement imposed by this ordinance on activities of the user. The Participant may also seek such other action as is appropriate for legal and/or equitable relief, including a requirement for the user to conduct environmental remediation. A petition for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against a user.

38. CIVIL PENALTIES.

A. A user which has violated or continues to violate any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall be liable to the Participant for a maximum civil penalty of $10,000 per violation, per day. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of the violation.

B. The Participant may recover reasonable attorneys fees, court costs, and other expenses associated with enforcement activities, including sampling and monitoring expenses, and the cost of any actual damages incurred by the POTW and/or the Participant.

C. In determining the amount of civil liability, the Court shall take into account all relevant circumstances, including but not limited to, the extent of harm caused by the violation, the magnitude and duration, any economic benefit gained through the user's violation, corrective actions by the user, the compliance history of the user, and any other factor as justice requires.

D. Filing a suit for civil penalties shall not be a bar against, or a prerequisite for, taking any other action against a user.

39. JUDICIAL REVIEW.

Any final administrative decision of the Participant rendered pursuant to this Ordinance may be reviewed only by the Superior Court. The review shall be initiated by a petition filed by the Industrial User. Such review shall be timely and shall be filed no later than ten (10) business days after the Participant has provided notice of the decision.

40. ANNUAL PUBLICATION OF ENFORCEMENT ACTIONS.

The Participant shall publish annually, in the largest daily newspaper published in the municipality where the POTW is located, a list of the users which, during the previous twelve (12) months, were in significant non-compliance with applicable pretreatment standards and requirements. The term significant non-compliance shall mean:

A. Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent (66%) or more of wastewater measurements taken during a six (6) month period exceed the daily maximum limit or average limit for the same pollutant parameter by any amount;

B. Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent (33%) or more of wastewater measurements taken for each pollutant parameter during a six (6) month period equals or exceeds the product of the daily maximum limit or the average limit multiplied by the applicable criteria [1.4 for BOD, TSS, FOG, and 1.2 for all other pollutants except pH];

C. Any other discharge violation that the Plant Manager believes has caused alone or in combination with other discharges, interference or pass through (including endangering the health of POTW personnel or the general public);

D. Any discharge of pollutants that has caused imminent endangerment to the public or to the environment, or has resulted in the Plant Manager or Participant's exercise of its emergency authority to halt or prevent such a discharge;

E. Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in a wastewater discharge permit or enforcement order for starting construction, completing construction, or attaining final compliance;

F. Failure to provide within thirty (30) days after the due date, any required reports, including baseline monitoring reports, reports on compliance with categorical pretreatment standard deadlines, periodic self-monitoring reports, and reports on compliance with compliance schedules;

G. Failure to accurately report non-compliance; or

H. Any other violation(s) which the Plant Manager or Participant determines will adversely affect the operation or implementation of the local pretreatment program.

41. RIGHT TO WRITTEN INTERPRETATION OF CHAPTER.

Any user or any interested party shall have the right to request an interpretation or ruling by the Participant on any matter covered by this ordinance. The request must be in writing and must be addressed to the Participant. The Plant Manager and/or Participant shall provide a prompt written response. A request pursuant to this section shall not stay or otherwise affect enforcement proceedings.

42. OPERATING UPSETS.

For the purposes of this section, "upset" means an exceptional incident in which there is unintentional and temporary non-compliance with applicable pretreatment standards because of factors beyond the reasonable control of the user. An upset does not include non-compliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

A. Reporting Requirements: The user will immediately inform the Plant Manager of an upset and submit the following information to the Plant Manager within five (5) days:

1. A description of the indirect discharge and cause of non-compliance;

2. The period of non-compliance, including exact dates and times or, if not corrected, the anticipated time the non-compliance is expected to continue;

3. Steps being taken and/or planned to reduce, eliminate, and prevent the recurrence of the non-compliance.

B. Required Actions: users shall control production of all discharges to the extent necessary to maintain compliance with applicable pretreatment standards upon reduction, loss, or failure of its treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

C. Affirmative Defense: an upset shall constitute on affirmative defense to an action brought for non-compliance with applicable pretreatment standards if the user can demonstrate through properly signed, contemporaneous operation logs, or other relevant evidence that:

1. An upset occurred and the user can identify the cause(s) of the upset;

2. The facility was at the time being operated in a prudent and workman-like manner and in compliance with applicable operation and maintenance procedures; and

3. The user has complied with the reporting requirements of "A" (above).

D. Burden of Proof: In any enforcement proceeding, the user seeking to establish the occurrence of an upset shall have the burden of proof.

E. Defense applies only to enforcement actions: Users will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for non-compliance with applicable pretreatment standards. Such defense shall not relieve the user of any liability for the upset, including liability for damages to the POTW, the Participant, or third persons.

43. RECORDS RETENTION.

All users subject to this ordinance shall retain and preserve for no less than three (3) years, any records, books, documents, memoranda, reports, correspondence and any and all summaries thereof, relating to monitoring, sampling and chemical analyses made by or in behalf of a user in connection with its discharge. Records shall include the date, exact place, method, and time of sampling; the name of the persons taking the samples; the dates analyses were performed; who performed the analyses; the analytical techniques or methods used; and the results of such analysis. All records which pertain to matters which are the subject of an enforcement action or litigation shall be retained and preserved by the user until all enforcement activities have concluded and all periods of limitation with respect to any and all appeals have expired.

44. REGULATIONS AND RIGHT OF REVISION.

The Plant Manager shall propose, subject to approval and adoption by the Participant, additional regulations consistent with this ordinance when necessary to reflect changes in applicable State and/or Federal regulations.

The Participant reserves the right to amend this ordinance and any permits it issues under it in a manner consistent with Section 4 of the Intergovernmental Agreement for Industrial Waste Pretreatment Program to provide for more stringent limitations or requirements on discharges to the POTW if such amendments are deemed necessary to comply with the objectives set forth in this ordinance, or are otherwise in the public interest. No vested right shall be created by the issuance of any permit under this ordinance.

45. RECOVERY OF COSTS INCURRED BY THE PARTICIPANT.

Any user violating any of the provisions of this ordinance who discharges or causes a discharge producing a deposit or obstruction or causes damage to or impairs the POTW shall be liable to the Participant for any reasonable expense, loss, fines or damage caused by such violation or discharge. The Participant shall bill the user for the cost incurred by the Participant for any cleaning, repair, replacement work, or other damages caused by the violation or discharge. Refusal to pay the assessed costs shall constitute a violation of this ordinance enforceable under the provisions of Part 35 of this ordinance.

46. CRIMINAL PROSECUTION.

A. A user which has willfully or negligently violated any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than $10,000 per violation per day, or imprisonment for not more than one (1) year, or both.

B. A user which has willfully or negligently introduced any substance into the POTW which causes personal injury or property damage shall, upon conviction, be guilty of a misdemeanor and be subject to a penalty of not more than $10,000 and/or be subject to imprisonment for one (1) year. This penalty shall be in addition to any other cause of action for personal injury or property damage available under State law.

C. A user which knowingly made any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to maintained, pursuant to this ordinance, wastewater discharge permit, or order issued hereunder, or who falsified, tampered with, or knowingly rendered inaccurate any monitoring device or method required under this ordinance shall, upon conviction, be punished by a fine of not more that $10,000 per violation per day, or imprisonment for not more than one (1) year, or both.

47. REMEDIES NON-EXCLUSIVE.

The provisions in Sections 29 through 38 and sections 45 and 46 of this ordinance are not exclusive remedies. The Participant reserves the right to take any, all, or any combination of these actions against a non-compliant user. Enforcement of pretreatment violations will generally be in accordance with the enforcement response plan provided by the Plant Manager. However, the Participant reserves the right to take other action against any user when the circumstances warrant. Subject to constitutional provisions relating to double jeopardy, the Participant is empowered to take more than one enforcement action against any non-compliant user. These actions may be taken concurrently.

48. STATE REQUIREMENTS.

State requirements and limitations on discharges to the POTW shall be met by all users which are subject to such standards in any instance in which they are more

stringent than federal requirements and limitations, or those in this ordinance or other applicable ordinance.

49. SEVERABILITY.

If any provision, paragraph, word, section or article of this ordinance is invalidated by any court of competent jurisdiction, the remaining provisions, paragraphs, words, sections, and chapters shall not be affected and shall continue in full force and effect.

50. CONFLICT.

All other previously issued ordinances and parts of other ordinances inconsistent or conflicting with any part of this ordinance are hereby repealed to the extent of such inconsistency or conflict.

51. EFFECTIVE DATE.

This ordinance shall be in full force and effect immediately following its passage, approval, and publication, as provided by law.

Introduced the _____ day of _____, 199 .
First reading: _____ day of _____, 199 .
Second Reading: _____ day of _____, 199 .
Passed this _____ day of _____, 199 .
Ayes:
Nays:
Absent:
Not Voting:
Approved by me this ___ day of _____, 199 .

[insert appropriate City official]

Attest:
[City] Clerk

Published:
[Publication Date]

Exhibit H

OPERATIONS AND MAINTENANCE AGREEMENT

by and between

The City of Olympia and the LOTT Alliance

THIS OPERATIONS AND MAINTENANCE AGREEMENT ("O&M Agreement"), dated _____, 2000, is entered into by and between the City of Olympia ("Olympia"), a Washington municipal corporation, and the LOTT Wastewater Alliance ("LOTT"), a nonprofit corporation formed and existing under Chapters 24.03 and 39.34 RCW. The parties are herein individually referred to as "Party" and collectively as the "Parties."

Recitals

WHEREAS, prior to the creation of the LOTT Alliance, Olympia had acted on behalf of the LOTT Partners as the lead agency for certain joint facilities, which involved owning, operating and maintaining such facilities; and

WHEREAS, each year since 1976, Olympia presented the LOTT Advisory Committee with a proposed budget which projected expenses for the operation and maintenance of the facilities, and consistently accepted the Advisory Committee's recommendations in its formal adoption of the budget; and

WHEREAS, with the execution of the Interlocal Cooperation Act Agreement, the LOTT Alliance has been created and will upon Consolidation take ownership of all Joint Facilities formerly owned by the individual partners;

WHEREAS, the LOTT Alliance and Olympia desire that Olympia continue to operate those facilities which it has been operating, using competent staff, following similar procedures, meeting the same standards of performance, and using similar budgeting methods as having prevailed in the past, except that the Parties desire that Olympia's responsibilities be established through an operations and maintenance agreement entered directly between Olympia and the LOTT Alliance as the new owner of the facilities; and

1. Purpose.

The City of Olympia, a municipal corporation of the State of Washington, and the LOTT Alliance, a Washington nonprofit corporation formed and existing under Chapters 24.03 and 39.34 RCW owned jointly by the Cities of Lacey, Olympia, and Tumwater and Thurston County, enter this Operations and Maintenance Agreement ("O&M Agreement") to provide contractual terms for Olympia's operation Joint Facilities owned by the LOTT Alliance.

2. Effective Date.

This O&M Agreement shall take effect on the date when Consolidation occurs pursuant to the Interlocal Cooperation Act Agreement ("Effective Date").

3. Term

Unless terminated for a cause pursuant to Section 13 below, the O&M Agreement shall remain in force until one year after written notice of termination is executed and delivered by either party. Prior to the LOTT Alliance giving such notice, the LOTT Alliance shall prepare a study of operating costs and practices of Olympia and alternatives in its operations of the Facilities. If such termination occurs, the LOTT Alliance will provide for an orderly, smooth transition which fairly takes into account the effect on Olympia's employees.

4. Joint Facilities; Future Joint Facilities.

For the purpose of this Agreement, "Joint Facilities" shall mean all "existing Joint Facilities" described in Exhibit B to the Interlocal Cooperation Act Agreement For Wastewater Management By the LOTT Wastewater Alliance. Future Joint Facilities shall include any facilities hereafter constructed or acquired by the LOTT Alliance.

5. Joint Facility Operation and Maintenance Services.

Olympia shall, at the Effective Date, assume responsibility for control, security, maintenance and operational performance of the Joint Facilities on a twenty-four hour per day, seven day per week basis. Olympia shall have operations and maintenance oversight authority over future Joint Facilities to the extent necessary to perform its obligations under this section.

a) **Compliance with Law; General Standards.** Olympia shall operate and maintain the Facilities in compliance with all applicable federal, state, and local laws, regulations, and ordinances, and in compliance with any orders or permits under which the Facilities operate. Olympia's operation and maintenance of the Joint Facilities shall conform to generally accepted industry principles and practices and the Treatment Plant's and other facilities' design capacity and capability, producing treated wastewater in full compliance with the NPDES permit requirements of the Environmental Protection Agency. Olympia shall also perform in accord with the Operation and Maintenance Manual established under WAC 173-240-080, the Department of Ecology "Orange Book," the Water

Environment Federation Manual of Practice, the Water Quality Laboratory Quality Assurance Manual, Water Quality Laboratory Standards of Practice Approved by the Department of Ecology, Water Environment Federation Standard Methods for Analysis of Water and Wastewater, Pretreatment Operation Manual as Approved by the Department of Ecology, and other applicable technical reference manuals that are pertinent to the operation of the LOTT Joint Facilities.

b) Regulatory Agency Relations. As operator of the Joint Facilities, Olympia shall work cooperatively with all regulatory agencies with jurisdiction over the Facilities to assure:

- Compliance with all permits and licenses
- Continued satisfaction of laboratory accreditation standards
- Conformance with personnel, practices, and equipment safety requirements
- Completion of all testing and certification required to assure safe Facility operations and environment
- That biosolids produced by the Facility are handled and utilized in compliance with law and applicable permits
- That the Facility meets all applicable air quality standards

c) Personnel. Olympia shall maintain an appropriately-sized workforce using qualified employees who have appropriate training, skill and, where required by law, appropriate certifications. Olympia shall further assure that employees are skilled and knowledgeable in their assigned duties.

d) Planning. Olympia shall look to future needs and submit plans to assure continuous and reliable performance of all Facility processes, in such a manner as to respond to and remain in compliance with changing regulations and other requirements.

e) Insurance. Olympia shall maintain during the life of this O&M Agreement Public Liability and General Liability Insurance in amounts deemed appropriate by the Alliance. The City of Olympia is a member of the Washington Cities Insurance Authority (WCIA) and this membership shall constitute adequate insurance coverage by Olympia for this Section. Olympia shall also maintain Worker's Compensation as required by state and federal law.
The LOTT Alliance shall be responsible for providing fire and other property damage insurance to cover the Joint Facilities and equipment, vehicles, tools, and other property associated therewith.

f) **Reporting.** Olympia shall provide in a timely manner all necessary reporting functions to regulatory agencies and others as necessary in the operation of the facilities. These reports shall include, but not be limited to:

- NPDES Reports
- Lab Accreditation Reports
- Pretreatment Reports
- Annual Budget Requests
- Monthly operations report submitted to the LOTT Alliance by the 15th of the following month, including data reported under the NPDES permit, overview of statement of operation and any significant events.

g) **Emergency Response.** Olympia shall maintain in place emergency response plans for all major disasters and plans for restoration of Joint Facility processes following the disaster, including:

- Plans for continuous operations during a disaster
- Recovery following a disaster
- Community information

h) **Industrial Pretreatment.** Olympia shall administer a pretreatment program in accordance with authority delegated from the Department of Ecology in accordance with applicable pretreatment ordinances, and the Department of Ecology approved operations manual or pretreatment programs. In addition, Olympia shall:

- Provide an annual report to the LOTT Alliance
- Provide a permitting system for major and minor industrial dischargers
- Regularly inspect and communicate with industrial dischargers
- Enforce the pretreatment ordinance in concert with the applicable LOTT Partner in accord with the Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance

6. Permitting Responsibilities.

The LOTT Alliance will maintain and hold the NPDES Permit, permits for sludge management and any applicable air emission permits. Olympia shall cooperate with the LOTT Alliance in preparing information to apply for, amend, renew, or demonstrate compliance under such permits. Because the costs necessary to comply with any modifications in such permits cannot be determined, the LOTT Alliance shall approve requested amendments to Olympia=s budget for the reasonable costs of complying with changed or new permit conditions.

7. Budget.

The LOTT Alliance shall pay the costs incurred by Olympia in the performance of this O&M Agreement to the extent that such costs conform with a budget for responsibilities approved in advance by the LOTT Alliance in accordance with the following process. The year 2000 budget shall be that budget already adopted for that year by the City of Olympia on behalf of LOTT. On or before May 1 of each year preceding a new budget year, Olympia shall prepare a proposed budget including all costs and expenses anticipated to be incurred in the performance of its duties in the following calendar year. The proposed budget shall be in substantially the same form as Olympia=s 2000 budget with respect to operation and maintenance of Joint Facilities. The budget shall include overhead costs in accordance with practices used prior to the effective date of this Agreement. The LOTT Alliance shall consider the proposed budget in good faith in accordance with the procedures for budgeting set forth in Section 3.7 of the Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance and shall, no later than August 31, approve a budget for the following calendar year to reasonably fund the services required herein. If Olympia objects to the budget as approved by the LOTT Alliance, it shall notify the LOTT Alliance within ten (10) days after the passage of such budget. Any such disputes shall be resolved pursuant to the provisions of Section 14 of this Agreement and such resolution shall occur prior to the commencement of the budget year in question.

Once approved, the Budget ("Budget" shall mean an approved budget) shall be the maximum compensation available to Olympia for its services under this O&M Agreement. Olympia may request and the LOTT Alliance shall consider and in good faith approve modifications at any time. Any unspent and uncommitted funds held by Olympia at the end of the budget year shall be carried over to the following budget year.

8. Payment.

City of Olympia shall receive from the LOTT Alliance as soon as practical, not to exceed thirty (30) days after the Effective Date of this O&M Agreement $750,000 as an advance for payment of services under this Agreement. This amount may be modified by agreement of the parties. The City of Olympia shall place these funds in a Fund which is separate from assets of the City of Olympia. The City of Olympia shall invest advanced funds and credit any net earnings from those investments to the Fund into which the advance was placed. The City of Olympia shall not use these funds for any purpose not associated with this Agreement. From time to time, the City of Olympia shall notify the LOTT Alliance of the use of these funds, (hereafter referred to as the "reimbursement amount"). Upon such notification, the LOTT Alliance shall pay to the City of Olympia the reimbursement amount, so as to replenish the Fund to the advance amount. The reimbursement amount shall be the amount of costs paid from the advance since the previous reimbursement notification less net earnings on investments posted to the Fund into which the advance was placed since the previous reimbursement notification.

Replenishment of the advance shall be made within ten (10) business days after a request is made by the City of Olympia. If the LOTT Alliance disputes the reimbursement amount

requested by the City of Olympia, it shall pay the reimbursement amount and notify the City of Olympia of the amount disputed. If the City of Olympia agrees with the disputed amount, it shall adjust the next reimbursement request. If the City of Olympia and the LOTT Alliance do not agree upon any disputed amount to be adjusted, the dispute resolution process defined in this Agreement shall be utilized. Any advance sums remaining in the Fund upon the termination of this Agreement shall be paid to the LOTT Alliance together with any interest earned upon such sums.

9. Payment by Alliance for Capital Expenditures by Olympia.

A. Capital expenditures shall not be included within the scope of this Agreement as operation and maintenance costs. Capital expenditures will be made by Olympia only after approval and funding by the LOTT Alliance. If such expenditures are urgently necessary to continue operation of any or all of the Joint Facilities in order to provide for public safety and environmental protection, Olympia shall make such emergency expenditures and make every effort to immediately seek and gain approval of these expenditures from the LOTT Alliance. The LOTT Alliance will reimburse Olympia for these emergency capital expenditures so long as Olympia has acted in good faith in making the expenditures. Reimbursement will be made within thirty (30) days of notification by Olympia. Capital expenditures, except for emergency capital expenditures, shall not be considered part of this Agreement and shall be funded by the LOTT Alliance. The term "capital expenditures" shall be defined as any expenditure for: 1) the purchase of new equipment or Joint Facility items that cost more than $5,000 and have a lifetime span of two (2) years or more; or 2) major repairs which significantly extend equipment or facility service life and cost more than $5,000.

Purchases or repairs, except emergency expenditures, which fall below the amounts and life span above shall be considered part of the Operation and Maintenance Budget per Section 7 above.

B. Starting with the first Budget under this Agreement and for each subsequent year hereafter, Olympia shall prepare and propose for LOTT Alliance review and approval annual and six-year capital improvement plans identifying major repairs and capital expenditures that will be necessary for then existing Joint Facilities and to restore, maintain, replace, or upgrade the equipment for efficiency, safety, function, and/or compliance with current and anticipated regulatory requirements. Odor control, noise control, reduction of visual impacts and lighting impacts should be addressed. The Alliance shall make funding provisions for approved major repairs and capital expenditures and shall provide the ways and means for construction of same. The provisions of the paragraph shall not apply to planning by the LOTT Alliance for the construction or acquisition of Joint Facilities in the future.

C. Additional operation and maintenance costs resulting from new capital facilities shall be included in the budget approved for this Agreement by the LOTT Alliance. The amount of additional operation and maintenance costs for Joint Facility items that go on-line in the middle of a budget year shall be negotiated in good faith between Olympia and the LOTT Alliance.

10. Rolling Stock and Equipment.

Within the LOTT budget of this Agreement, Olympia shall pay for equipment rental of all rolling stock and equipment used for operation and maintenance of Joint Facilities. In the event Olympia's role under this Agreement is terminated, Olympia shall pay LOTT any depreciation reserves maintained for such rolling stock and equipment and shall convey without cost the applicable rolling stock and equipment to LOTT.

11. Contracts for Goods and Services.

Olympia shall in its own capacity and not as agent for the LOTT Alliance enter into contracts for the purchase and disposal of goods and for the performance of services as may be necessary to perform Olympia's obligations under this O&M Agreement, provided, however, that the LOTT Alliance shall enter into and maintain directly contracts relating to capital expenditures and major repairs discussed in Section 9 above. Any contracts entered into/by Olympia pursuant to this O&M Agreement for work or goods relating to the Joint Facilities shall be made expressly assignable to the LOTT Alliance, without restriction or condition of any kind, and Olympia shall, at the LOTT Alliance's request, assign such contracts to the LOTT Alliance at the termination of this O&M Agreement.

12. Notices; Authorized Representatives.

All notices shall be in writing and delivered in person or transmitted by certified mail, return receipt requested, postage prepaid. Notices required to be given to the City of Olympia shall be given to the City Manager or his/her designee.

Notices required to be given to the LOTT Alliance shall be given to the LOTT Alliance Board Chair or his or her designee.

13. Termination for Cause.

Either party may terminate the O&M Agreement upon material breach by the other party providing that the terminating party first provides written notice of such breach to the other party and such breach has not been corrected within a forty-five day cure period. By mutual agreement by the Parties, the forty-five day cure period may be extended where the situation warrants.

14. Force Majeure.

If a Party is rendered unable by Force Majeure to carry out, in whole or part, its obligations under this Agreement and such Party gives notice and full details of the event to the other Party as soon as practicable after occurrence, then during the pendency of such Force Majeure but for no longer period, the obligations of the Party affected by the event (other than the obligation to make payments due for performance prior to the event) shall be suspended to the extent required. The Party claiming Force Majeure shall remedy the Force Majeure as soon as possible.

15. Disputes.

Any disputes under this Agreement shall be resolved by negotiation, if possible. If impasse is reached, the Parties shall employ a panel with three arbitrators, one appointed by each party and the third by the two appointed arbitrators, to resolve the dispute. The ruling of the panel shall be binding, subject to judicial review under an arbitrary and capricious standard.

16. Access to Facilities.

LOTT Alliance staff shall have access to the Joint Facilities at all times but shall be required to first sign in at the entrance.

17. Independent Contractor.

The relationship of Olympia to the LOTT Alliance created by this O&M Agreement is that of an independent contractor, and none of Olympia's employees or agents shall be considered employees of the LOTT Alliance.

18. Non-Waiver.

The failure on the part of either party to enforce its right as to any provision of the Agreement shall not be construed as a waiver of its rights to enforce such provision in the future.

19. No Third Party Beneficiaries.

Except as expressly provided herein, this Agreement is not intended to create rights in, or to grant remedies to, any third party as a beneficiary of this Agreement or of any duty, obligation or undertaking established herein.

20. Governing Law.

This O&M Agreement shall be governed by the laws of the State of Washington.

21. Assignment.

This O&M Agreement shall inure to the benefit of, and shall bind, the respective successors and assigns of the Parties; provided, however, that neither Party shall assign this O&M Agreement without first obtaining the other Party's written consent, which shall not be unreasonably withheld.

22. Severability.

If one or more clauses, sections, or provision of this Agreement is held to be unlawful, invalid or unenforceable by any court with jurisdiction, the remainder of this Agreement shall not be affected thereby.

23. Modifications in Writing.

Except as expressly provided in this Agreement, no amendment or modification of this Agreement shall be effective unless made in writing and executed by all Parties.

IN WITNESS WHEREOF, the Parties have caused this O&M Agreement to be executed in their respective names and in their respective behalf, and have caused their respective names to be subscribed and affixed by their respective duly and legally elected and authorized officers, who are authorized to execute this O&M Agreement this _____ day of _____,

.

CITY OF OLYMPIA	LOTT WASTEWATER ALLIANCE
By:	By:
_____	_____
Its:	Its:
_____	_____
Date:	Date:
_____	_____
ATTEST:	ATTEST:
By:	By:
_____	_____
Approved as to form:	Approved as to form:
_____	_____
Legal Counsel	Legal Council

moe9319c
1/14/00

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Exhibit I

Agreement

Regarding Additional LOTT Joint Facilities

This Agreement, dated ---------June 21----------, 1999, is entered into by and between the City of Olympia ("Olympia"), the City of Lacey ("Lacey"), the City of Tumwater ("Tumwater"), and Thurston County (the "County"), all of which are municipal corporations organized under the laws of the State of Washington and are herein collectively referred to as the "LOTT Partners."

WHEREAS, the LOTT Partners entered into the Intergovernmental Contract for Wastewater Facilities Management of November, 1976, and

WHEREAS, that agreement provides that when The Advisory Committee deems it desirable and the LOTT Partners agree in writing that additional wastewater facilities be acquired or added, those facilities may become LOTT Joint Facilities, and

WHEREAS, as a result of several years of planning and deliberation, The Advisory Committee recommends the designation of existing City of Lacey facilities as LOTT Joint Facilities and LOTT's construction of certain new facilities as LOTT Joint Facilities to prepare for expected future additions to the LOTT system and assure reliable management of existing wastewater flows in a manner consistent with the requirements of the Washington State Department of Ecology, and

WHEREAS, the facilities to be acquired from the City of Lacey were originally designed and constructed to be LOTT Joint Facilities and are integral to plans for future LOTT wastewater treatment, and

WHEREAS, the facilities to be constructed by LOTT as Joint Facilities are necessary to carry existing and future City of Tumwater and City of Olympia wastewater flows to Joint Facilities transmission and treatment structures, now

THEREFORE, IT IS AGREED by the LOTT Partners that the City of Lacey gravity sewer running west along Martin Way from Marvin Road to the City of Lacey Martin Village

Pump Station, the Martin Village Pump Station near Martin Way and Desmond Drive, and the sewer force main from the Martin Village Pump Station which runs west to its connection to the existing LOTT Joint Facility interceptor west of the intersection of Sleater-Kinney Road and Martin Way, together with all associated deeds, easements, and franchise agreements, shall become LOTT Joint Facilities as set forth in the terms of a Facilities Acquisition Agreement for total amount not to exceed $2,390,000, said amount to be drawn 25% from LOTT's Capacity Development Charge account and 75% from LOTT monthly rate revenues, and

IT IS FURTHER AGREED by the LOTT Partners that a new gravity sewer line from the southern end of the Capitol Boulevard Bridge across the Deschutes River, west to Deschutes Parkway, and north along Deschutes Parkway to the existing LOTT Capitol Lake Pump Station, and the associated parallel sewer force main addition north from the Capitol Lake Pump Station through northwest downtown Olympia to an existing LOTT Joint Facility interceptor in the vicinity of Olympia Avenue and Adams Street shall be a LOTT Joint Facility to be engineered using funds already appropriated for that purpose and constructed for an amount estimated at $5,274,353, 9% of which shall be drawn from LOTT's Capacity Development Charge account and 91% from LOTT monthly rate revenues.

CONTINUES ON NEXT PAGE

IN WITNESS WHEREOF, each party has caused this Agreement to be signed by its duly authorized officer or representative as of the date set forth below its signature.

City of Lacey:

By _____

Its: _____

Date: _____

Approved as to form:
By _____

Attest: By _____

City of Olympia:

By _____

Its: _____

Date: _____

Approved as to form:
By _____

Attest: By _____

City of Tumwater:

By _____

Its: _____

Date: _____

Approved as to form:
By _____

Attest: By _____

Thurston County:

By _____

Its: _____

Date: _____

Approved as to form:
By _____

Attest: By _____

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Exhibit J

Intergovernmental Contract For
Inflow and Infiltration Management and
New Capacity Planning

WHEREAS, pursuant to the Intergovernmental Contract for Wastewater Facilities Management dated November, 1976, (hereinafter "LOTT 1976 Contract") the LOTT Partners agreed to cooperatively construct and maintain joint facilities for wastewater treatment and discharge; and

WHEREAS, pursuant to the Intergovernmental Contract of September, 1991, (hereinafter "LOTT 1991 Contract") the LOTT Partners affirmed their intent to assure long-term availability of capacity in LOTT joint facilities to intercept, treat, and discharge sanitary sewage in an environmentally sound and cost effective manner for the benefit of all Partners; and

WHEREAS, under the terms of the LOTT 1991 Contract, the Partners agreed to conduct an engineering study of inflow and infiltration and thereafter set a standard for allowable inflow and infiltration, define an equalization basin service area and agree upon a program for the cost effective removal of inflow and infiltration; and

WHEREAS, the agreed-upon study of inflow and infiltration (hereinafter "LOTT I/I Study") is complete and the Partners have learned that the extent of inflow and infiltration is such that capacity for treating wastewater using existing LOTT joint facilities cannot reasonably be provided to the year 2010 as assumed in the LOTT 1991 Contract; and

WHEREAS, the Partners have concluded that standards for allowable inflow and infiltration cannot be established in the manner assumed in the LOTT 1991 Contract without either forcing construction of inflow and infiltration removal projects which are clearly not cost effective or creating the potential for additional inflow and infiltration into the LOTT system; and

WHEREAS, the Partners have also concluded that during a ten year storm the equalization basins in the existing LOTT Wastewater Treatment Plant are inadequate to

effectively manage inflow and infiltration from even a small portion of the combined sewer system; and

WHEREAS, using information developed during the LOTT I/I Study, the Partners found that while LOTT system inflow and infiltration, which originates primarily in the City of Olympia, can dramatically impact treatment capacity during heavy rain, the cost to treat such flows is, and has been, approximately equal to the value of in-kind contributions made by the City of Olympia to the LOTT Partnership; and

WHEREAS, during the course of the LOTT I/I Study, the LOTT Partners concluded that only through a combination of cost effective inflow and infiltration removal and water conservation efforts, and immediate initiation of planning for additional wastewater treatment capacity can adequate treatment capacity for all Partners be reasonably assured, and

WHEREAS, during the course of consideration of long-term capacity needs the Partners have determined that to the extent practicable new capacity should be financed using the principle that new connections should fund new capacity, now

THEREFORE, it is agreed by the LOTT Partners as follows:

1. Purpose of Agreement

In order to cooperatively preserve capacity in the existing LOTT treatment facilities and to plan for new wastewater treatment facilities on an accelerated basis, the LOTT Partners, collectively and individually, commit by this Contract to act on a cooperative basis by authorizing the LOTT Advisory Committee, with the assistance of the Technical Sub-Committee, to study, decide upon and implement necessary wastewater strategies as provided in this Contract. Each Partner recognizes that the successful implementation of those strategies may require each Partner to actively study and implement commensurate improvements in its local system.

To facilitate these reciprocal commitments, the LOTT Partners are formally recognizing by this Contract their respective legal and equitable interests in current LOTT facilities and their agreement in resolving any pending disputes or issues including the equitable allocation of past City of Olympia infiltration and inflow treatment costs.

This Contract is intended to amend and supersede inconsistent provisions of the LOTT 1976 Contract and LOTT 1991 Contract in recognition of changing conditions and capacity needs within the LOTT service area and to provide a mutually agreed basis among the LOTT Partners for future facility planning and implementation efforts.

2. Definitions

For the purposes of this Contract, the following words and phrases shall be defined as set forth below:

a. "Advisory Committee" shall mean the committee of the same name defined in the Intergovernmental Contract for Wastewater Facilities Management of November 30, 1976 (LOTT 1976 Contract) as amended.

b. "Cost Effective" shall mean the cost of capacity management options, such as conservation or removal of inflow and infiltration which is equal to or less than the value of the savings they achieve through delay of the anticipated date when a new wastewater treatment facility will be needed.

c. "Equivalent Residential Unit" or "ERU" shall mean the flow unit established in the LOTT 1976 Contract, as amended.

d. "Financial Responsibility" as used in reference to the LOTT Partners in Section 4, Subsection D of this contract shall mean each Partner has financial obligation based on each Partner's number of connected equivalent residential units consistent with the LOTT 1976 Contract, as amended, or as required by the Partner's allocation of new capacity as established pursuant to Section 6, Sub-Section B of this contract.

e. "Joint Facilities" shall mean those facilities, either existing or future, as defined and described in the LOTT 1976 Contract, as amended.

f. "I & I Removal" shall mean the actual or intended removal or reduction of inflow and/or infiltration present in the sewer systems tributary to LOTT joint facilities and the removal or reduction of inflow and /or infiltration originating in LOTT joint facilities.

g. "Infiltration" shall mean ground water entering LOTT joint facilities and ground water entering the system of sanitary sewers tributary to LOTT joint facilities.

h. "Inflow" shall mean storm water entering LOTT joint facilities and storm water entering the system of sanitary sewers tributary to LOTT joint facilities as a result of constructed combined storm/sanitary sewer facilities.

I. "LOTT" shall meant the sewerage services, facilities and activities cooperatively performed, constructed and operated by the cities of Lacey, Olympia, and Tumwater and Thurston County pursuant to the LOTT 1976 Contract, as amended.

j. "LOTT Fund" shall mean the City of Olympia fund used to accumulate and disperse revenues from monthly and other LOTT charges.

k. "LOTT Inflow and Infiltration Study" shall mean the study of the same name prepared for the LOTT Wastewater Management Partnership between 1992 and 1994.

l. "Partner" shall mean "Original Participant" as defined in the LOTT 1976 Contract, as amended.

m. "Reserve Capacity Charge Receipts" shall mean the money collected from the Reserve Capacity Charge as defined in the LOTT 1976 Contract, as amended, and as further defined in the LOTT 1991 Contract, as amended.

n. "Water conservation" shall mean those efforts which reduce, or are intended to reduce, the amount of residential, commercial and industrial wastewater entering the sewer systems tributary to LOTT joint facilities. Other efforts which reduce the amount of water consumed but which do not affect the amount of water entering the sewer systems tributary to LOTT are, for the purposes of this contract, not considered water conservation. Efforts which reduce inflow and infiltration are, for the purposes of this contract, not considered water conservation.

o. "Technical Sub-Committee" shall mean the committee of the same name defined in the LOTT 1976 Contract, as amended.

p. "Wet weather season" shall mean the calendar period November through February.

3. Confirmation of LOTT Partners' Interests

A. Capacity and Facility Use

The LOTT Partners, collectively and individually, acknowledge and agree that each Partner has a beneficial interest in the current LOTT joint facilities and in the capacity of such facilities due to their past funding of construction of the facilities and their continued payments for treatment services including financing and operating costs of the LOTT system. Pursuant to the LOTT 1976 Contract, the LOTT Partners, collectively and individually, also acknowledge and agree that each Partner has a right to utilize such current capacity on a "first come first serve" basis as defined in the LOTT 1976 Contract, as amended.

B. Property Use

The City of Olympia hereby acknowledges and agrees that such beneficial interests of the Partners extends to the continued use and enjoyment, in common with the City, of the LOTT treatment plant facilities and property for so long as the facilities are required by LOTT for wastewater treatment purposes.

4. Inflow and Infiltration

A. Inflow and Infiltration Standards

Section 3 of the LOTT 1991 Contract requires that the LOTT Partners adopt standards for acceptable levels of inflow and infiltration, and that Partners not meeting the adopted standards are to compensate the LOTT Partnership on an Equivalent Residential Unit Basis for the estimated flows in excess of adopted standards are to compensate the LOTT Partnership on an Equivalent Residential Unit Basis of the estimated flows in excess of adopted standards. As a result of the technical findings of the LOTT I/I Study, the LOTT Partners hereby rescind any LOTT 1991 Contract requirements to establish and enforce standards for acceptable levels of inflow and infiltration within the system of sewers flowing into LOTT joint facilities. From and after the effective date of this Contract, all binding Partnership requirements concerning

acceptable levels of inflow and infiltration shall be contained in and governed by this Contract. Further, the LOTT Partners agree that all new sewers tributary to LOTT joint facilities and all future LOTT joint facilities which are constructed subsequent to the date of this Contract by LOTT or by any participant shall be constructed to allow no more inflow and infiltration than 700 gallons per day per inch/mile of new sewer line.

B. Equalization Basin Service Area

Section 4 of the LOTT 1991 Contract requires that and Equalization Basin Service Area be determined. As a result of the technical findings of the LOTT I/I Study, the LOTT Partners hereby rescind any LOTT 1991 Contract requirements to establish an Equalization Basin Service Area.

C. Olympia Inflow and Infiltration Removal Program

The City of Olympia hereby agrees to design and implement in good faith the infiltration removal program recommended in the LOTT I/I Study which is expected to remove 2,712,000 gallons or 8.28 per cent of the current system-wide 10 year storm/24 hour peak inflow and infiltration from the LOTT joint facilities at an estimated cost of $8,791,000 in 1994 dollars (including the cost of design, administration and construction). The City of Olympia will follow the I/I Study recommendation to the extent feasible and consistent with design-level findings and good civil engineering practice. The City of Olympia agrees to provide a reasonable opportunity for the LOTT Technical Sub-Committee to review design and construction decisions and expenditures related to this infiltration removal program.

The City of Olympia agrees to complete all such recommended program work by December 31, 2001. Should the City of Olympia fail to complete implementation of the Study's recommended infiltration removal by December 31, 2001, the City of Olympia shall compensate the LOTT Fund on an Equivalent Residential Unit basis for the difference between the 10 year storm/24 hour peak infiltration flows actually removed and the 2,712,000 gallon 10 year storm/24 hour peak flows estimated as likely to be removed in the LOTT I/I Study until such time as the Study's recommendation for Olympia facilities has been implemented or until the City of Olympia has expended the then current equivalent of $8,791,000 in 1994 dollars on reasonable and appropriate efforts to complete implementation of the Study's recommendation.

At such time as the City of Olympia, according to pre- and post-construction flow measurements by LOTT, has removed infiltration or inflow in an amount equal to the 10 year storm/24 hour peak 2,712,000 gallon volume estimated in the LOTT I/I Study recommendation, or when the Technical Sub-Committee agrees the City Of Olympia has expended $8,791,000 in 1994 dollars on reasonable and appropriate efforts to complete implementation of the Study recommendation, the City of Olympia's obligation to fund and manage inflow and infiltration removal is recognized by all present and future LOTT Partners as forever satisfied except as provided later in this section under Subsection F.

D. LOTT Inflow and Infiltration Projects

Should additional inflow and infiltration removal beyond that recommended in the LOTT I/I Study later be found by the LOTT Partners to be appropriate and cost effective, the LOTT Partners, acting through the Advisory Committee in their efforts to assure adequate treatment capacity, shall assume financial responsibility for such additional inflow and infiltration removal. Each Partner agrees to act in good faith and in a timely manner to cooperate with any such additional inflow and infiltration removal efforts recommended by the Advisory Committee provided that no such efforts will be conducted in a City of Olympia area bordered by Union Street on the south, Capitol Lake and Bud Inlet on the west, State Street on the north and Eastside Street on the east unless such removal can be part of otherwise required City of Olympia sewer repair or replacement projects within the specified area. In that case, the LOTT Partners, upon separate agreement with the City of Olympia, will be financially responsible for that portion of the work associated with inflow and infiltration removal which the LOTT Partners wish to pursue in their efforts to assure adequate treatment capacity.

If regulatory authorities require inflow and infiltration removal which the LOTT Partners do not consider cost effective, the Partner jurisdiction wherein the inflow and infiltration removal is required shall be financially responsible.

E. Cost of Treating Inflow and Infiltration, Benefits of Olympia Facilities and Services

The LOTT Partners agree that although the substantial portion of inflow and infiltration passing through LOTT joint facilities originates in the City of Olympia due to Olympia's combined sewer system, the cost of treating those flows on an annual basis is, and has been, approximately equal to the value provided by the City of Olympia to LOTT for land owned by the City of Olympia but fully utilized by the LOTT Wastewater Treatment Plant for the benefit of all LOTT Partners and the extra cost of administrative and overhead services and benefits provided to the LOTT Partners by the City of Olympia beyond those costs already compensated by the LOTT Partners. It is further agreed that the sum of these in-kind contributions by the City of Olympia and the continued contribution of such value and services shall be considered appropriate compensation for the past and future cost of treating the City's combined flows, provided payment for overhead services remains at its current level as adjusted annually for inflation according to the federal Seattle Area Consumer Price Index, and provided further, that LOTT Partners have continued use of Olympia property occupied by current LOTT joint facilities without charge.

F. Prevention of Further Inflow and Infiltration Degradation

The LOTT Partners agree that additional inflow and infiltration in the system of sewers tributary to and including LOTT joint facilities is to be avoided so as to prevent further capacity degradation of LOTT joint facilities beyond that which exists at the time of this Contract and that which is otherwise herein accepted or removed. Each LOTT Partner agrees to exercise sound engineering judgment in the repair and maintenance of its own sewers tributary to LOTT joint facilities to assure minimal additional inflow and infiltration will be allowed beyond that which exists at the time of this Contract and that which is otherwise herein accepted or removed.

Beginning March, 1996, and each year thereafter, it is agreed that each Partner with sewer lines tributary to LOTT joint facilities will prepare and submit to the LOTT Technical Sub-Committee an updated inventory of those sewer lines with an accompanying report identifying all updates, modifications, repairs an additions made during the preceding year to sewer lines which are tributary to LOTT joint facilities. The

inventory shall be similar to and substantially in the form of Appendix B of the LOTT I/I Study. LOTT will prepare a similar report for LOTT joint facility sewer lines. The Technical Sub-Committee will review the materials submitted and, commencing June, 1996, report annually to the Advisory Committee concerning the status of the systems of sewers tributary to LOTT joint facilities and the status of LOTT joint facilities relative to modifications, repairs and additions and the expected resulting changes in inflow and infiltration.

Beginning in the wet weather season of 1998-1999, and every seven years thereafter, the Partners agree that LOTT will conduct an update of the LOTT I/I Study to determine if significant additional inflow and infiltration exists which could result in a significant degradation of system capacity beyond that which exists at the time of this Contract and which is otherwise herein accepted or removed. Should such a condition(s) be present, each LOTT Partner agrees to act within twelve months of receiving such information to begin correction of the facilities contributing to degradation within its jurisdiction when such correction is cost effective. All sewer lines with inflow and infiltration no greater than 1,500 gallons per day per inch mile are exempt from correction under this agreement. The Partners further agree that LOTT, acting through the Advisory Committee, will act within twelve months of receiving of such information to initiate cost effective correction of facilities contributing to degradation in LOTT joint facilities.

5. Water Conservation

A. Purpose for Water Conservation Program

The LOTT Partners agree that reducing the amount of water consumed which reaches the Partner's local wastewater systems will delay the need for additional wastewater treatment facilities provided by or through LOTT. The LOTT Partners further agree that water conservation can be a cost effective method for delaying the need to construct additional wastewater treatment facilities. The LOTT Partners also agree that primary responsibility for water conservation, as defined herein, rests with water utilities providing water which, in the form of wastewater, reaches LOTT joint facilities.

B. Partner's Conservation Commitments

Each Partner operating a water utility(s) which provides water that reaches LOTT joint facilities agrees to individually pursue water conservation efforts which result in a per capita reduction in wastewater flow to LOTT joint facilities. The LOTT Technical Sub-Committee, using information on per capita wastewater flows in the LOTT I/I Study, will, on or before December 31, 1995, further refine and mutually establish specific, current per capita wastewater flows for each Partner operating a water utility(s) which provides water that reaches LOTT facilities. The LOTT Technical Sub-Committee shall also establish on or before December 31, 1995, a measuring system for calculating per capita wastewater flows from each Partner operating a water utility(s) which provides water that reaches LOTT facilities. Further, the LOTT Technical Sub-Committee shall establish a recommended cost effective per capita residential conservation goal, expressed in gallons per day, and a related cost effective conservation goal for commercial and industrial sewer users, both of which can be achieved within ten years. These recommended goals shall be presented to The Advisory Committee for consideration on or before December 31, 1995. The Advisory Committee shall, on or before February 28, 1996, adopt a ten year cost effective residential per capita conservation goal and a related ten year cost effective goal for commercial and industrial sewer users.

The conservation goals shall be targeted for achievement by December 31, 2005. Each February, commencing in 1996, each Partner operating a water utility(s) which provides water that reaches LOTT facilities will submit a report to The Advisory Committee which identifies the water conservation efforts undertaken or continued during the preceding calendar year, the current per capita wastewater flow using the agreed upon measuring system, and the progress toward the conservation goals.

C. LOTT Assistance

Each Partner operating a water utility(s) which provides water that reaches LOTT facilities is encouraged to present proposals to the Advisory Committee requesting LOTT funds to support water conservation as defined in this contract. Within sixty days of receipt of such proposals, the Advisory Committee, with the involvement of the Technical Sub-Committee, will respond to each proposal indicating the level of financial

support the LOTT Partners will provide and whether that support will be available immediately or during the following fiscal year. Proposals will be reviewed based on their likelihood of success and whether they will be cost effective in managing LOTT wastewater treatment capacity. It is the Partners' intent to fully support those conservation activities which have a high likelihood of success and which are cost effective.

D. LOTT's Role in Conservation

The LOTT Partners collectively will, in the manner described herein, support the conservation activities of the water utilities providing water which reaches LOTT joint facilities in the form of wastewater. LOTT will, while supporting and encouraging those activities, also search for and implement cost effective conservation activities which complement those of the water utilities and which can be effectively managed by LOTT acting on behalf of all the Partners.

6. New Capacity Planning

A. Initiate Wastewater Treatment Capacity Planning

The LOTT Partners agree that upon approval of this Contract, LOTT should act as quickly as feasible to secure engineering services, prepare a scope of work, and initiate facilities planning as defined by the United States Environmental Protection Agency pursuant to 40 CFR Part 35.917 and in Chapter 173-240 of the Washington Administrative Code to assure adequate future wastewater treatment capacity for the LOTT Partners. It is further agreed that the Advisory Committee, with assistance from the Technical Sub-Committee, is hereby authorized to conduct and timely complete facilities planning according to the general schedule described below. The planning effort will review all reasonable alternative for developing new capacity, including inflow and infiltration removal beyond that which is described in or provided for by Section 4 of this Contract. The planning will also consider population growth information consistent with local planning and regional growth management planning in developing refined flow projections beyond those already developed in the LOTT I/I Study.

The planning effort will be coordinated with other local, regional and state agencies and include an appropriate environmental review process consistent with

requirements of the Washington State Environmental Policy Act. The planning effort will provide adequate opportunity for citizens potentially affected by LOTT's planning outcomes to be aware of the planning process and to provide input to the Advisory Committee's planning decisions as plans are being prepared.

No later than June 30, 1998, and prior to completing facilities planning, the Partners agree to have convened and completed discussions about Partnership processes and operating procedures relative to decisions concerning planning, designing, financing and constructing future joint facilities.

B. Wastewater Treatment Capacity Allocation

Facilities planning effort identified above will include consideration of how new capacity is to be allocated among the LOTT Partners. The Partners hereby agree in principle that any allocation of future LOTT capacity should be based on each Partner's decision about its own future wastewater treatment capacity requirements provided that decision is consistent with State of Washington forecasts provided for growth management purposes, and maintaining prudent levels of reserve capacity. Until a new capacity allocation system is approved by the LOTT Partners, nothing herein shall be construed as changing the allocation established in the LOTT 1976 Contract as amended.

C. Financing Planning and New Wastewater Treatment Capacity

The facilities planning effort will be paid for using no less than sixty percent Reserve Capacity Charge receipts from LOTT funds and no more than forty percent from other LOTT revenues. It is hereby agreed that in considering how to finance new wastewater treatment capacity alternatives and recognizing the interest of existing rate payers, to the extent practicable the principle of "growth paying for growth" shall apply.

D. Schedule for Facilities Planning, Facilities Design and Facilities Construction

The LOTT Partners agree that time is of the essence in preparing a facilities plan so that the maximum amount of time is available for design and construction of whatever new capacity alternative(s) may be selected by the Advisory Committee. To that end, it is agreed that facilities planning will be completed no later than June 30, 1998, and that facilities planning information concerning estimates of remaining capacity

in existing LOTT joint facilities and schedules for timely implementation of new capacity alternatives will be made available as soon as possible to the Washington State Department of Ecology and each Partner for use in preparing each Partner's National Pollutant Discharge Elimination System Permit for LOTT joint facilities. It is further agreed that all reasonable efforts will be undertaken by the LOTT Partners collectively and individually to avoid Washington State Department of Ecology imposition of a sewer connection and septic tank permit moratorium as a result of insufficient wastewater treatment capacity or lack of reasonable progress in planning for wastewater treatment capacity.

7. Dispute Resolution

A. Advisory Committee Review

In the event of any dispute, claim or demand for performance ("issue") between or among Partners concerning, the Partner or Partners concerned with the issue shall present it to the Advisory Committee in detail and in writing for study and recommendation. Oral presentations shall be permitted and all Partners shall be given a reasonable opportunity to respond to the issue prior to consideration of a recommendation by the Advisory Committee. The Advisory Committee shall then make such findings and prepare such conclusions and recommendations as may represent the majority decision of the Advisory Committee on the issue within ninety (90) days after receipt of the initial written presentation of the issue.

B. Non-binding Mediation

In the event the Advisory Committee's actions do not resolve the issue to the satisfaction of all of the Partners, any Partner may refer the matter to mediation by filing a written request with the Advisory Committee within thirty (30) days of the issuance of the advisory Committee's decision. The Advisory Committee shall refer the request to the presiding judge of the Thurston County Superior Court with the request that the court appoint a qualified mediator to establish the rules, schedule and scope of the mediation, unless all of the Partners agree on an appropriate mediator and the rules, schedule and scope of the mediation. All Partners shall be parties to the mediation and shall equally share the cost of the mediator.

The mediation shall occur within ninety (90) days of the appointment of a mediator. The mediation shall be conducted de novo from prior dispute resolution proceedings.

C. Binding Arbitration

In the event the issue is not resolved by mediation, then the issue may be submitted to binding arbitration by any Partner pursuant to paragraph 15 of the LOTT 1976 Contract and Chapter 7.04 of the Revised Code of Washington. All Partners shall be parties to the arbitration and shall equally share the cost of the arbitrator. Such arbitration shall be limited to the interpretation and application of this Contract and may not impair the contract and debt obligations of any Partner, including Olympia. The arbitration shall be conducted de novo from prior dispute resolution proceedings.

D. Litigation

Completion of the Advisory Committee review, the mediation steps and binding arbitration shall be a prerequisite to the filing of any legal action relative to interpretation of this agreement in Thurston County Superior Court. Subject to this condition, the terms of this Contract shall be specifically enforceable.

--continues on next page--

So approved this 27th day of March, 1995.

City of Lacey:

By: Jon Halvorson
Its Mayor
Attest:
Charlotte Taylor

City of Olympia:

By: Bob Jacobs
Its Mayor
Attest:
By: Jane Ragland Kirkemo

City of Tumwater:

By: Ralph Osgood
Its Mayor
Attest:
Sheryle Wyatt

County of Thurston:

By: Judy Wilson
Its Chairperson
Attest:
LaBonita Bowman

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Exhibit K

INTERLOCAL COOPERATION AGREEMENT
BETWEEN THURSTON COUNTY
AND THE CITIES OF LACEY, OLYMPIA AND TUMWATER
REGARDING JOINT WASTEWATER FLOW
REDUCTION AND WATER CONSERVATION PROJECTS

This agreement, dated May 28, 1997, hereinafter referred to as GENERAL AGREEMENT, is made and entered into by and between Thurston County and the cities of Lacey, Olympia and Tumwater for joint planning, management and operation of wastewater flow reduction and water conservation projects. The terms of agreement about each specific project will be described in separate agreements, hereinafter referred to as PROJECT AGREEMENTS.

WITNESSETH:

WHEREAS, it is in the public interest to effectively reduce LOTT wastewater flows and thereby help delay the need for developing additional sewage treatment capacity; and

WHEREAS, it is in the public interest to make most effective use of limited water resources; and

WHEREAS, it is to the mutual advantage of the parties to share the cost of preparing general water and wastewater reduction plans, developing public education, retrofit and other programs for water conservation and wastewater flow reduction; and

WHEREAS, coordinated water conservation and wastewater flow reduction programs and messages promote the wise use of resources and provide benefits across jurisdictional boundaries; and

WHEREAS, in the Intergovernmental Contract for Inflow and Infiltration Management and New Capacity Planning, dated March 27, 1995, the LOTT Partners agreed that water conservation can be a cost-effective method for delaying the need to construct additional wastewater treatment facilities; and

WHEREAS, the LOTT Partners further agreed in the March 27, 1995 contract that primary responsibility for water conservation rests with water utilities providing water which, in the form of wastewater, reaches LOTT joint facilities; and

WHEREAS, the LOTT Partners further agreed in the March 27, 1995 contract that each Partner operating such water utility(s) would individually pursue water conservation efforts which result in a per capita reduction in wastewater flow to LOTT joint facilities; and

WHEREAS, pursuant to Chapter 39.34 RCW, the parties are authorized to jointly exercise the powers, privileges, and authority described herein;

NOW, THEREFORE, in consideration of the mutual promises and covenants recited herein, the parties agree and resolve as follows:

I. PURPOSE

This GENERAL AGREEMENT establishes the benefits and obligations to the parties for participating in cooperative water conservation and wastewater flow reduction planning and management activities.

II. RELATIONSHIP

The parties agree that they intend to act jointly pursuant to the authority of Chapter 39.34 RCW to accomplish the purpose recited herein. No separate legal entity is created by this agreement.

III. MANAGEMENT

All activities conducted pursuant to this GENERAL AGREEMENT shall be coordinated and managed by the STEERING COMMITTEE, whose members shall be the Directors of Public Works or Directors of Water and Waste Management of the four jurisdictions.

IV. ACTIVITIES

Any water conservation or wastewater flow reduction activity or projects may be conducted under the terms of this GENERAL AGREEMENT by consent of two or more parties. For each activity or project, detailed terms of agreement related to the scope of work, responsibility of each party and financing shall be prepared as a PROJECT AGREEMENT attached to this document. Such activities shall be consistent with adopted policies and budgets of each jurisdiction and LOTT. Each PROJECT AGREEMENT shall be adopted and/or officially approved by each of the affected jurisdictions.

V. PUBLIC INFORMATION, EDUCATION AND INVOLVEMENT

It is understood and recognized that each activity or project completed under this GENERAL AGREEMENT will require varying amounts of public information, education and involvement. The specific scope and type of public activity shall be included in the PROJECT AGREEMENT attached to this GENERAL AGREEMENT.

VI. RESPONSIBILITY

Within each separate PROJECT AGREEMENT, one of the following two responsibility approaches will apply and will be specifically defined.

A. Lead Agency Approach. In this model, one jurisdiction will be designated in the applicable PROJECT AGREEMENT as lead agency and other participating jurisdictions, not serving as lead agency, shall be cooperating agencies.

1. Lead Agency will be responsible to:

   a. Administer the project, including managing any grant funds and coordinating with other jurisdictions and agencies to ensure that work proceeds in an acceptable manner and that performance is timely.
   b. Account for funds expended and bill each jurisdiction, as appropriate, for its agreed upon share of the project at regular intervals.
   c. Provide legal opinions and support as necessary to carry out the work.
   d. Provide required budget and program information and/or requirements to cooperating agencies allowing adequate time for preparation of their annual budgets and workplans.
   e. Coordinate the project with other County and City water conservation and/or wastewater flow reduction programs.

2. Cooperating Agencies:

For each project, cooperating agencies not serving as lead agency will be responsible to:

   a. Assign their chief public works or engineering manager or designee to participate and assist the lead agency in preparing the work program and directing the overall project.

b. Reimburse the lead agency for their share of the total project or account for labor and other costs within the terms of the PROJECT AGREEMENT. Make payments within 45 days following billing by the lead agency.
c. Keep a record of costs incurred as part of the project, whether or not they are to be reimbursed.
d. Provide information required for the project.
e. Review the data and findings of the project.
f. Assist as appropriate with obtaining public participation and/or input.
g. Provide feedback and evaluation where needed for development of future projects.

B. Project Policy Agreement Approach. In this model, participating jurisdictions will incorporate in the applicable PROJECT AGREEMENT the terms by which separate projects undertaken by each jurisdiction shall achieve common goals and will be carried out in a manner that provides consistent service to customers across jurisdictional boundaries. Elements incorporated in the PROJECT AGREEMENT may include provisions for joint selection of service providers, development and distribution of consistent educational and marketing messages, establishment and implementation of evaluation techniques and procedures, equitable allocation of charges and benefits to customers, and other issues deemed necessary to the promotion of a consistent regional program. Each participating jurisdiction will be responsible for carrying out and funding its own project.

VII. COST ALLOCATION

Costs for each project may be shared by LOTT, the participating water and/or sewer utilities, customers and/or other funding sources. Generally, costs for each project supported by LOTT and achieving wastewater flow reductions through activities targeting sewer customers shall be allocated based on LOTT's flow reduction program funding guidelines effective at the time the project is approved. Costs to serve water customers who are not also LOTT sewer customers shall be covered by the utilities, customers and/or other funding sources. The specific method of cost allocation shall be included in the detailed terms of the activity or project as described in the PROJECT AGREEMENT attached to this GENERAL AGREEMENT.

VIII. DURATION

This GENERAL AGREEMENT shall remain in effect for five years and may be extended upon agreement of the participating jurisdictions.

IX. WITHDRAWL

Any party to this GENERAL AGREEMENT may withdraw after giving 30 days written notice to the other parties. The withdrawing party will remain responsible for fulfilling all financial commitments made under this GENERAL AGREEMENT and any PROJECT AGREEMENTS, except as mutually agreed upon by the affected parties.

CITY OF LACEY

By: Greg J. Cuoio

BOARD OF COMMISSIONERS
Thurston County, Washington

ABSENT
Chairman

ATTEST:

Charlotte M. Taylor

CITY OF OLYMPIA

By: Richard C. Cushing

ATTEST:

Jane Ragland Kirkemo
City Clerk

CITY OF TUMWATER

By: Ralph Osgood

ATTEST:

Sheryle Wyatt
City Clerk

APPROVED AS TO FORM:

P. Brock
City Attorney

Richard Q. Nichols
Commissioner

Judy Wilson
Commissioner

ATTEST:

LaBonita I. Bowmar
Clerk of the Board

APPROVED AS TO FORM:

Prosecuting Attorney

BY:

Mark H. Calkins
Deputy Prosecuting Attorney

Exhibit L

ADMINISTRATIVE AND TREASURY SERVICES CONTRACT

THIS CONTRACT ("Contract"), dated _____, 2000, is entered into by and between the City of Olympia ("Olympia"), a Washington municipal corporation, and the LOTT Wastewater Alliance ("LOTT"), a nonprofit corporation formed and existing under Chapters 24.03 and 39.34 RCW. The parties are herein individually referred to a "Party" and collectively as the "Parties."

RECITALS

WHEREAS, the Cities of Lacey, Olympia, and Tumwater and Thurston County (ALOTT Partners@) have entered the Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance, dated _____, 2000 ("Interlocal Cooperation Act Agreement"). Any capitalized terms not defined herein shall have the meaning as defined in the Interlocal Cooperation Act Agreement; and

WHEREAS, RCW 43.09.285 requires the funds of the LOTT Wastewater Alliance to be deposited in the public treasury of one of the LOTT Partners; and

WHEREAS, the Interlocal Cooperation Act Agreement provides for Olympia and LOTT to enter this Contract so that Olympia may continue to provide certain administrative and treasury services to LOTT for at least an initial period of time; and

WHEREAS, Olympia has historically provided administrative treasury, and financial services for the LOTT Partnership prior to the Interlocal Cooperation Act Agreement; and

WHEREAS, the Parties desire to set out the specific terms and conditions of Olympia=s provision of services to LOTT.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, the Parties hereby agree as follows:

1. General Description of Roles.

The Parties intend for Olympia to perform limited treasury and accounting functions for LOTT, as defined below. This contract does not include providing financial advice, serving as a financial advisor to LOTT, capital facilities planning or financing, issuing of debt, administratively arbitrage regulations, or signing contracts or documents on behalf of LOTT, except for contracts or documents necessary to carry out the functions and intent of this contract. In addition, the Parties intend that Olympia provide informal consultations to LOTT regarding the above financial matters. LOTT will obtain formal advice and services regarding capital facilities financing, debt issuance, investment advice, and other financial matters from other sources.

2. Services Provided by Olympia.

As directed by the LOTT Board and its duly authorized representatives, Olympia shall provide the following services to LOTT:

a) Hold LOTT funds in a separate fund (the "LOTT Fund") and establish special accounts within the LOTT Fund as requested by LOTT or as required by state law.

b) Receive and disburse LOTT funds. Olympia may disburse funds for debt service obligations in accord with bond covenants of LOTT without specific direction from the LOTT Wastewater Alliance, and establish bank accounts as needed to carry out this contract.

c) Perfonn basic accounting services including detail of accounting transactions, maintenance of budget, accounts payable, accounts receivable, and payroll. Maintenance of detailed inventory and fixed asset records shall be the responsibility of LOTT. Project and grant accounting shall be the responsibility of LOTT, although Olympia will within the standard design of its accounting system provide for tracking of financial transactions of projects and grants.

d) Investment of LOTT funds consistent with investment policies adopted by the LOTT Board. Establish investment accounts as needed.

e) Assist with audits of LOTT.

f) Prepare annual financial reports as required by the State Auditor=s Office.

LOTT shall be responsible for retaining any and all documents produced which are necessary for Olympia to carry out the provisions of this contract. Upon completion of the audit by the State Auditor=s Office, all documents produced for the audited period shall be delivered to LOTT.

Olympia shall perform the above functions in accordance with Generally Accepted Accounting Principles ("GAAP"), rules promulgated by the Auditor of the State of Washington, and other applicable law.

Olympia shall have access to LOTT books and records as necessary or convenient in performing services for LOTT. LOTT shall provide reasonable notice to Olympia of requests to perform tasks under this Contract.

3. Compensation.

From the date of this agreement through December 31, 2001, the amount received by Olympia for overhead and indirect charges under the LOTT facilities Operations and Maintenance Agreement executed per Section 5.2 of the Interlocal Cooperation Act Agreement,

shall also cover the services rendered by Olympia under this contract. The Parties recognize that creation of the LOTT Wastewater Alliance as a separate entity will result in more effort for administration and treasury services than before. As a result, at least sixty (60) days prior to December 31, 2001, and for each year thereafter, Olympia will submit to LOTT for inclusion as an amendment to this contract the costs to perform the treasury and administrative functions separately under this agreement. LOTT will review these costs in good faith and, if these costs are acceptable to LOTT, that amount will be included in this contract as the payment to Olympia for services performed hereunder. If the Operation and Maintenance Contract for LOTT facilities is terminated prior to December 31, 2001, the Parties shall negotiate in good faith the compensation to be paid hereunder for the period this contract is in effect.

Separate from the above, each year LOTT will pay Olympia the out-of-pocket expenses Olympia incurs which are not customarily incurred in the provision of administrative and treasury services, such as investment fees, wire transfer fees, and setup costs.

4. Billings.

Overhead and indirect costs payable under the LOTT facilities Operations and Maintenance Contract which constitute compensation hereunder for the period indicated above, and reimbursement requests shall be billed by Olympia to LOTT. Payment on these billings shall be due within thirty (30) days of receipt thereof by LOTT. Delinquent amounts shall accrue interest at one percent per month. Compensation for services under this contract for any period after December 31, 2001 shall be billed and paid in the same manner.

5. Contract Relationship.

The relationship of Olympia to LOTT created by this Contract is that of an independent contractor, and none of Olympia=s employees or agents shall be considered employees of LOTT.

6. Term of Agreement.

This contract shall take effect on the date Consolidation occurs pursuant to the Interlocal Cooperation Act Agreement ("Effective Date"). This Contract shall remain in effect unless and until earlier terminated for convenience by LOTT or Olympia.

7. Termination for Convenience.

Either party may terminate this Contract for convenience, which termination shall be effective one year after either party provides notice of termination to the other party. Neither party shall give notice of termination earlier than January 31, 2000. Prior to giving notice of termination of this Contract, LOTT shall have considered and documented Olympia=s and alternate administrative and treasury service costs and practices as provided in the Interlocal Cooperation Act Agreement.

8. Termination for Cause.

Either Party may terminate this Contract upon material breach by the other party providing that the terminating Party first provides written notice of such breach to the other Party and such breach has not been corrected within a forty-five (45) day cure period, except if the cure cannot reasonably be completed within forty-five (45) days then the Party shall not be in default so long as it commences the cure within forty-five (45) days and promptly and diligently completes the same. The written notice shall specify the alleged breach and the action(s) that would cure it.

9. Notices; Authorized Representatives.

All notices shall be in writing and delivered in person or transmitted by certified mail, return receipt requested, postage prepaid. Notices required to be given to the City of Olympia shall be addressed as follows:

City Manager
City of Olympia
P.O. Box 1967
Olympia WA 98507-1967

Notices required to be given to the LOTT Wastewater Alliance shall be addressed as follows:

Executive Director
LOTT Partnership Administration
2101 - 4th Ave., E./Suite 101
Olympia WA 98506

10. Dispute Resolution.

Any disputes under this Agreement shall be resolved by negotiation, if possible. If impasse is reached, the Parties shall employ a panel with three arbitrators, one appointed by each party and the third by the two appointed arbitrators, to resolve the dispute. The ruling of the panel shall be binding, subject to judicial review under an arbitrary and capricious standard.

11. Non-waiver.

The failure on the part of either Party to enforce its right as to any provision of the Contract shall not be construed as a waiver of its rights to enforce such provision in the future.

12. No Third Party Beneficiaries

Except as expressly provided herein, this Contract is not intended to create rights in, or to grant remedies to, any third party as a beneficiary of this Contract or of any duty, obligation or undertaking established herein.

13. Governing Law.

This Contract shall be governed by the laws of the State of Washington.

14. Assignment.

With the approval of the LOTT Board, Olympia may assign this Contract to one of the other LOTT Partners.

15. Severability.

If one or more clauses, sections, or provisions of this Contract is held to be unlawful, invalid or unenforceable by any court with jurisdiction, the remainder of this Contract shall not be affected thereby.

16. Modifications in Writing.

Except as expressly provided in this Contract, no amendment or modification of this Contract shall be effective unless made in writing and executed by all Parties.

IN WITNESS WHEREOF, each Party has caused this Contract to be signed by its duly authorized officer or representative as of the date set forth below its signature.

DATED this _____day of_____2000.

CITY OF OLYMPIA	**LOTT WASTEWATER ALLIANCE**
By:	By:
_____	_____
Its:	Its:
_____	_____
ATTEST:	ATTEST:
By:	By:
_____	_____
Approved as to form:	Approved as to form:
_____	_____
Legal Counsel	Legal Council

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MASTER INTERLOCAL AGREEMENT
BETWEENLOTT CLEAN WATER ALLIANCE AND CITY OF LACEY

This Agreement is entered into in duplicate originals this 8TH day of May, 2014 between the LOTT CLEAN WATER ALLIANCE, a 501(c)(3) corporation acting as a public agency to provide wastewater resource management services (hereinafter "LOTT") and the CITY OF LACEY, a municipal corporation (hereinafter "City"), pursuant to RCW 39.34.080.

WHEREAS, it is to the mutual advantage of LOTT and the City to cooperate as described herein in order to make the most efficient use of their resources to provide services and facilities needed by the citizens residing within their respective jurisdictions; and

WHEREAS, RCW 39.34.080 authorizes a public agency to contract with another public agency to perform any governmental service, activity, or undertaking that each public agency is authorized by law to perform;

NOW THEREFORE, by virtue of RCW 39.34.080 and in consideration of the terms, conditions, covenants, and performances contained herein, or attached and incorporated and made a part hereof, IT IS MUTUALLY AGREED AS FOLLOWS:

I
GENERAL

1.0 It is the purpose of the Agreement to permit the parties to make the most efficient use of their resources by enabling them to cooperate by providing staff support, equipment, and materials when available on a reimbursable basis for roadway, utility, and utility appurtenance maintenance activities or cooperate on joint roadway, utility, and utility appurtenance maintenance and repair projects. This will be done with the understanding that the work of the owner of the requested resources takes first priority.

1.1 This Agreement sets forth all terms and conditions agreed upon by LOTT and the City and supersedes any and all prior agreements oral or otherwise with respect to the subject matter addressed herein.

II
DURATION

2.0 This Agreement shall become effective on the date written above and shall remain in effect for five (5) years unless terminated sooner as provided for herein. At the end of the five-year term, this Agreement may be renewed under those terms and conditions mutually agreed to by the parties herein. Prior to becoming enforceable, this Agreement shall be executed by both Parties and recorded with the Thurston County Auditor's Office or posted upon the websites or other electronically retrievable public source as required by RCW 39.34.040.

III

REQUEST FOR SERVICES

3.0 Each request for service shall be submitted by the authorized official or designee on behalf of each entity. Each request for service shall be in writing and shall specify the particular service required, the amounts and types of labor, equipment, and material required, the location of the work, the estimated cost of the work, when the work is to be performed, and other information pertinent to the request. Upon receipt of the request, the party which has been requested to supply the service shall indicate their acceptance or rejection of the request, have the request reduced to a writing that complies with RCW 39.34 et.seq, and signed by their authorized official, and return one (1) copy to the requesting party. The authorized official for LOTT is the Executive Director and for the City of Lacey is the City Administrator or designee. In cases of emergency, as declared in writing by the official at the requesting agency authorized to do so, the request and approval may be verbal, but must be documented in writing within 48 hours of the verbal request, and following up by an Agreement that complies with RCW 39.34 et.seq. . In some instances, it may be necessary for one or both Parties to obtain the authorization of their respective governing body as a pre-requisite to provide services under this Agreement or, in the case of an emergency, for the governing body to review the services provided.

3.1 The party that accepts the request for service agrees to perform, or cause to be performed, all work and furnish, or cause to be furnished, all materials and equipment required to procure and perform the work described in the Request for Services. The work shall be procured and performed in accordance with this Agreement and all applicable city, state, and federal laws, policies, and regulations applicable to each Party.

IV

PAYMENT

4.0 The parties to this Agreement agree that the party receiving services under this Agreement shall reimburse the party providing the services for their actual direct and related indirect costs. Upon request of the providing party, the party receiving services shall make partial payments to cover out of pocket costs incurred. These payments are not to be more frequent than once per month. It is agreed that any such partial payment will not constitute agreements as to the appropriateness of any item or to the reasonableness of the cost incurred. Neither party may incur costs on behalf of the other beyond that expressed in their written agreement to perform services without first obtaining the requesting party's written consent.

4.1 The maximum amount payable for work to be performed under this Agreement is $100,000 per calendar year.

V

RECORDS RETENTION AND AUDIT

5.0 During the progress of the work and for a period not less than six (6) years from the final date of payment, the records and accounts pertaining to the work and accounting therefore are to be kept available for inspection and audit by either party and/or the Federal Government. Copies of all records, accounts, documents, or other data pertaining to the work will be furnished upon request. If any litigation, claim, or audit is commenced, the records and accounts along with supporting documentation shall be retained until all litigation, claim, or audit finding has been resolved even though such litigation, claim, or audit continues past the 6-year retention period. The Parties agree that any requirements under the Washington Public Records Act and RCW 40.14 that exceed the six (6) year requirement described herein shall be complied with.

VI

CARE AND MAINTENANCE OF EQUIPMENT

6.0 The parties agree that any time a request is made for the use of equipment, the requesting party shall be responsible for the proper care, maintenance, and security of the equipment until the equipment is returned to the owner. Any damage other than normal wear and tear will be the responsibility of the party in possession of the equipment at the time the equipment is damaged.

VII

RIGHT OF ENTRY

7.0 The parties to this Agreement hereby grant and convey to each other the right of entry upon all land in which the parties have interest, within or adjacent to the right of way of the highway, road, or street for the purpose of accomplishing all work or services requested as part of this Agreement.

VIII

RELATIONSHIP OF PARTIES

8.0 The employees or agents of each party who are engaged in the performance of this Agreement shall continue to be employees or agents of that party and shall not be considered for any purpose to be employees or agents of the other party. This Agreement is for the benefit of the parties, and no third party beneficiary relationship is intended. No separate legal entity and no joint organization are created by this Agreement. No common budget is to be established. No personal or real property is to be jointly acquired or held.

IX

HOLD HARMLESS AND INDEMNIFICATION

9.0 The City shall hold harmless, indemnify, and defend LOTT, its officers, officials, employees and agents, solely for third party claims relating to bodily injury, sickness or death, or real or personal property damage or destruction and loss of use thereof, including costs and attorney's

fees in defense thereof, caused by or arising out of the City's negligence in the performance of its obligations under this Agreement.

9.1 LOTT shall hold harmless, indemnify, and defend the City, its officers, officials, employees and agents, solely for third party claims relating to bodily injury, sickness or death, or real or personal property damage or destruction and loss of use thereof, including costs and attorney's fees in defense thereof, caused by or arising out of the LOTT's negligence in the performance of its obligations under this Agreement.

9.2 The City's obligations hereunder shall not extend to bodily injury, sickness or death caused by or arising out of the sole negligence of LOTT, its officers, officials, employees or agents.

9.3 LOTT's obligations hereunder shall not extend to bodily injury, sickness or death caused by or arising out of the sole negligence of the City, its officers, officials, employees or agents.

9.4 In the event of the concurrent negligence of the parties, the City's obligations hereunder shall apply only to the percentage of fault attributable to the City, its officers, officials, employees or agents.

9.5 In the event of the concurrent negligence of the parties, the LOTT's obligations hereunder shall apply only to the percentage of fault attributable to LOTT, its officers, officials, employees or agents.

9.6 The provisions of this Section IX shall survive the expiration or termination of this Agreement and completion of the request for services.

X
INSURANCE

10.0 Both parties shall maintain Commercial General Liability or equivalent for bodily injury, personal injury and property damage, subject to limits of not less than $1,000,000 per loss. The general aggregate limit shall apply separately to this Agreement and be no less than $2,000,000. Participation in a governmental self-insured risk pool shall fulfill the above stated coverage requirements. An Evidence of Coverage acknowledgement letter from the jurisdictions' risk pools will be provided to each party. Other insurance coverage that may be unique to the work performed will be included in the written agreement following the acceptance of a request to perform work, as more particularly referred to in Section III herein.

10.1 Both parties shall maintain workers' compensation insurance as required by Title 51 RCW, and shall provide evidence of coverage to the other party.

10.2 Both parties shall maintain all required policies in force from the time services commence until services are completed. Certificates, policies, and endorsements expiring before completion of services shall be promptly replaced with written notice mailed to each party.

XI

TERMINATION

11.0 Either party may terminate this Agreement upon 30 calendar days' prior written notice to the other party. If this Agreement is so terminated, the parties shall be liable only for performance rendered or costs incurred in accordance with the terms of this Agreement prior to the effective date of termination. The hold harmless and indemnification provision shall survive the termination of this Agreement and completion of the request for services. In exercising its right to Termination, the Parties agree to act reasonable to minimize any costs associated with the overall project and the work specifically being undertaken pursuant to this Agreement.

XII

LEGAL RELATIONS

12.0 No liability shall attach to the parties by reason of entering into this Agreement except as expressly provided herein.

XIII

ADMINISTRATION AND NOTICE

13.0 The following individuals are designated as representatives of the respective parties. The representatives shall be responsible for administration of this Agreement and for coordinating and monitoring performance under this Agreement. Wherever written notice is required under this Agreement, such notice shall be provided to the representatives designated below. In the event such representatives are changed, the party making the change shall notify the other party.

The City's representative shall be the Wastewater Supervisor or their Designee

LOTT's representative shall be the Contract Administrator, 500 Adams Street NE, Olympia, WA 98501, 360-528-5718.

13.1 Any notice required under this Agreement shall become effective three (3) calendar days following the date of deposit in the United States Postal Service.

XIV

CHANGES, MODIFICATIONS, AND AMENDMENTS

14.0 This Agreement may be changed, modified, amended or waived only by written agreement executed by the authorized officials of both parties hereto.

XV
GOVERNING LAW AND VENUE

15.0 This Agreement has been and shall be construed as having been made and delivered within the State of Washington and it is agreed by each party hereto that this Agreement shall be governed by the laws of the State of Washington both as to its interpretation and performance. Any action at law, suit in equity, or judicial proceeding arising out of this Agreement shall be instituted and maintained only in a court of competent jurisdiction in Thurston County, Washington.

XVI
WAIVER

16.0 A failure by either party to exercise its rights under this Agreement shall not preclude that party from subsequent exercise of such rights and shall not constitute a waiver of any other rights under this Agreement unless stated to be such in a writing signed by an authorized representative of the party and attached to the original Agreement.

XVII
SEVERABILITY

17.0 If any provision of this Agreement of any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this Agreement, and to this end the provisions of this Agreement are declared to be severable.

XVIII
EQUAL OPPORTUNITY TO DRAFT

18.0 The parties have participated and had an equal opportunity to participate in the drafting of this Agreement, and the Exhibits, if any, attached. No ambiguity shall be construed against any party upon a claim that such party drafted the ambiguous language.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

City of Lacey

By: Scott Spence

Its: City Manager

LOTT Clean Water Alliance

By: Michael D. Strub

Its: Executive Director

ATTEST: _____

Carol Litten, City Clerk

Approved as to form

By: _____

David Schneider, City Attorney

ATTEST: _____

Farah Derosier, Corporate Secretary

Approved as to form

By: _____

Rick Hughes, General Counsel

REQUEST FOR SERVICES
EXHIBIT _____
TO
MASTER INTERLOCAL AGREEMENT
BETWEEN LOTT CLEAN WATER ALLIANCE AND CITY OF LACEY

TITLE

_____

SCOPE OF PROJECT

_____
_____
_____
_____
_____

COST ESTIMATE (Itemization to be attached)

Labor $_____
Materials $_____
Equipment $_____
Other $_____
TOTAL $_____

LOCATION OF WORK

_____

START DATE

_____

COMPLETION DATE

_____

PROJECT CONTACTS

LOTT Clean Water Alliance

_____
_____
_____
_____

City of Lacey

_____
_____
_____
_____

CONCURRENCE

_____
LOTT Clean Water Alliance

_____
City of Lacey

MASTER INTERLOCAL AGREEMENT
BETWEENLOTT CLEAN WATER ALLIANCE AND CITY OF LACEY

This Agreement is entered into in duplicate originals this 8TH day of May, 2014 between the LOTT CLEAN WATER ALLIANCE, a 501(c)(3) corporation acting as a public agency to provide wastewater resource management services (hereinafter "LOTT") and the CITY OF LACEY, a municipal corporation (hereinafter "City"), pursuant to RCW 39.34.080.

WHEREAS, it is to the mutual advantage of LOTT and the City to cooperate as described herein in order to make the most efficient use of their resources to provide services and facilities needed by the citizens residing within their respective jurisdictions; and

WHEREAS, RCW 39.34.080 authorizes a public agency to contract with another public agency to perform any governmental service, activity, or undertaking that each public agency is authorized by law to perform;

NOW THEREFORE, by virtue of RCW 39.34.080 and in consideration of the terms, conditions, covenants, and performances contained herein, or attached and incorporated and made a part hereof, IT IS MUTUALLY AGREED AS FOLLOWS:

I
GENERAL

1.0 It is the purpose of the Agreement to permit the parties to make the most efficient use of their resources by enabling them to cooperate by providing staff support, equipment, and materials when available on a reimbursable basis for roadway, utility, and utility appurtenance maintenance activities or cooperate on joint roadway, utility, and utility appurtenance maintenance and repair projects. This will be done with the understanding that the work of the owner of the requested resources takes first priority.

1.1 This Agreement sets forth all terms and conditions agreed upon by LOTT and the City and supersedes any and all prior agreements oral or otherwise with respect to the subject matter addressed herein.

II
DURATION

2.0 This Agreement shall become effective on the date written above and shall remain in effect for five (5) years unless terminated sooner as provided for herein. At the end of the five-year term, this Agreement may be renewed under those terms and conditions mutually agreed to by the parties herein. Prior to becoming enforceable, this Agreement shall be executed by both Parties and recorded with the Thurston County Auditor's Office or posted upon the websites or other electronically retrievable public source as required by RCW 39.34.040.

III

REQUEST FOR SERVICES

3.0 Each request for service shall be submitted by the authorized official or designee on behalf of each entity. Each request for service shall be in writing and shall specify the particular service required, the amounts and types of labor, equipment, and material required, the location of the work, the estimated cost of the work, when the work is to be performed, and other information pertinent to the request. Upon receipt of the request, the party which has been requested to supply the service shall indicate their acceptance or rejection of the request, have the request reduced to a writing that complies with RCW 39.34 et.seq, and signed by their authorized official, and return one (1) copy to the requesting party. The authorized official for LOTT is the Executive Director and for the City of Lacey is the City Administrator or designee. In cases of emergency, as declared in writing by the official at the requesting agency authorized to do so, the request and approval may be verbal, but must be documented in writing within 48 hours of the verbal request, and following up by an Agreement that complies with RCW 39.34 et.seq. . In some instances, it may be necessary for one or both Parties to obtain the authorization of their respective governing body as a pre-requisite to provide services under this Agreement or, in the case of an emergency, for the governing body to review the services provided.

3.1 The party that accepts the request for service agrees to perform, or cause to be performed, all work and furnish, or cause to be furnished, all materials and equipment required to procure and perform the work described in the Request for Services. The work shall be procured and performed in accordance with this Agreement and all applicable city, state, and federal laws, policies, and regulations applicable to each Party.

IV

PAYMENT

4.0 The parties to this Agreement agree that the party receiving services under this Agreement shall reimburse the party providing the services for their actual direct and related indirect costs. Upon request of the providing party, the party receiving services shall make partial payments to cover out of pocket costs incurred. These payments are not to be more frequent than once per month. It is agreed that any such partial payment will not constitute agreements as to the appropriateness of any item or to the reasonableness of the cost incurred. Neither party may incur costs on behalf of the other beyond that expressed in their written agreement to perform services without first obtaining the requesting party's written consent.

4.1 The maximum amount payable for work to be performed under this Agreement is $100,000 per calendar year.

V

RECORDS RETENTION AND AUDIT

5.0 During the progress of the work and for a period not less than six (6) years from the final date of payment, the records and accounts pertaining to the work and accounting therefore are to be kept available for inspection and audit by either party and/or the Federal Government. Copies of all records, accounts, documents, or other data pertaining to the work will be furnished upon request. If any litigation, claim, or audit is commenced, the records and accounts along with supporting documentation shall be retained until all litigation, claim, or audit finding has been resolved even though such litigation, claim, or audit continues past the 6-year retention period. The Parties agree that any requirements under the Washington Public Records Act and RCW 40.14 that exceed the six (6) year requirement described herein shall be complied with.

VI

CARE AND MAINTENANCE OF EQUIPMENT

6.0 The parties agree that any time a request is made for the use of equipment, the requesting party shall be responsible for the proper care, maintenance, and security of the equipment until the equipment is returned to the owner. Any damage other than normal wear and tear will be the responsibility of the party in possession of the equipment at the time the equipment is damaged.

VII

RIGHT OF ENTRY

7.0 The parties to this Agreement hereby grant and convey to each other the right of entry upon all land in which the parties have interest, within or adjacent to the right of way of the highway, road, or street for the purpose of accomplishing all work or services requested as part of this Agreement.

VIII

RELATIONSHIP OF PARTIES

8.0 The employees or agents of each party who are engaged in the performance of this Agreement shall continue to be employees or agents of that party and shall not be considered for any purpose to be employees or agents of the other party. This Agreement is for the benefit of the parties, and no third party beneficiary relationship is intended. No separate legal entity and no joint organization are created by this Agreement. No common budget is to be established. No personal or real property is to be jointly acquired or held.

IX

HOLD HARMLESS AND INDEMNIFICATION

9.0 The City shall hold harmless, indemnify, and defend LOTT, its officers, officials, employees and agents, solely for third party claims relating to bodily injury, sickness or death, or real or personal property damage or destruction and loss of use thereof, including costs and attorney's

fees in defense thereof, caused by or arising out of the City's negligence in the performance of its obligations under this Agreement.

9.1 LOTT shall hold harmless, indemnify, and defend the City, its officers, officials, employees and agents, solely for third party claims relating to bodily injury, sickness or death, or real or personal property damage or destruction and loss of use thereof, including costs and attorney's fees in defense thereof, caused by or arising out of the LOTT's negligence in the performance of its obligations under this Agreement.

9.2 The City's obligations hereunder shall not extend to bodily injury, sickness or death caused by or arising out of the sole negligence of LOTT, its officers, officials, employees or agents.

9.3 LOTT's obligations hereunder shall not extend to bodily injury, sickness or death caused by or arising out of the sole negligence of the City, its officers, officials, employees or agents.

9.4 In the event of the concurrent negligence of the parties, the City's obligations hereunder shall apply only to the percentage of fault attributable to the City, its officers, officials, employees or agents.

9.5 In the event of the concurrent negligence of the parties, the LOTT's obligations hereunder shall apply only to the percentage of fault attributable to LOTT, its officers, officials, employees or agents.

9.6 The provisions of this Section IX shall survive the expiration or termination of this Agreement and completion of the request for services.

X
INSURANCE

10.0 Both parties shall maintain Commercial General Liability or equivalent for bodily injury, personal injury and property damage, subject to limits of not less than $1,000,000 per loss. The general aggregate limit shall apply separately to this Agreement and be no less than $2,000,000. Participation in a governmental self-insured risk pool shall fulfill the above stated coverage requirements. An Evidence of Coverage acknowledgement letter from the jurisdictions' risk pools will be provided to each party. Other insurance coverage that may be unique to the work performed will be included in the written agreement following the acceptance of a request to perform work, as more particularly referred to in Section III herein.

10.1 Both parties shall maintain workers' compensation insurance as required by Title 51 RCW, and shall provide evidence of coverage to the other party.

10.2 Both parties shall maintain all required policies in force from the time services commence until services are completed. Certificates, policies, and endorsements expiring before completion of services shall be promptly replaced with written notice mailed to each party.

XI

TERMINATION

11.0 Either party may terminate this Agreement upon 30 calendar days' prior written notice to the other party. If this Agreement is so terminated, the parties shall be liable only for performance rendered or costs incurred in accordance with the terms of this Agreement prior to the effective date of termination. The hold harmless and indemnification provision shall survive the termination of this Agreement and completion of the request for services. In exercising its right to Termination, the Parties agree to act reasonable to minimize any costs associated with the overall project and the work specifically being undertaken pursuant to this Agreement.

XII

LEGAL RELATIONS

12.0 No liability shall attach to the parties by reason of entering into this Agreement except as expressly provided herein.

XIII

ADMINISTRATION AND NOTICE

13.0 The following individuals are designated as representatives of the respective parties. The representatives shall be responsible for administration of this Agreement and for coordinating and monitoring performance under this Agreement. Wherever written notice is required under this Agreement, such notice shall be provided to the representatives designated below. In the event such representatives are changed, the party making the change shall notify the other party.

The City's representative shall be the Wastewater Supervisor or their Designee

LOTT's representative shall be the Contract Administrator, 500 Adams Street NE, Olympia, WA 98501, 360-528-5718.

13.1 Any notice required under this Agreement shall become effective three (3) calendar days following the date of deposit in the United States Postal Service.

XIV

CHANGES, MODIFICATIONS, AND AMENDMENTS

14.0 This Agreement may be changed, modified, amended or waived only by written agreement executed by the authorized officials of both parties hereto.

XV
GOVERNING LAW AND VENUE

15.0 This Agreement has been and shall be construed as having been made and delivered within the State of Washington and it is agreed by each party hereto that this Agreement shall be governed by the laws of the State of Washington both as to its interpretation and performance. Any action at law, suit in equity, or judicial proceeding arising out of this Agreement shall be instituted and maintained only in a court of competent jurisdiction in Thurston County, Washington.

XVI
WAIVER

16.0 A failure by either party to exercise its rights under this Agreement shall not preclude that party from subsequent exercise of such rights and shall not constitute a waiver of any other rights under this Agreement unless stated to be such in a writing signed by an authorized representative of the party and attached to the original Agreement.

XVII
SEVERABILITY

17.0 If any provision of this Agreement of any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this Agreement, and to this end the provisions of this Agreement are declared to be severable.

XVIII
EQUAL OPPORTUNITY TO DRAFT

18.0 The parties have participated and had an equal opportunity to participate in the drafting of this Agreement, and the Exhibits, if any, attached. No ambiguity shall be construed against any party upon a claim that such party drafted the ambiguous language.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

City of Lacey

By: Scott Spence

Its: City Manager

LOTT Clean Water Alliance

By: Michael D. Strub

Its: Executive Director

ATTEST: _____

Carol Litten, City Clerk

Approved as to form

By: _____

David Schneider, City Attorney

ATTEST: _____

Farah Derosier, Corporate Secretary

Approved as to form

By: _____

Rick Hughes, General Counsel

REQUEST FOR SERVICES
EXHIBIT _____
TO
MASTER INTERLOCAL AGREEMENT
BETWEEN LOTT CLEAN WATER ALLIANCE AND CITY OF LACEY

TITLE

_____

SCOPE OF PROJECT

_____
_____
_____
_____
_____

COST ESTIMATE (Itemization to be attached)

Labor $_____
Materials $_____
Equipment $_____
Other $_____
TOTAL $_____

LOCATION OF WORK

_____

START DATE

_____

COMPLETION DATE

_____

PROJECT CONTACTS

LOTT Clean Water Alliance

_____
_____
_____
_____

City of Lacey

_____
_____
_____
_____

CONCURRENCE

_____
LOTT Clean Water Alliance

_____
City of Lacey

INTERLOCAL AGREEMENT FOR WASTEWATER SERVICES

This agreement is made by and between the City of Olympia and the City of Lacey, both municipal corporations of the State of Washington and shall be effective upon the date of the last signature contained hereon.

WHEREAS, each of the parties to this Agreement is qualified and capable of providing wastewater services within its jurisdiction and in a portion of the Urban Growth Area of Thurston County; and

WHEREAS, certain parcels of real property identified herein are within the wastewater service area of the City of Lacey, however, based upon previous construction of wastewater mains, such properties can more economically and conveniently be served by the City of Olympia,

NOW, THEREFORE, IT IS HEREBY AGREED BETWEEN THE PARTIES AS FOLLOWS:

1. The City of Olympia shall allow connection to its existing wastewater facilities and shall provide wastewater collection services to those certain parcels of real property listed on Exhibit A and shown on Exhibit B, both of which exhibits are attached hereto and made a part hereof as though fully set forth at length. Such service shall be conditioned upon the owners of such properties complying with all requirements for such wastewater services from the City of Olympia, including the payment of all capacity development charges, general facilities charges and any other connection charges required by the Olympia Municipal Code for connection to the City of Olympia wastewater system and the timely payment of monthly wastewater service fees as required by such.

2. The City of Lacey hereby waives its right to serve those certain parcels of real property listed on Exhibit A and shown on Exhibit B, both of which exhibits are attached hereto and made a part hereof as though fully set forth at length. Such waiver shall include the right to receive any connection charges or service charges which otherwise would be applicable were such properties customers of the City of Lacey.

3. The parties agree to cooperate in modifying their respective Wastewater Comprehensive Plans to set forth the wastewater service areas for each of the parties in a manner which will reflect the terms of this Agreement.

4. A. The City of Olympia agrees to defend, indemnify and hold the City of Lacey, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits, including reasonable attorney fees, rising out of or in connection with the performance of this Agreement including the providing of services as set forth

herein, except to the extent such injuries and damages are caused by the negligence of the City of Lacey.

B. The City of Lacey agrees to defend, indemnify and hold the City of Olympia, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits, including reasonable attorney fees, rising out of or in connection with the performance of this Agreement, including the providing of services as set forth herein, except to the extent such injuries and damages are caused by the negligence of the City of Olympia.

5. This Agreement creates no joint board and no separate legal entity.

6. This Agreement shall be effective upon the date of the last signature hereon and shall have no termination date. Provided, however, that prior to its entry into force, this Agreement shall be filed with the Thurston County Auditor's Office or posted upon the websites of the parties pursuant to RCW 39.34.040.

CITY OF OLYMPIA

By: _____ Date October 1, 2013
Stephen H. Buxbaum, Mayor

Approved as to form:

Darren Nienaber
_____
City Attorney

CITY OF LACEY

By: _____ Date _____
Its: _____

Approved as to form:

_____
City Attorney

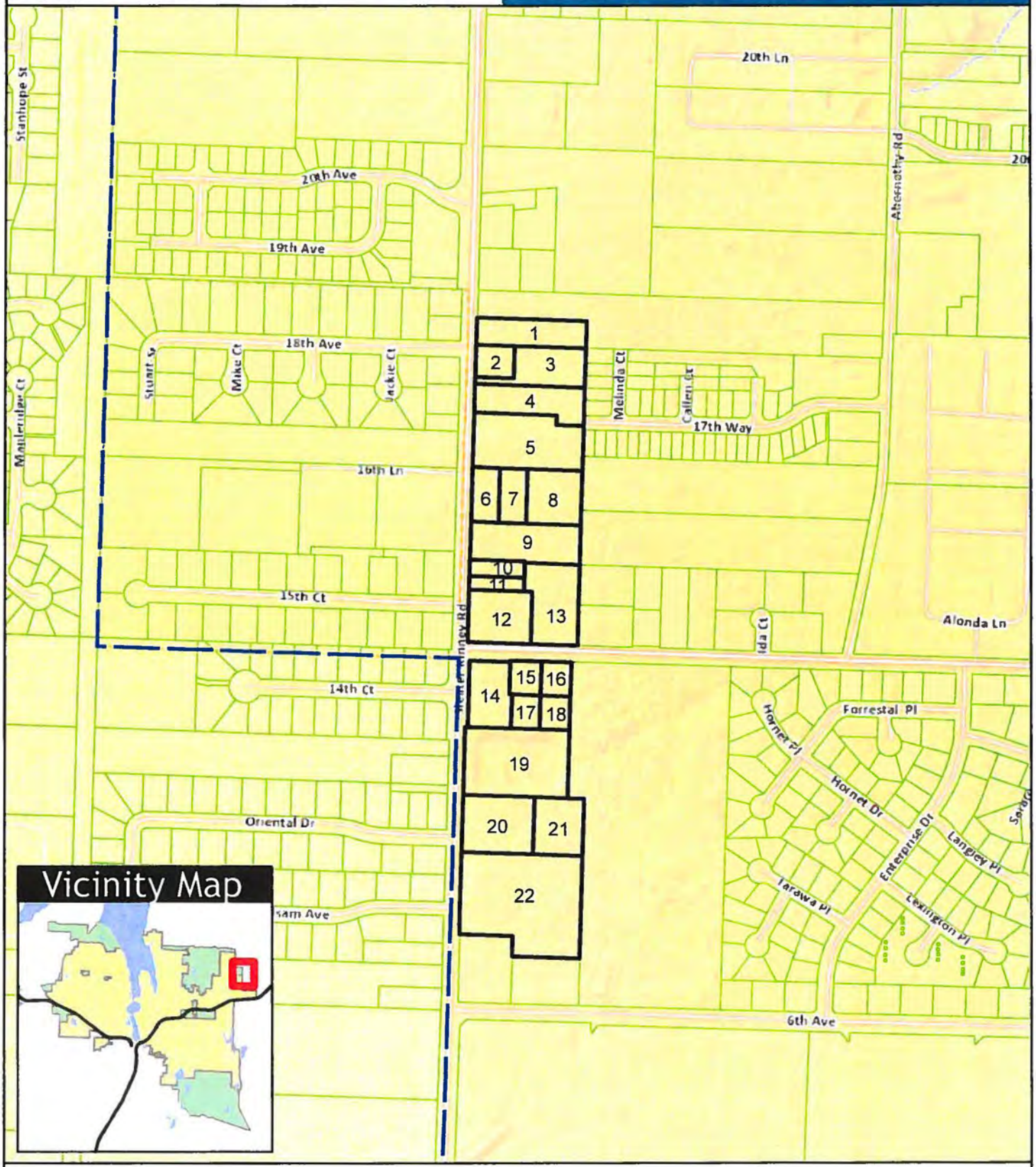
EXHIBIT A

Proposed Olympia Sewer Service Area

MapID	*Parcel*	*Owner*	*Legal Desc.*
1.	118-08-421104	Willamette Property Holdings LLC	AFN 4293451
2.	118-08-421100	Willamette Property Holdings LLC	AFN 4293451
3.	118-08-421102	Willamette Property Holdings LLC	AFN 4293451
4.	118-08-421202	Marilyn K. Nelson	AFN 3765666
5.	118-08-421200	Marilyn K. Nelson	AFN 3765666
6.	118-08-421300	James C. Everett Trustee	AFN 3148138
7.	118-08-421301	Sylvia Ann Nolan	AFN 3123643
8.	118-08-421302	Thomas & Catherine McNally	AFN 4052456
9.	118-08-421800	Dennis E. Taylor	AFN 4067707
10.	118-08-421700	Danyl & Jeny Meconi	AFN 3386842
11.	118-08-421500	Danyl & Jeny Meconi	AFN 3386842
12.	118-08-421400	Patricia Wines, Bonnie Walsh	AFN 3491767
13.	118-08-421600	Russell & Darlene M. Wolfenbarger	AFN8303280126
14.	118-08-430104	Donald & Karen Stuart	AFN 3146449
15.	118-08-430105	Robert & Lynda Benn	AFN 3329436
16.	118-08-430106	Robert & Lynda Benn	AFN 3329430
17.	118-08-430108	Robert & Lynda Benn	AFN 3329434
18.	118-08-430107	Robert & Lynda Benn	AFN 3329432
19.	118-08-430101	City of Olympia	AFN 3433205
20.	118-08-430400	Arthur & Marlenen Orth	AFN 9412160101
21.	118-08-430200	Arthur & Marlenen Orth	AFN 9412160101
22.	118-08-430500	ML & Joan Milton	AFN 1062147

Olympia to provide sewer service *
- proposed (June 2012)

City of Olympia | Capital of Washington State



Vicinity Map

0 200 400 Feet

Legend

Proposed parcels for Olympia to provide sewer service

City Limits

Map created April 25, 2013
Please contact Ladd Cluff
City Surveyor, with questions:
LCluff@ci.olympia.wa.us
(360) 753-8389

N

\\calvin\maps\mapprj\jd-6\Sewer interlocal agreement 2013\Sewer interlocal Lilly.mxd

Appendix B

Population Forecasts by Mini-Basin

City of Lacey
Wastewate Comprehensive Plan Update
Residential, Employment, and Student Population Projections
Prepared by: T. Tittlefitz
Reviewed by: P. Cunningham
8/12/2013

	Residential Population							Employment					Students			
Mini-Basin	1995[1]	2000[1]	2005[1]	2010	2018	2032	Build-Out	2003[2]	2010	2018	2032	Build-Out	2010	2018	2032	Build-Out
15th Ave				346	576	1,018	1,209		38	57	89	98				
A				-	291	467	486		0	19	52	57				
AA				1,768	1,789	2,122	2,287		119	129	147	161				
Alder				396	417	427	432		37	38	41	45				
Alder Glen				450	528	571	583		51	53	56	62				
Avonlea				245	245	242	242		17	19	23	25				
B				2,791	3,081	3,111	3,181		1,133	1,705	2,707	2,972	0	0	2,858	3,190
BB				108	110	290	376		15	27	50	54				
BC				911	909	991	1,049		49	65	93	102				
Carpenter				5,738	6,140	6,718	7,025		713	733	768	843	85	113	160	160
CC				9	9	31	41		0	1	2	2				
Clearbrook				965	961	936	934		579	612	669	734	458	499	571	637
D				172	172	204	227		10	12	15	17				
DD				-	0	2	3		1	11	30	33				
Desmond				697	731	850	887		1,913	1,961	2,045	2,245	1,400	1,800	2,500	2,500
Draham				58	58	109	148		3	8	18	20				
E				59	59	83	102		6	7	7	8				
EE				115	114	234	311		5	10	18	20				
F				144	144	142	142		10	10	10	11				
FF				420	1,095	1,716	1,924		29	51	88	96				
Future LS-C				41	41	304	535		14	28	52	57				
G				171	179	258	293		115	128	150	164				
Galaxy				-	0	0			802	802	802	881				
GG				8	9	1,529	3,443		0	39	106	117				
H				1,048	1,065	1,113	1,146		79	84	93	102	0	0	825	921
HH				8	11	668	1,040		0	14	38	41				
Homann				303	303	301	302		19	20	24	26				
I				209	986	2,404	3,262		23	83	189	208				
II				547	553	567	576		46	46	46	51				
J				-	0	0	0		301	1,097	2,492	2,736				
JJ				1,038	1,091	1,578	1,842		138	172	233	255	548	710	992	1,107
K				-	28	228	296		197	700	1,581	1,736				
KK				118	117	116	116		5	5	6	6				
L				266	265	262	262		24	24	24	27				
Lacey				1,156	1,170	1,290	1,345		1,323	1,356	1,413	1,552				
Lake Pointe				1,496	1,495	1,484	1,486		89	101	121	133				
Lancaster				288	287	282	281		17	17	17	19				
Landfill				7	7	43	68		125	125	125	138				
Long Lake				-	0	0			0	0	0	0				
LS-11				38	42	45	46		2	2	2	2				
LS-12				236	255	416	489		16	18	23	25				
LS-14				663	663	677	688		203	295	455	500				
LS-15				-	0	0			371	371	371	407	2,260	0	0	0
LS-17				21	27	109	139		129	149	183	201	140	207	325	325
LS-18				1,445	1,881	1,923	1,965		833	833	833	915	601	773	1,073	1,197
LS-19 (A)				471	922	1,144	1,286		1,128	1,454	2,026	2,225	0	880	1,092	1,219
LS-19 (B)				141	217	245	266		17	17	17	19				
LS-19 (C)				513	922	925	987		29	87	188	206				
LS-2				356	371	465	500		45	45	45	49				
LS-20				133	133	137	140		9	9	9	10				
LS-21				-	4	16	19		168	230	338	371				
LS-22				943	942	932	932		53	53	53	58				
LS-23				663	931	1,347	1,581		115	141	185	203	611	904	1,417	1,581
LS-24				85	85	81	80		8	9	10	11				
LS-25				363	361	343	340		27	24	20	22				
LS-26				65	65	64	63		6	5	4	4				
LS-27				686	689	779	821		98	96	93	102				
LS-28				100	100	102	102		10	9	8	9				
LS-29				82	82	114	128		5	6	8	9				
LS-3				2,827	2,915	3,058	3,139		369	395	440	483	738	778	848	946
LS-30				136	136	135	135		6	5	4	4				
LS-31				320	319	316	316		16	15	13	14				
LS-32				301	300	296	299		23	25	27	30				
LS-33				147	146	145	145		9	8	6	7				
LS-34				171	171	170	172		13	9	2	2				
LS-35				70	70	69	69		3	3	2	2				
LS-36				90	91	92	92		4	4	3	3				
LS-37				3,258	3,569	3,602	3,626		238	305	423	464	588	671	839	936
LS-38				-	0	0			11	11	12	13				
LS-39				269	454	456	459		19	25	37	41				
LS-4				325	336	417	454		19	24	33	36				
LS-40				41	136	135	135		2	2	3	4				
LS-41				118	121	119	119		6	6	7	8				
LS-42				199	239	237	237		9	9	9	10				
LS-43				533	1,031	1,122	1,212		29	36	48	53				
LS-44				141	141	140	140		7	7	7	7				
LS-45				-	0	0			72	76	82	90	507	596	752	839
LS-46				64	128	131	134		3	4	5	5				
LS-47				79	85	85	86		3	7	13	15				
LS-48				194	441	438	445		9	20	41	45				
LS-49				26	418	1,435	2,245		108	407	931	1,022				
LS-5				217	217	215	215		12	12	12	14				
LS-50				-	175	183	235		0	2	6	7				
LS-51				93	272	302	364		16	19	23	25				
LS-52				892	895	1,015	1,108		503	558	654	718	20	100	240	240
LS-6				613	623	691	724		61	61	61	67				
LS-8				-	5	31	39		332	449	654	718				
LS-9				6,789	7,392	7,811	8,023		1,775	1,791	1,820	1,998	300	337	421	470
M				222	222	302	342		17	18	19	21				
Martin Way				989	1,047	1,615	1,822		1,224	1,405	1,720	1,889				
Martin Way-East				1,164	1,208	1,663	1,881		2,539	2,539	2,539	2,788	1,201	1,372	1,714	1,913
MC North				-	360	577	600		12	23	42	46				
McAllister Park				852	899	947	973		57	66	80	88				
MM				914	914	1,437	1,738		78	84	96	105				
N				-	0	0			433	451	483	530	2,238	3,206	4,227	4,718

City of Lacey
Wastewate Comprehensive Plan Update
Residential, Employment, and Student Population Projections
Prepared by: T. Tittlefitz
Reviewed by: P. Cunningham
8/12/2013

	Residential Population							Employment					Students			
Mini-Basin	**1995[1]**	**2000[1]**	**2005[1]**	**2010**	**2018**	**2032**	**Build-Out**	**2003[2]**	**2010**	**2018**	**2032**	**Build-Out**	**2010**	**2018**	**2032**	**Build-Out**
Nisqually Bluff				9	658	1,058	1,103		15	30	56	61				
NN				768	773	1,594	2,151		72	90	121	133				
NTPS				-	0	0			276	291	318	350	2,212	2,396	3,179	3,548
Olympia				63	67	139	171		91	101	117	128				
OO				109	110	770	1,351		11	28	60	65				
P				978	997	1,021	1,030		61	64	67	74				
Pacific				76	80	84	86		91	98	110	120				
PP				451	452	600	682		35	37	40	44				
Q				537	555	627	658		126	140	165	181	610	732	944	1,054
QQ				521	525	701	800		46	52	62	68				
R				3,149	3,210	3,548	3,648		6,436	6,833	7,526	8,264	0	4,850	10,250	10,250
Ridgeview				313	318	317	318		17	18	19	21				
RR				213	214	644	1,112		23	30	43	47				
Ruddell				4,675	4,703	4,757	4,803		507	518	537	590	709	797	996	1,112
S				2,011	2,064	2,391	2,528		488	488	488	536	403	410	423	472
Shady Lane				242	242	277	295		23	23	23	25				
SS				150	150	645	1,192		15	27	47	51				
T				596	597	595	597		374	374	374	411	574	656	819	914
Tanglewilde East				955	953	931	929		62	65	69	76				
U				199	202	272	303		34	34	34	38				
Union Mills				844	1,070	1,308	1,389		272	299	345	379	833	815	783	845
UU				72	80	95	103		3	5	8	9				
V				1,373	1,431	1,940	2,172		130	148	180	198				
W				643	655	803	876		43	54	74	81				
Woodland Creek				320	322	332	344		21	21	21	23				
X				1,258	1,496	2,119	2,459		86	96	113	124				
Y				2,384	2,406	2,454	2,478		204	249	328	360	467	580	778	868
Z				1,240	1,247	1,595	1,760		134	166	223	245				
ZZ				307	315	507	631		20	26	35	39				
Totals	**53,710**	**59,858**	**64,700**	**75,611**	**85,098**	**104,064**	**116,148**	**24,401**	**29,073**	**33,509**	**41,271**	**45,316**	**17,503**	**24,182**	**39,026**	**41,962**

(1) Source: Table II-2, page II-12, The Profile 2011, TRPC: http://www.trpc.org/data/Documents/Profile%202011/04_Profile11_Ch02_PopulationDemo2.pdf
(2) Source: Table IV-9 http://www.trpc.org/data/Documents/Profile%202011/06_Profile11_Ch04_Employment.pdf

Appendix C

Basin Map

Legend

- City of Lacey LS
- LOTT LS
- Private LS
- Manhole
- City of Lacey FM
- LOTT FM
- Private FM
- City of Lacey Sewer Main
- LOTT Sewer Main
- Private Sewer Main
- City of Lacey STEP System
- Private STEP System
- WWTP
- City Limits
- UGA
- Parcels
- Basins
- Water Bodies
- Streams

MARTIN WAY BASIN

SLEATER KINNEY NORTH BASIN

SLEATER KINNEY SOUTH BASIN

P:\Mapping\Maps_Generated\Lacey\12-10263.00\002\maps\Fig C-1 Basins and Sewer System 36x60.mxd 3/30/2015 ctolentino

BHC Consultants, LLC
1601 Fifth Avenue, Suite 500
Seattle, Washington 98101

206.505.3400
206.505.3406 (fax)
www.bhcconsultants.com

GIS Data: City of Lacey 2012

This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

N W E S

0 0.25 0.5 Miles

LACEY BASINS AND MINI-BASINS

WASTEWATER COMPREHENSIVE PLAN UPDATE

City of Lacey
April 2015

Figure C-1

Appendix D

Model Output

Legend

- City of Lacey LS
- LOTT LS
- Private LS
- Manhole
- City of Lacey FM
- LOTT FM
- Private FM
- City of Lacey Sewer Main
- LOTT Sewer Main
- Private Sewer Main
- City of Lacey STEP System
- Private STEP System
- Future Piping
- WWTP
- City Limits
- UGA
- Parcels
- Basins
- Water Bodies
- Streams

MARTIN WAY BASIN

SLEATER KINNEY NORTH BASIN

SLEATER KINNEY SOUTH BASIN

PUGET SOUND

Olympia

Lacey

Tumwater

Woodland Creek

Future LS-C

Draham

15th Ave

Martin Way

Desmond

Pacific

Clearbrook

Alder

Homann

Shady Lane

Rudden

Carpenter

Union Mills

McAllister Park

Landfill

Galaxy

Tanglewilde East

Martin Way-East

Ridgeview

Nisqually Bluff

Avonlea

Alder Glen

Lake Pointe

Lancaster

MC North

LS-19 (A)

LS-19 (B)

LS-19 (C)

LS-43

LS-49

LS-51

LS-23

LS-27

LS-17

LS-8

LS-21

LS-14

LS-4

LS-2

LS-3

LS-6

LS-39

LS-5

LS-22

LS-20

LS-9

LS-18

LS-37

NTPS

LS-52

LS-10

LS-12

LS-11

LS-15

LS-32

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KK

LL

MM

NN

OO

PP

QQ

RR

SS

UU

61ST AVE NE

56TH AVE NE

46TH AVE NE

43RD CT NE

41ST AVE NE

40TH CT NE

39TH WAY NE

36TH AVE NE

31ST AVE NE

26TH AVE NE

15TH CT NE

15TH AVE NE

13TH AVE NE

6TH AVE NE

3RD LN NE

3RD WAY SE

38TH AVE NE

BETTI LN NE

28TH CT NE

POLARIS LN NE

MAIN ST NE

6TH AVE SE

7TH AVE SE

14TH AVE SE

14TH WAY SE

15TH AVE SE

16TH AVE SE

18TH AVE SE

21ST AVE SE

22ND AVE SE

23RD AVE SE

24TH AVE SE

25TH AVE SE

26TH AVE SE

27TH AVE SE

34TH AVE SE

35TH AVE SE

37TH AVE SE

37TH LN SE

40TH AVE SE

43RD AVE SE

57TH AVE SE

58TH AVE SE

62ND AVE SE

64TH AVE SE

65TH AVE SE

74TH AVE SE

HUSKY WAY SE

9TH AVE SE

9TH WAY SE

MULLEN RD SE

BEDINGTON DR SE

24TH CT SE

60TH LN SE

46TH AVE SE

MARTIN WAY E

HAWKS PRAIRIE RD NE

HERMAN RD SE

MORSE MERRYMAN RD SE

HELENA AVE SE

NB OFF RAMP PACIFIC AVE SE

PACIFIC AVE SE

STEILACOOM RD SE

YELM HWY SE

KYRO RD SE

BRIANNA CT SE

KAGY ST SE

CATE FARM DR SE

SCHMIDT PRAIRIE LN SE

JOHNSON POINT RD NE

PUGET RD NE

PUGET BEACH RD NE

HILL ST NE

MERIDIAN RD NE

HILTON RD NE

LEGACY DR NE

MARVIN RD NE

OWL LN NE

EAGLE CREEK

FOX CREEK

CARPENTER RD NE

LILLY RD NE

CHEHALIS WESTERN TR NE

SLEATER KINNEY RD NE

ABERNETHY RD NE

JUDD ST NE

LEMON RD NE

QUAIL CREEK LN NE

GATEWAY BLVD NE

NEILL ST NE

WHISLER ST NE

MARVIN RD SE

SEAHAWK ST SE

AMELIA CT NE

HARRIMAN RD NE

MCALLISTER CREEK

SLOUGH

HARRIMAN CREEK

INDIAN CREEK

WOODLAND CREEK

LITTLE MCALLISTER CREEK

MCALLISTER SPRINGS

EATON CREEK

MAPLE LN SE

REHKLAU RD SE

MERIDIAN RD SE

FONES RD SE

HALL ST SE

BOWKER ST SE

LACEY ST SE

ALDER ST SE

DOGWOOD ST SE

LEBANON ST SE

BETHEL ST SE

MARINA VIEW LN SE

CHEHALIS ST SE

IMPALA DR SE

COLLEGE ST SE

APOLLO ST SE

RUDDELL RD SE

TURF LN SE

WIGGINS RD SE

RICH RD SE

CHAMBERS DITCH

DMILLER LAKE

CHAMBERS LAKE

SMITH LAKE

SOUTHWICK LAKE

HICKS LAKE

LONG LAKE

PATTISON LAKE

LAKE SAINT CLAIRE

LAKE LOIS

GOOSE POND

GOOSE LAKE (LONG'S POND)

POND

GC POND

DESCHUTES RIVER

CHAMBERS CREEK

UNKNOWN

P:\Mapping\Maps_Generated\Lacey\12-10263.00\005\maps\Fig D-1 Future Piping 22x34.mxd 3/30/2015 ctolentino

BHC Consultants, LLC
1601 Fifth Avenue, Suite 500
Seattle, Washington 98101

206.505.3400
206.505.3406 (fax)
www.bhcconsultants.com

GIS Data: City of Lacey 2012

This map is a geographic representation based on information available. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

N W E S

0 0.25 0.5 Miles

FUTURE PIPING

WASTEWATER COMPREHENSIVE PLAN UPDATE

City of Lacey
April 2015

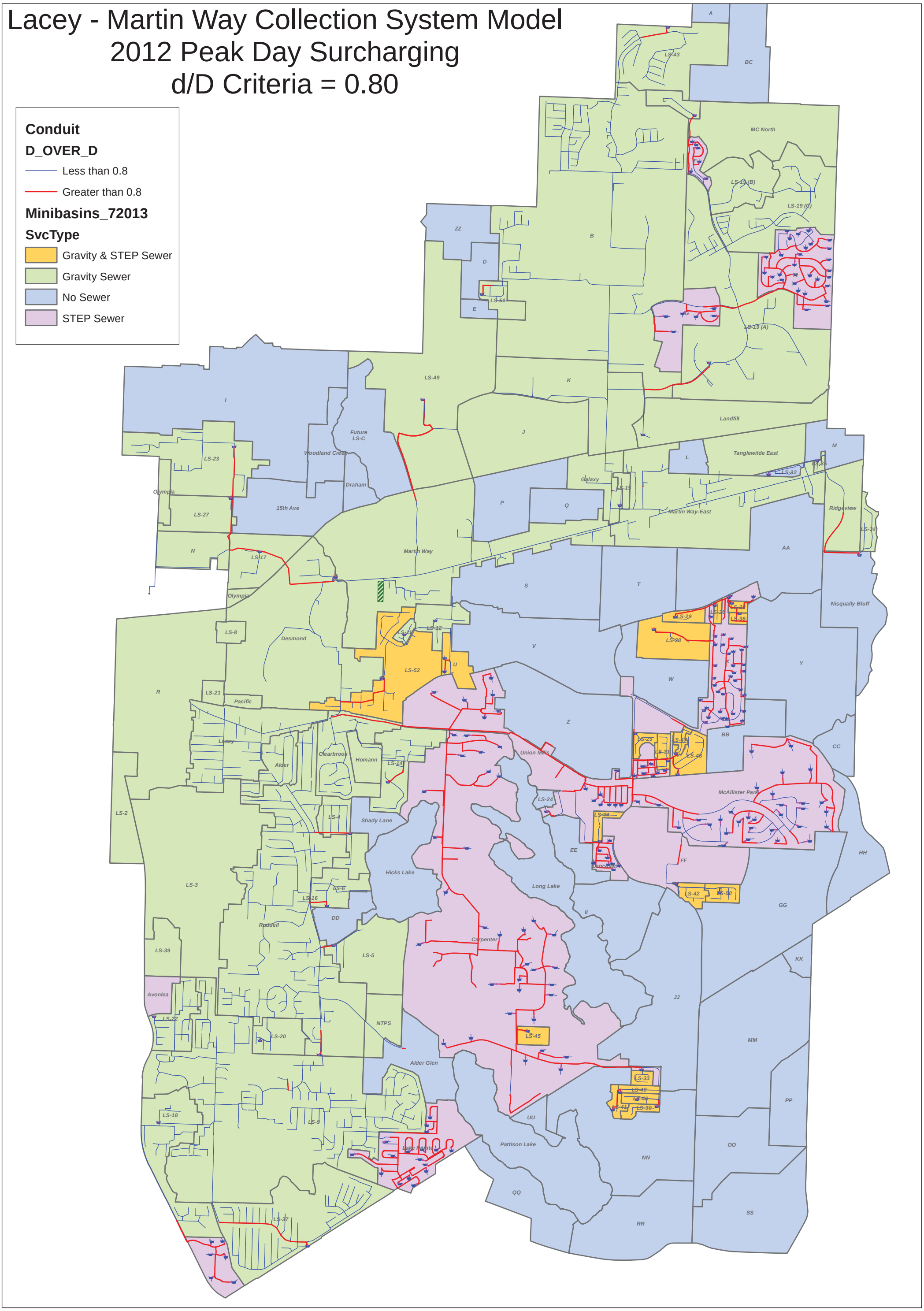
Figure

D-1

2012 MODEL RESULTS

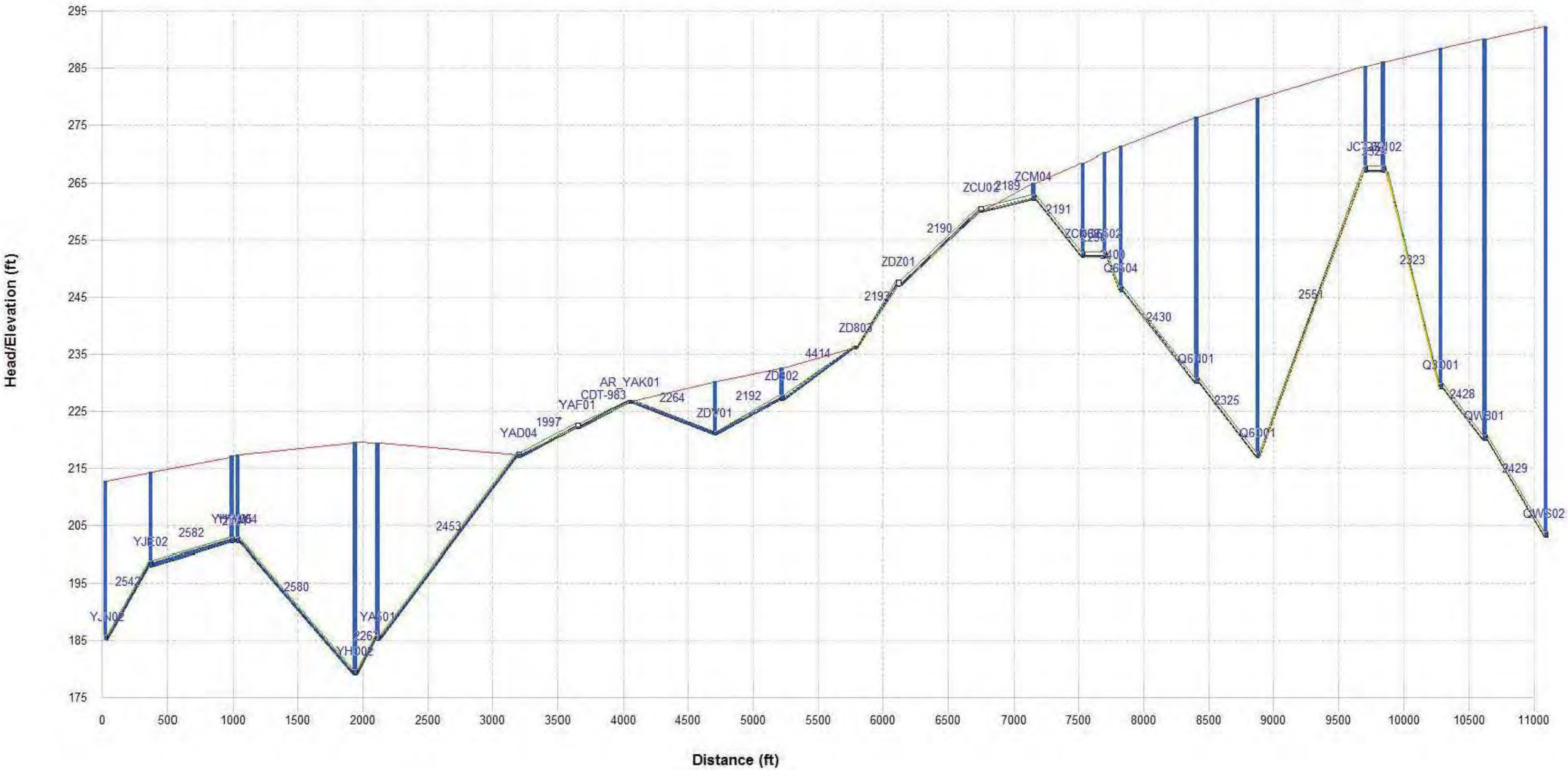
MARTIN WAY BASIN

Lacey - Martin Way Collection System Model
2012 Peak Day Surcharging
d/D Criteria = 0.80



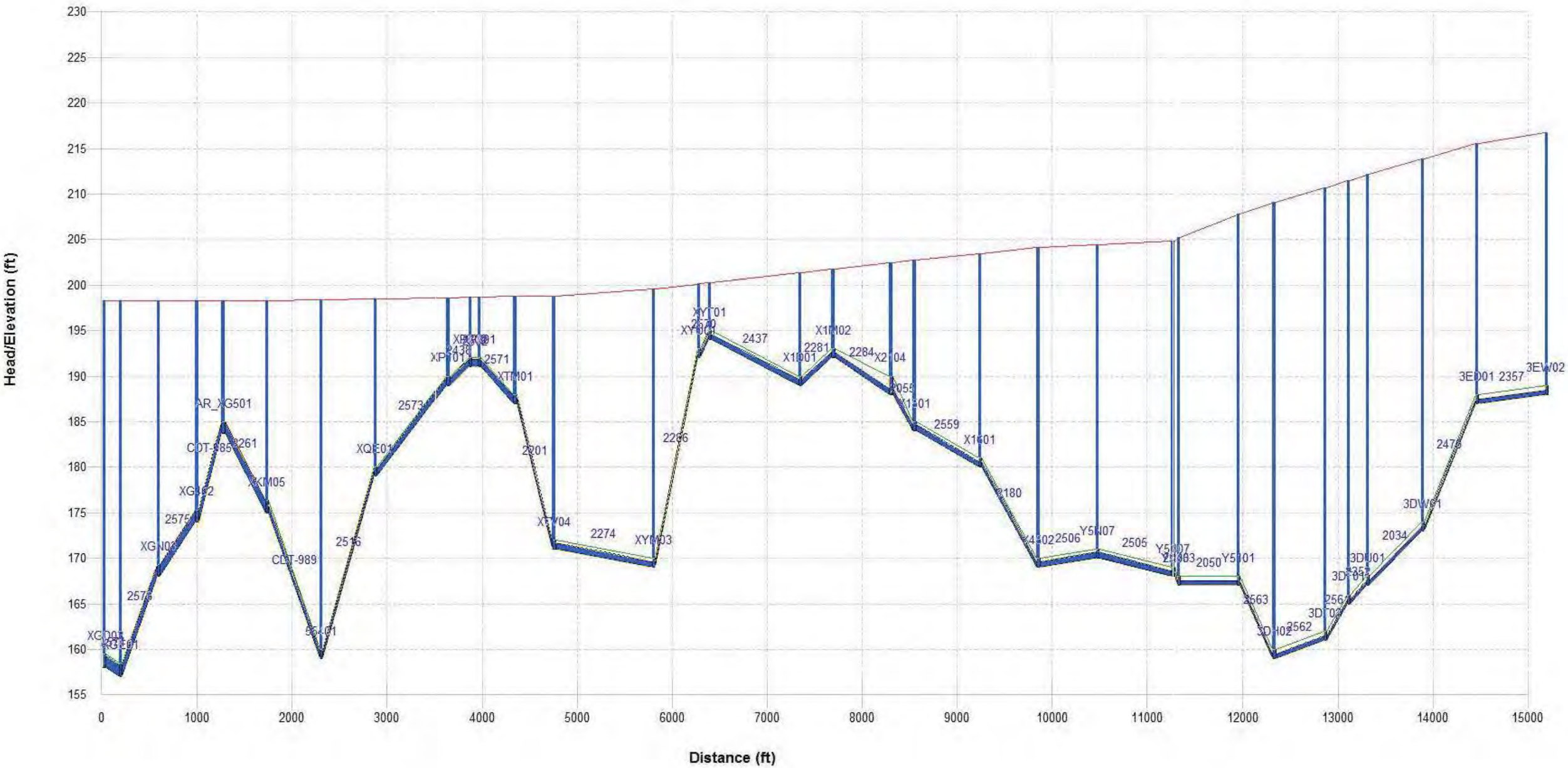
Basin X Alignment: 2012 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



Carpenter Alignment: 2012 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



Desmond Alignment: 2012 Peak Flow Depth

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

185 180 175 170 165 160 155 150 145 140 135 130 125 120 115 110 105 100 95 90 85

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500

Distance (ft)

TYX01 TY601 T2E01 T2W01 T2U01 T2Y01 T2701 T2702 T2801 T7A01 T8D01 T8N02 T8N03 T8W01 T8401 WAD01 WAN02 WAW01 WA401

TYH03 TYH02 TYG01 TYK01 TYU01

DIVERSION

4022 4023 4024 4025 4019 4020 4021 4026 4028 4031 4032 4033 1606 4147 4152 4160 4140 4161 4162

4037 4046 4045 4044 4042 4043 2116

Galaxy Alignment: 2012 Peak Flow Depth (Max d/D=0.59)

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

230
225
220
215
210
205
200
195
190

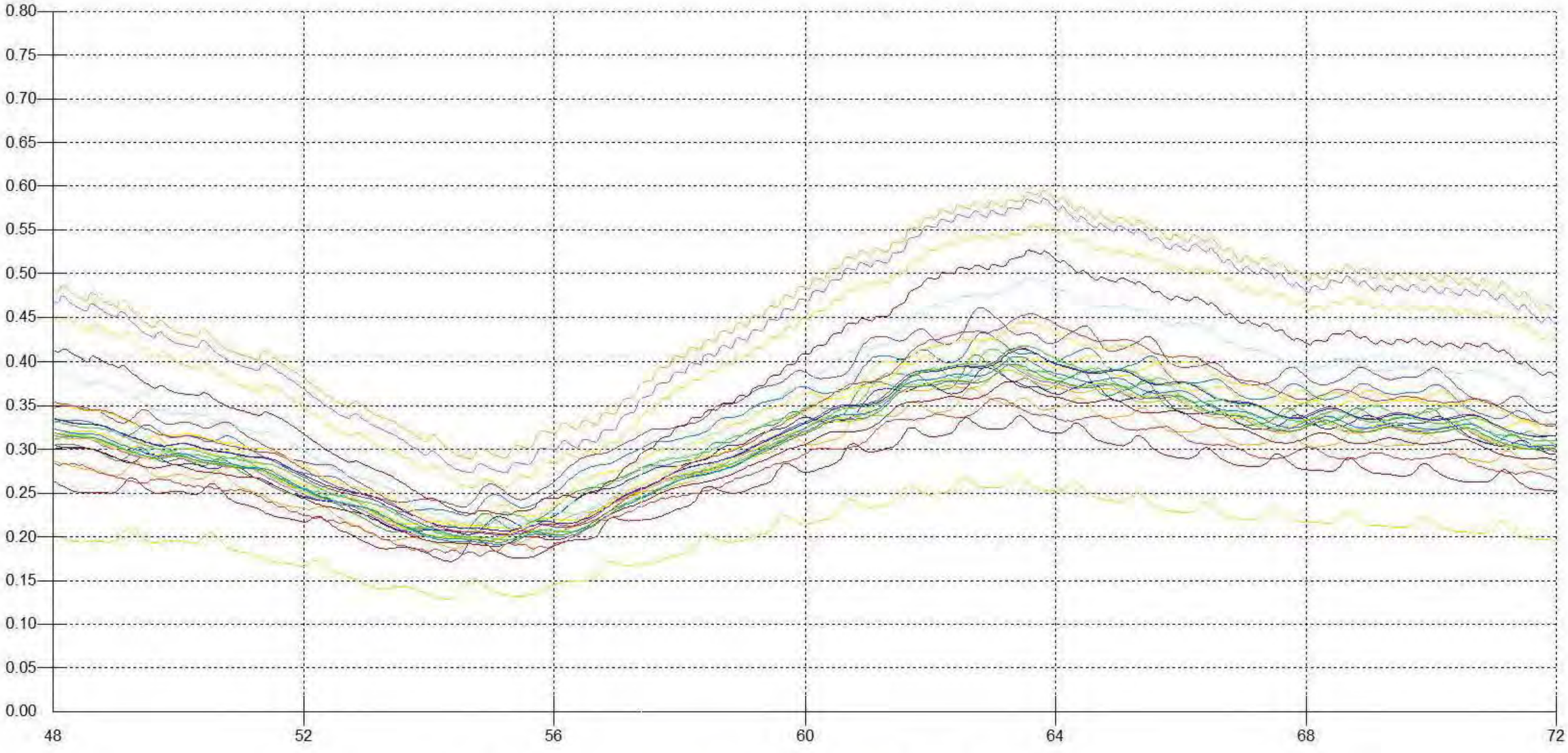
RG502
RG501
RG402
RGW01
805
RKM03
808
810
230
809
231
234
667
674
673
675
676
RQN01
RQE01
RK501
RK401
RKW01
RKV01
RKM01
806
807
2950
2767
2881
2882
2878
2951
2866
3464
2952
2867
2773
2772
2948
2775
2771
2949
3896
3894
3895
1608
3920
3922
3925
3926
3906
3907
3938

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000

Distance (ft)

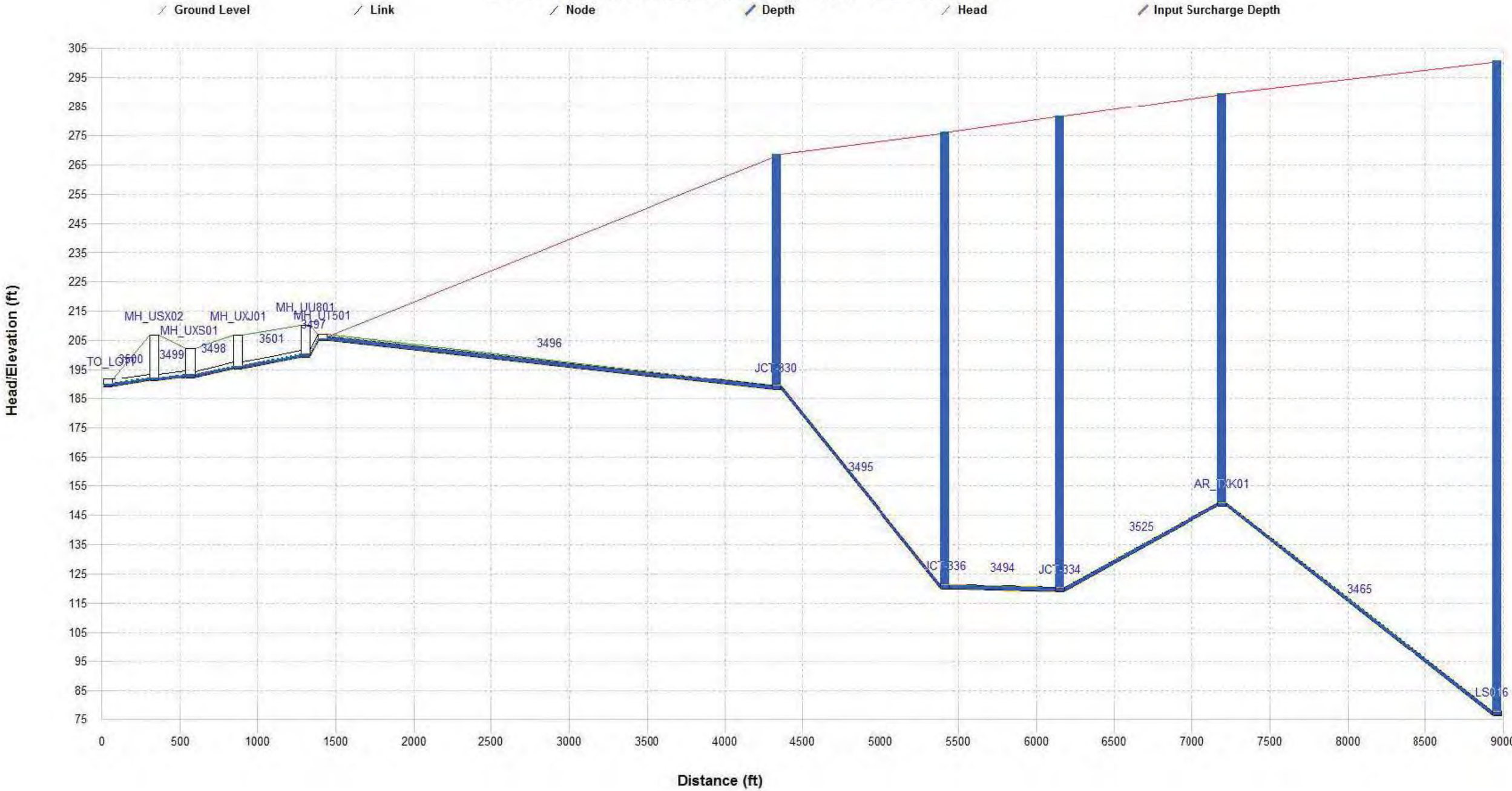
Galaxy Alignment d/D: 2012 Peak Day

2767 / 2881 / 2950 / 2882 / 2878 / 2951 / 2866 / 2952 / 3464 / 2867 / 2772 / 2773 / 2771 / 2775 / 2948 / 2949 / 3896 / 3894 / 3895 / 1608 / 3920 / 3922 / 3906 / 3925 / 3926 / 3907 / 3938



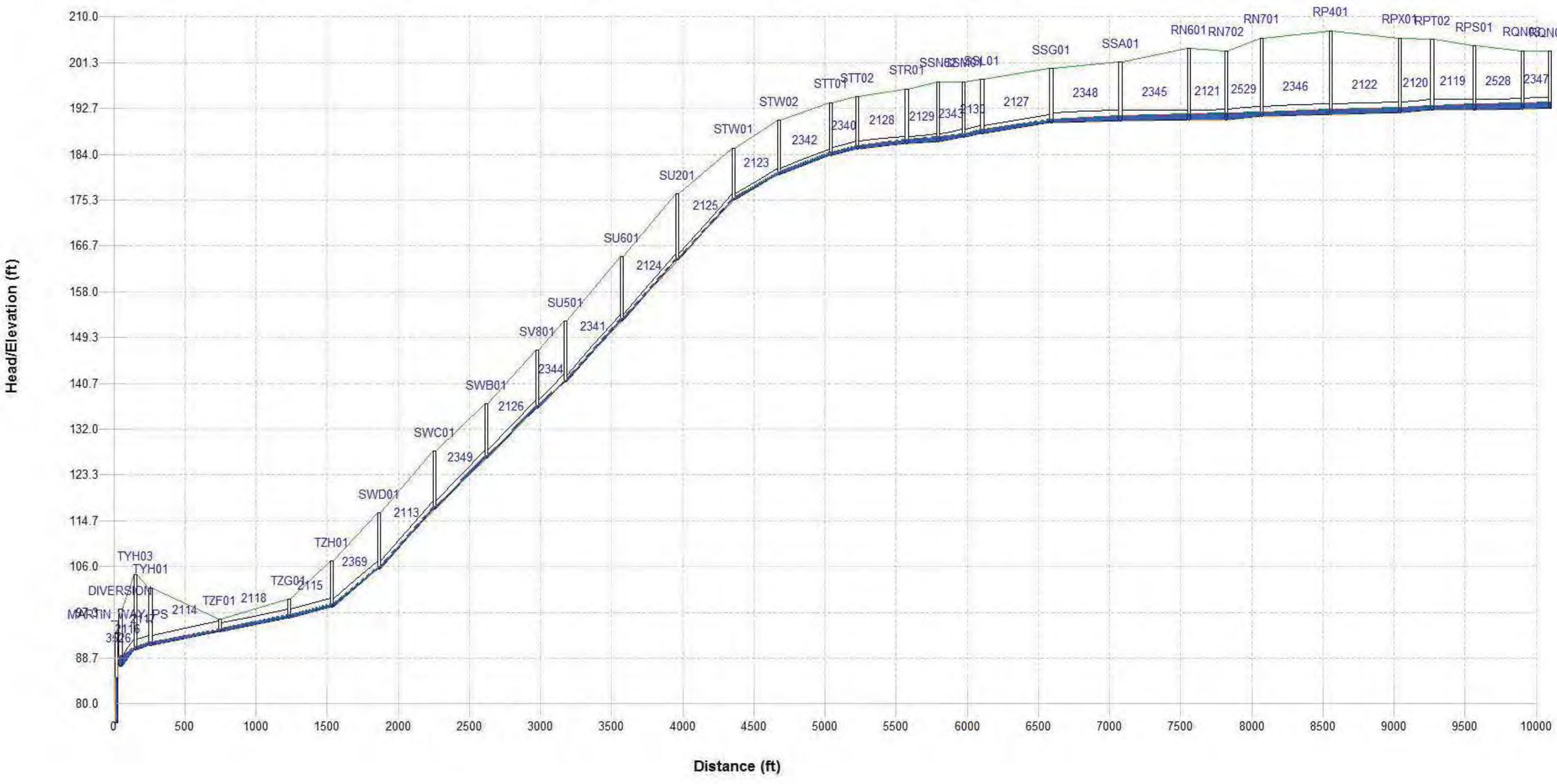
Elapsed Time (hours) [Starts @01/21/2012, 00:01:58]

Martin Way South Pump Station Alignment: 2012 Peak HGL



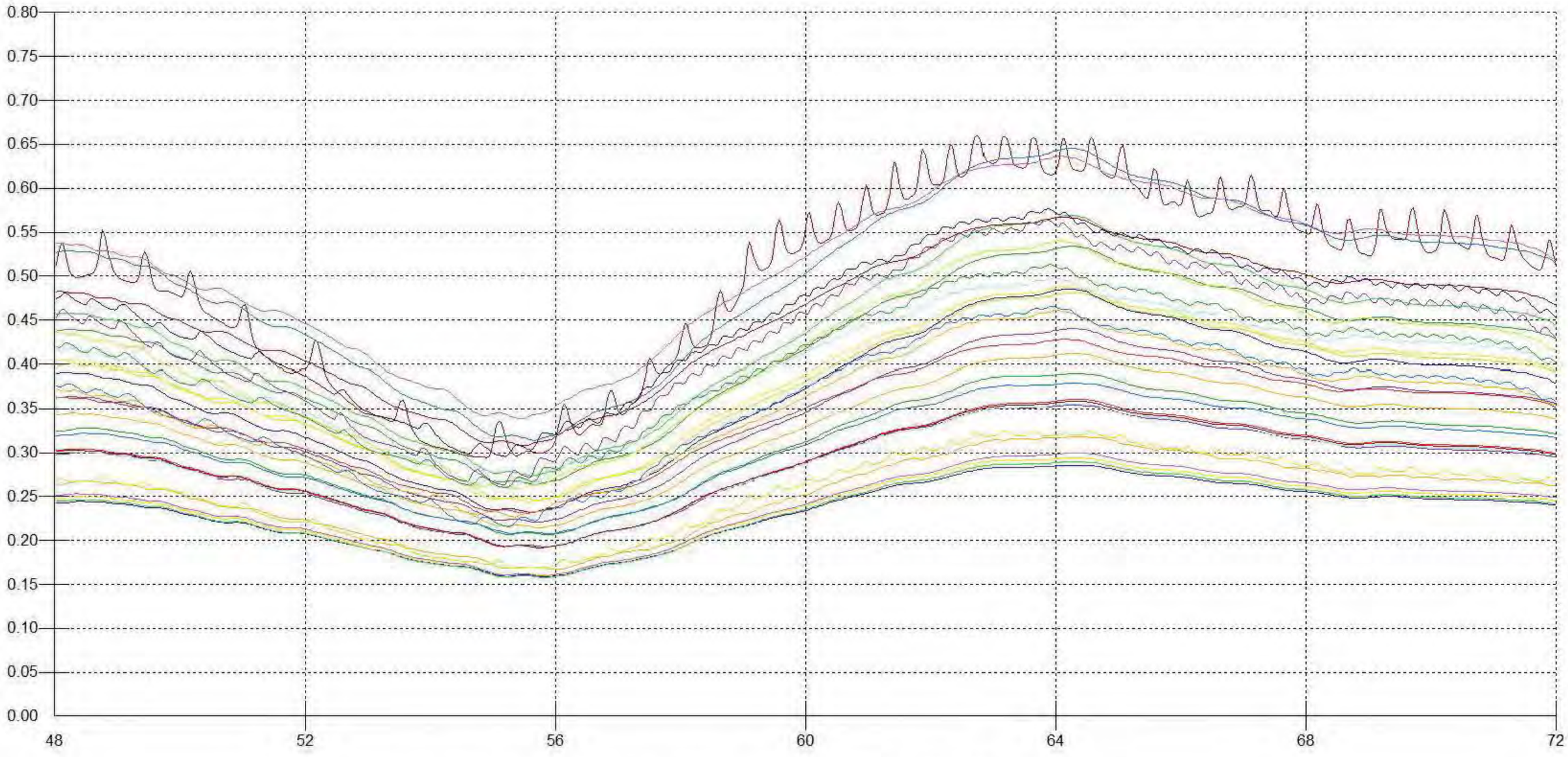
Martin Way South Alignment: 2012 Peak Flow Depth (Max d/D=0.64)

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



Martin Way South Alignment d/D: 2012 Peak Day

2116 2114 2117 2115 2118 2369 2113 2349 2126 2341 2344 2124 2125 2123 2342 2128 2129 2340 2130 2343 2127 2348 2121 2122 2345 2346 2529 2119 2120 2347 2528



McAllister Park Alignment: 2012 Peak HGL

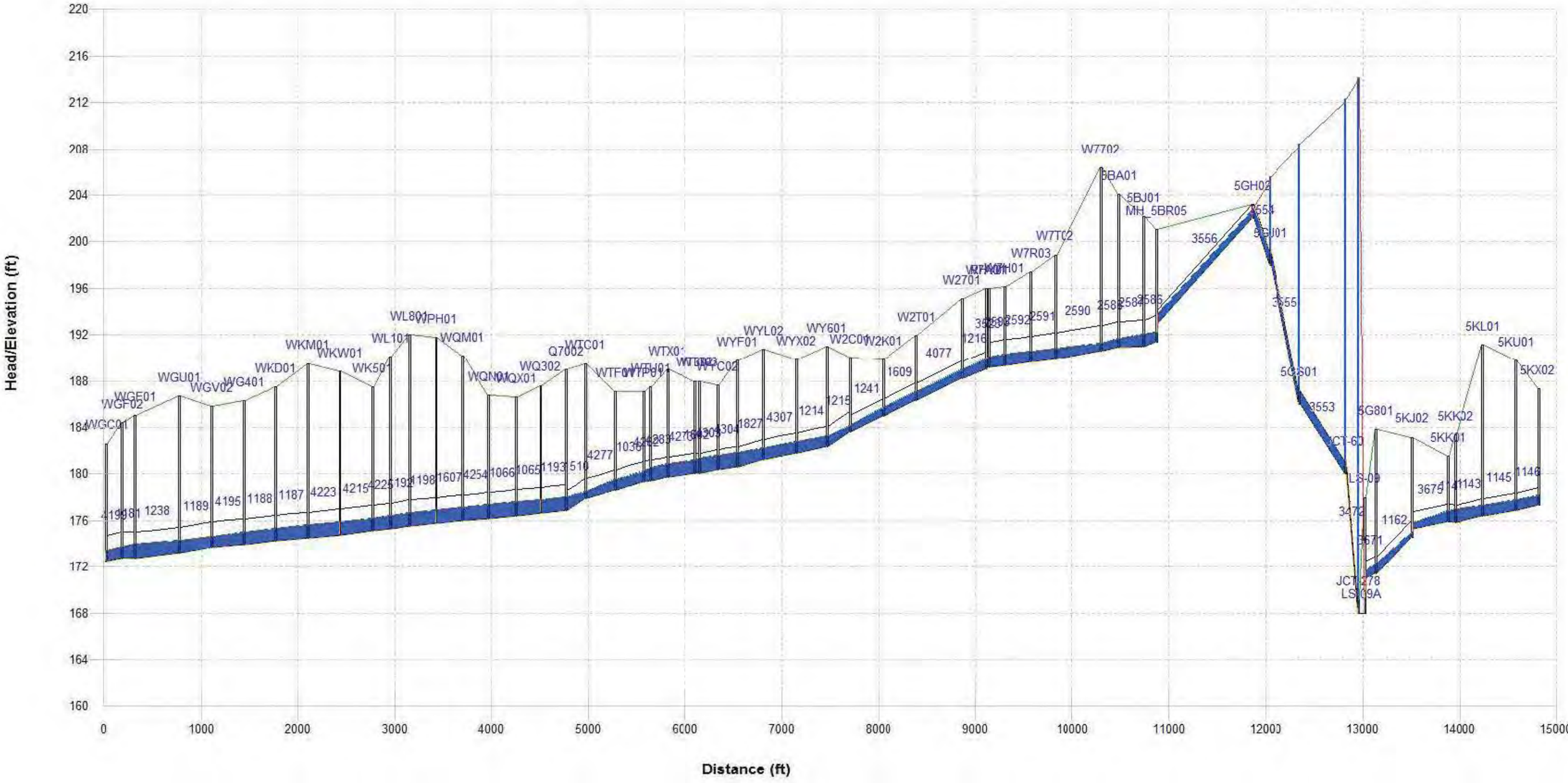
Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

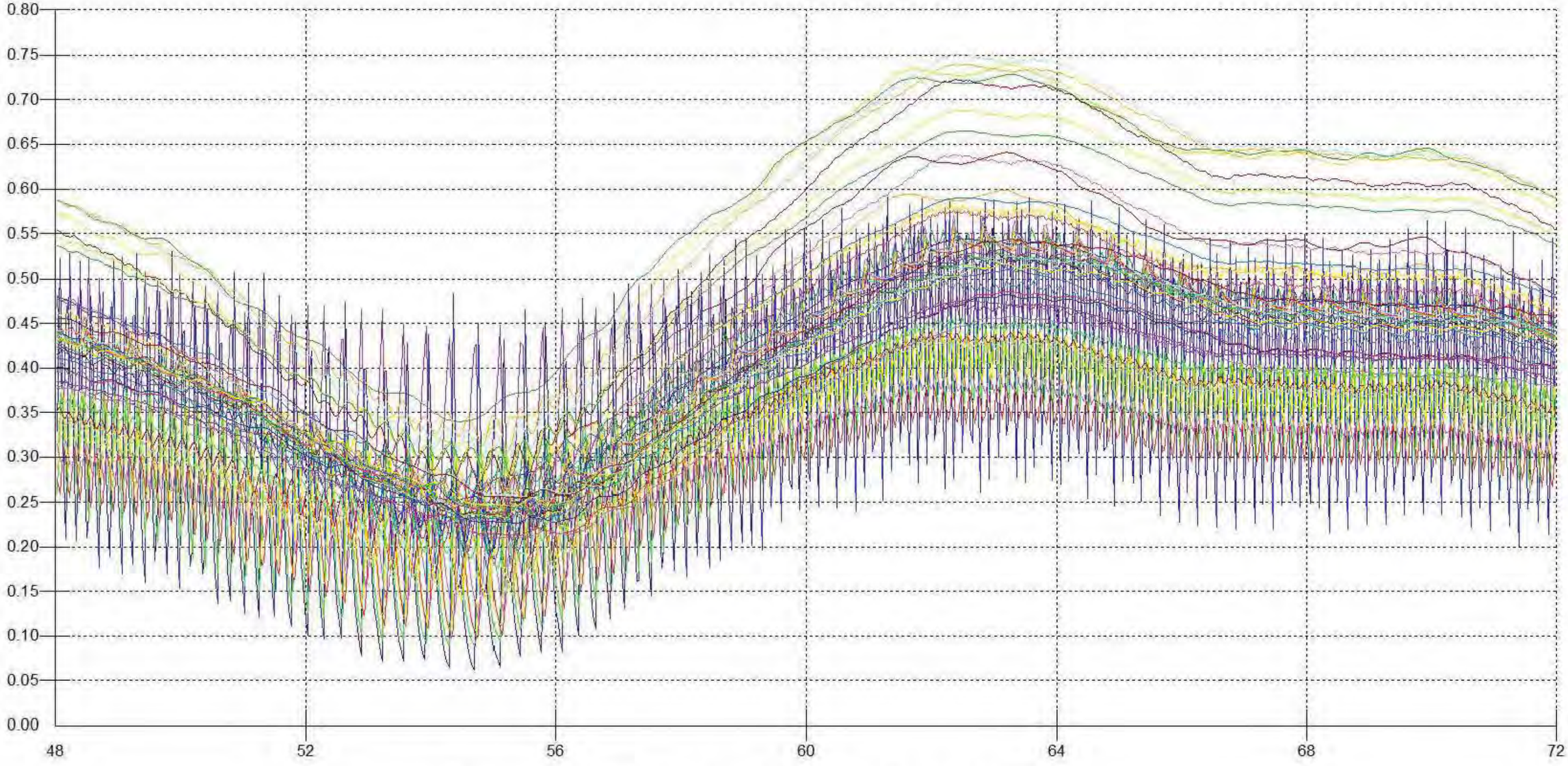
Distance (ft)

Ruddell Alignment: 2012 Peak Flow Depth (Max d/D=0.75)

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



Ruddell Alignment d/D: 2012 Peak Day



Elapsed Time (hours) [Starts @01/21/2012, 00:01:58]

Union Mills Alignment: 2012 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

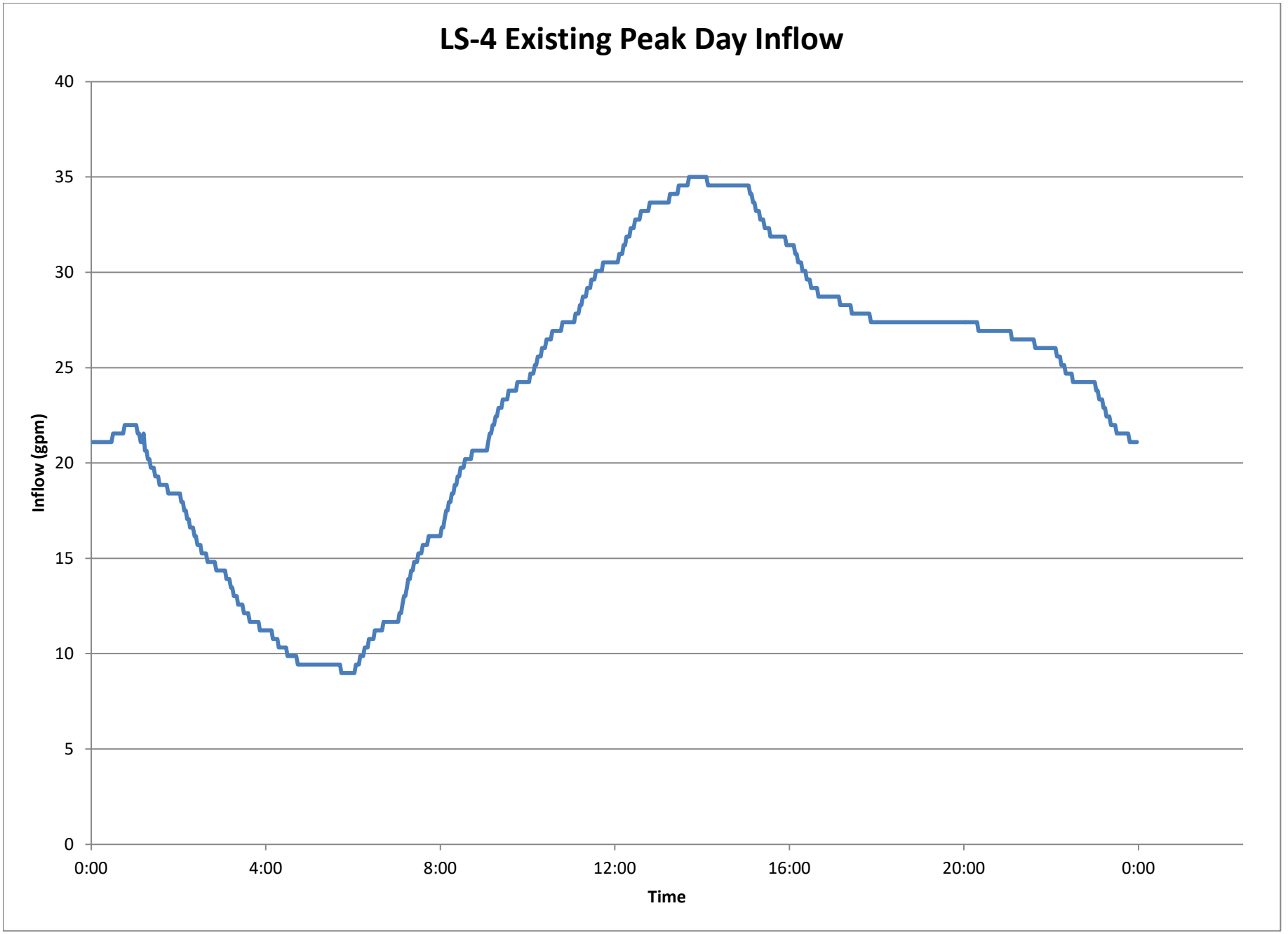
Head/Elevation (ft)

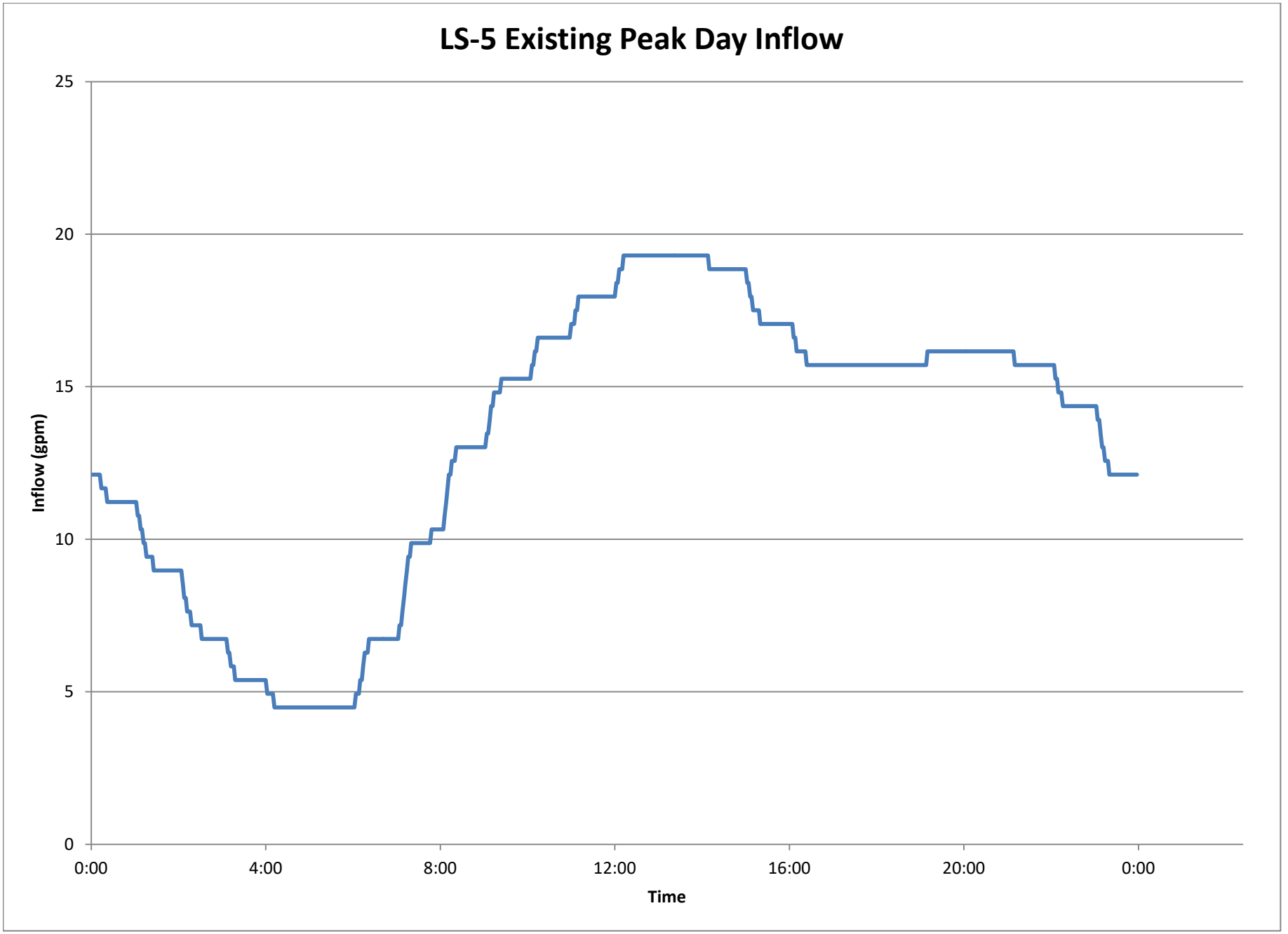
225
220
215
210
205
200
195
190
185
180
175
170
165
160
155
150

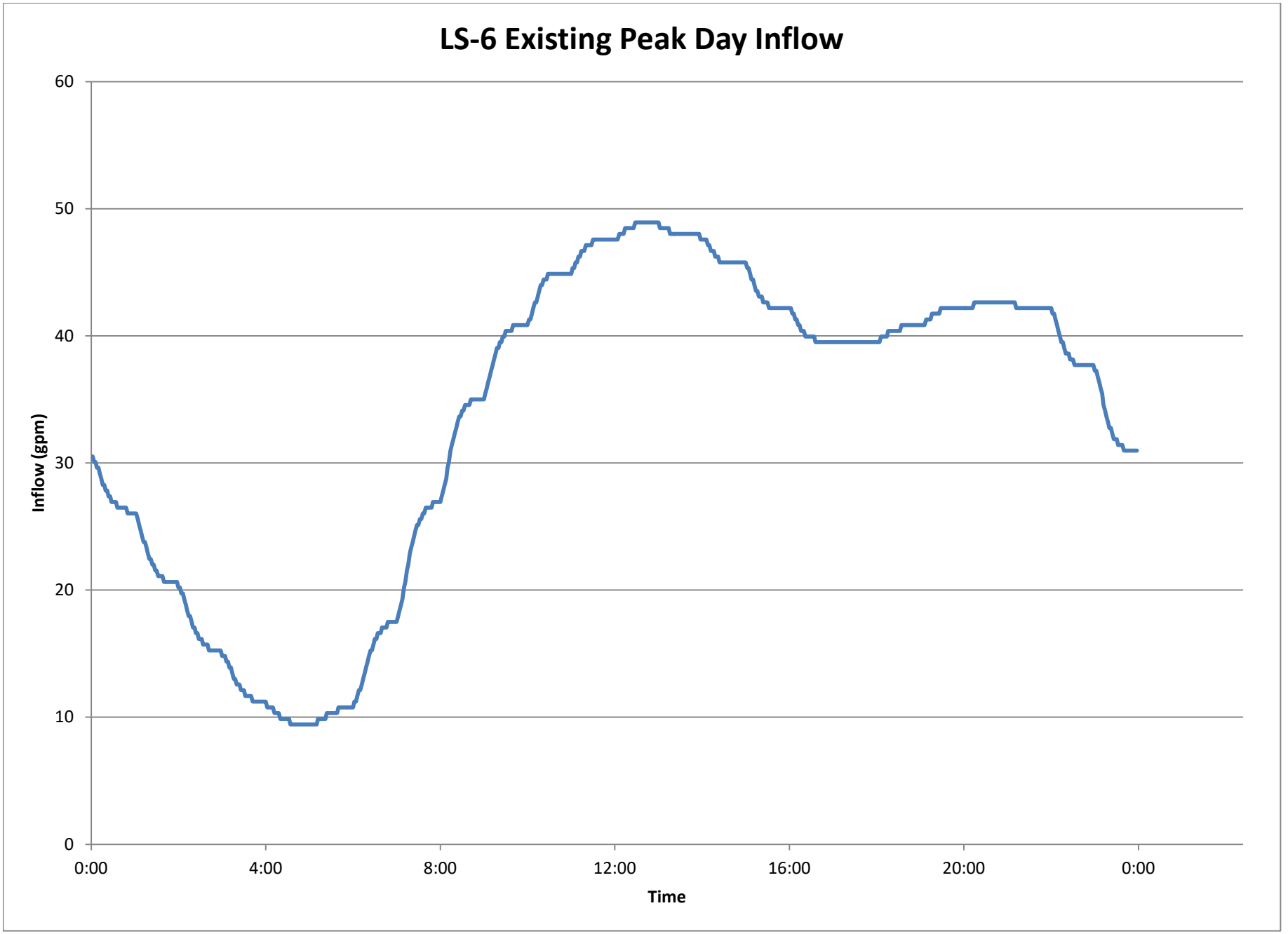
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000 10500 11000 11500 12000

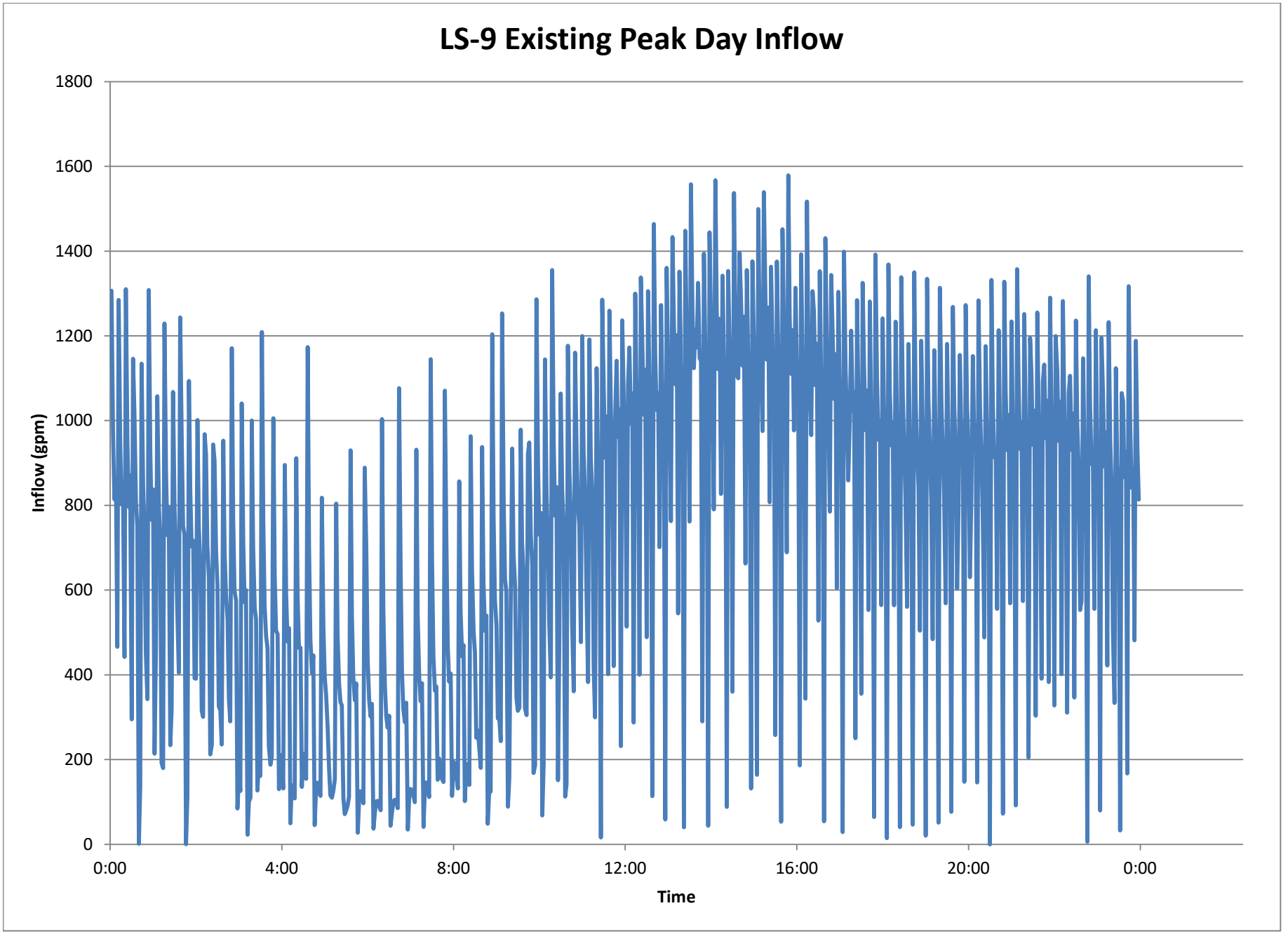
Distance (ft)

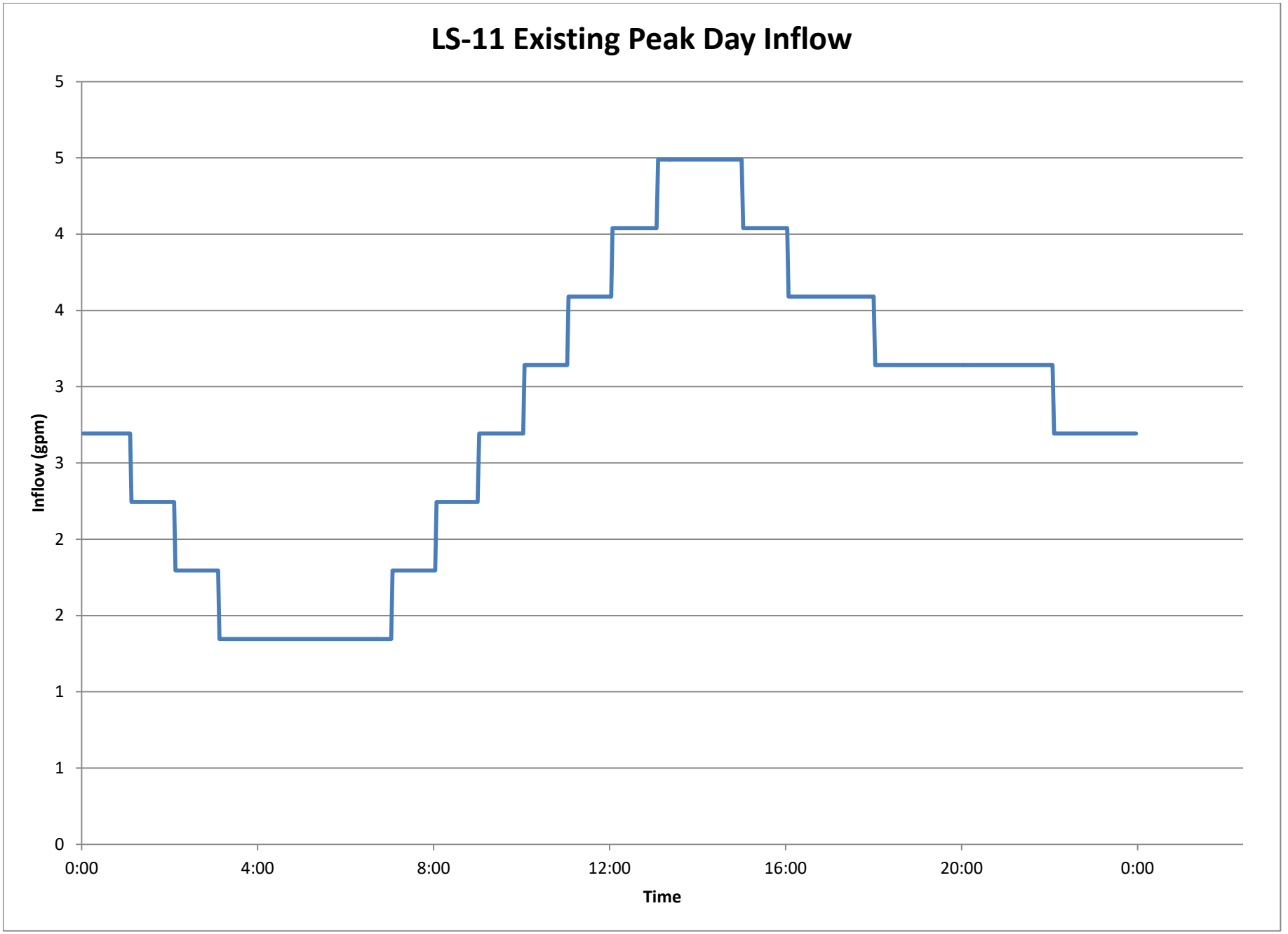
STEP_JC
TRAP
AR_WA301
CDT-99
WB104
CDT-995
2425
WA802
2059
WX603
2424
4410
XF001
4409
XF801
4411
XG003
AR_XGB01
2092
2420
XH001
2298
YE101
2072
AR_YET01
2290
YE102
2418
YF501
2288
YL001
2419
2287
YK001
2085
2218
AR_YKQ01
2267
2217
YKQ05
2270
YKR01
2067
2220
YK004
YK001
YL101
2085
YK101
2218
2287
2419
YE102
2418
YF501
2288
YLC01
2290
AR_YET01
2072
YE101
2298
XH001
2420
AR_XGB01
2092
XG003
4411
XF801
4409
XF001
4410
2424
WX603
WA802
2059
2425
CDT-995
CDT-99
AR_WA301
WB104
STEP_JC
TRAP

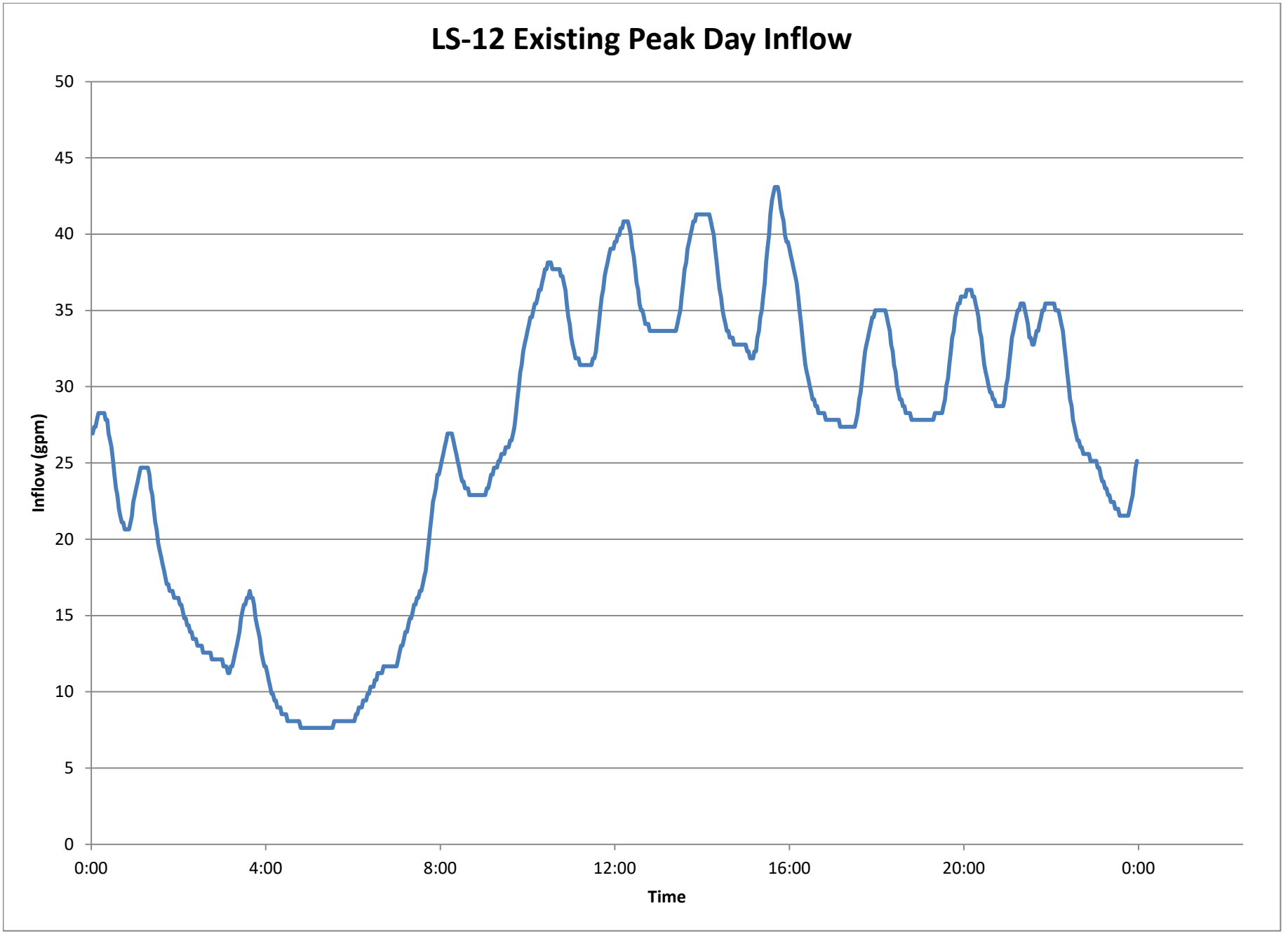

LS-4 Existing Peak Day Inflow
Inflow (gpm)
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

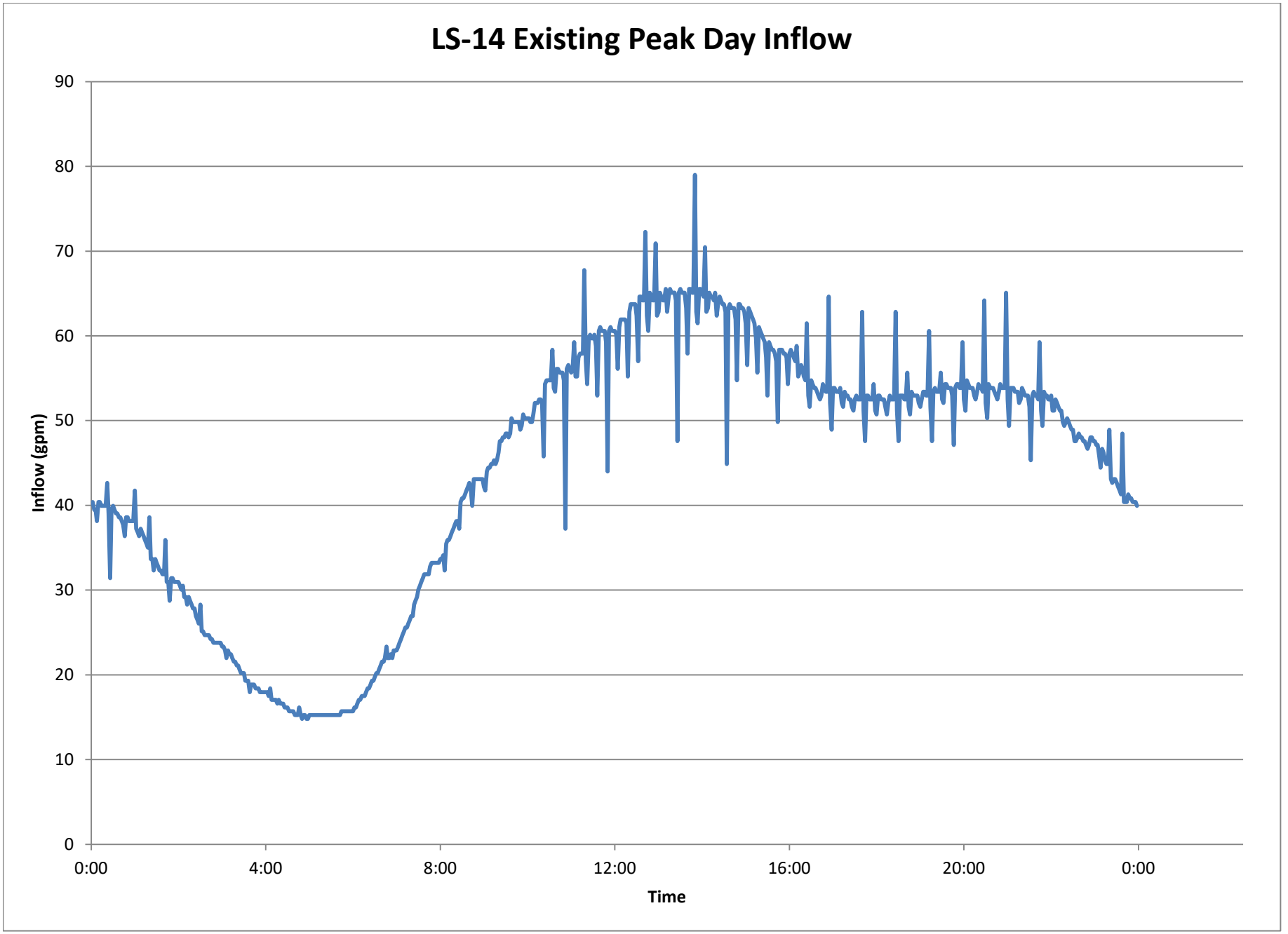

LS-5 Existing Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

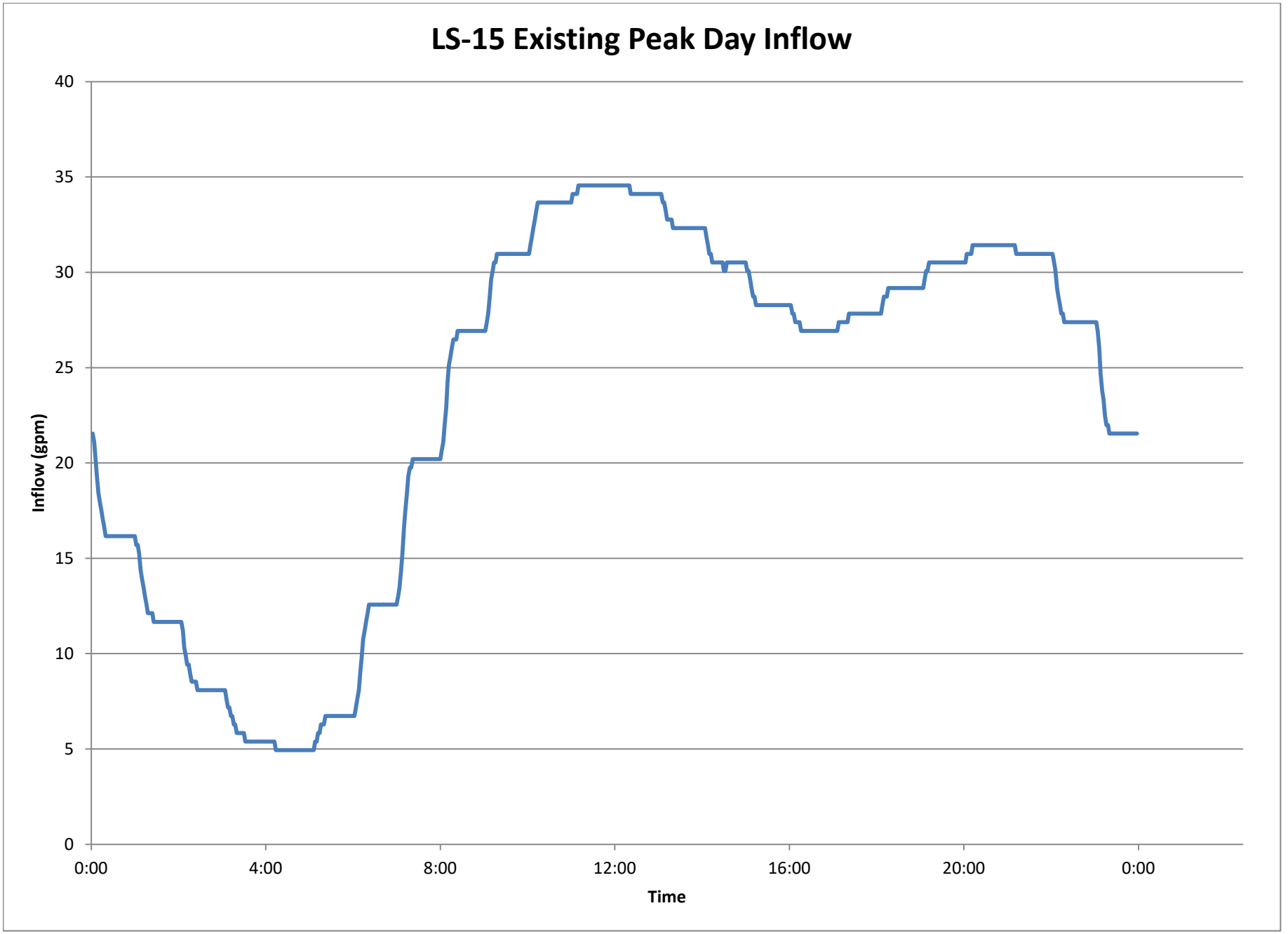

LS-6 Existing Peak Day Inflow
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

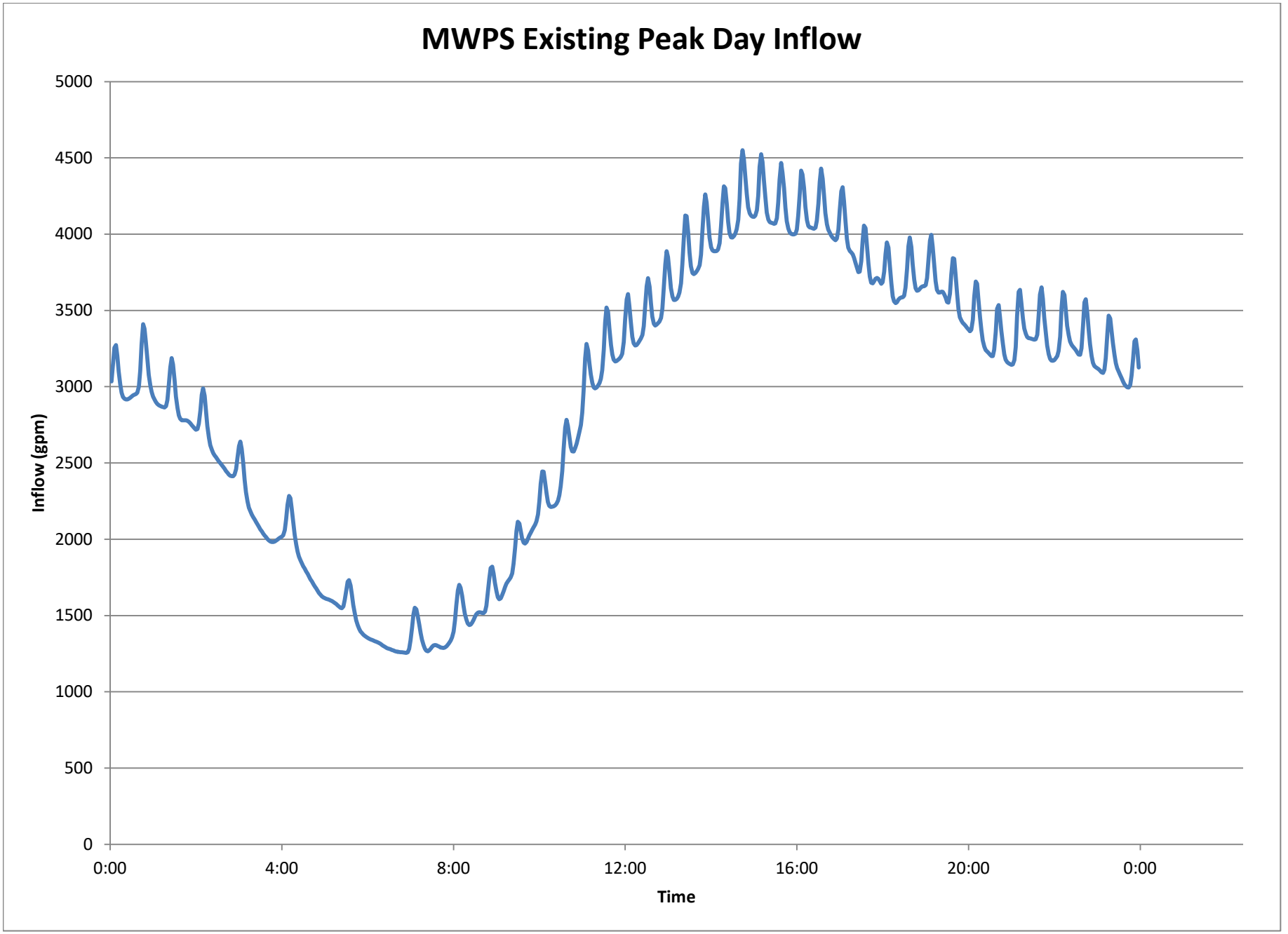

LS-9 Existing Peak Day Inflow
1800
1600
1400
1200
1000
800
600
400
200
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

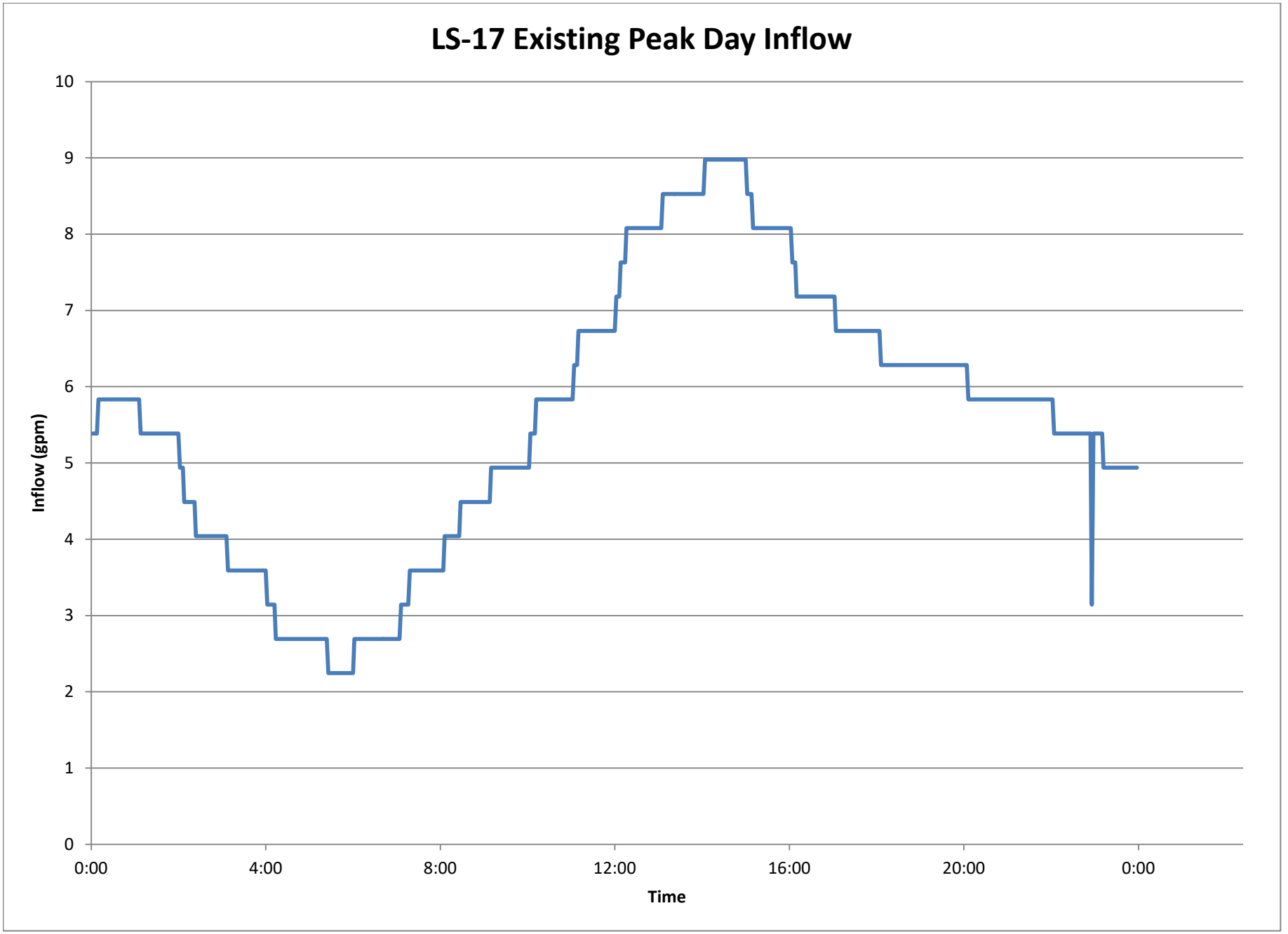

LS-11 Existing Peak Day Inflow
Inflow (gpm)
5
5
4
4
3
3
2
2
1
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

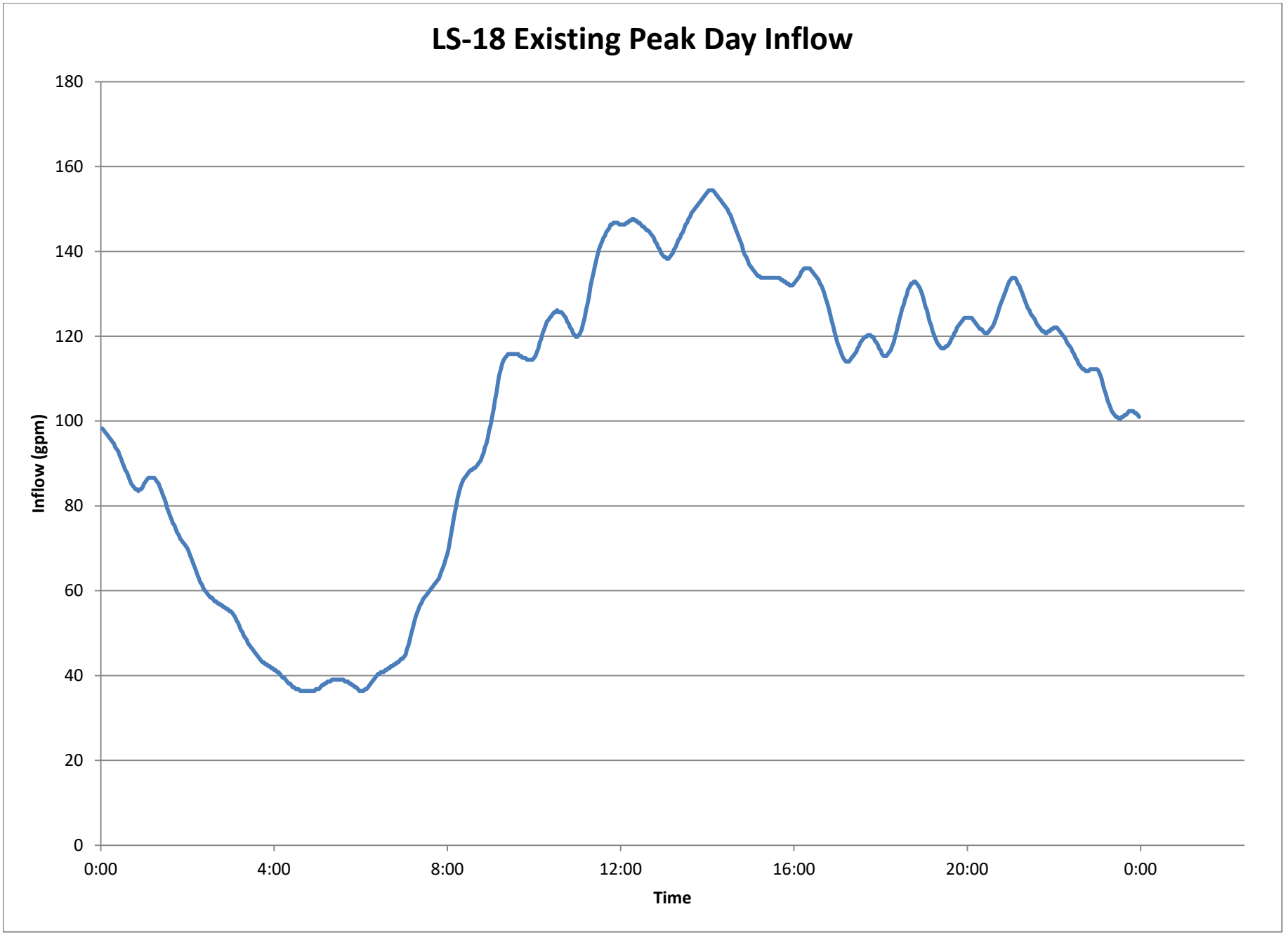

LS-12 Existing Peak Day Inflow
Inflow (gpm)
50
45
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

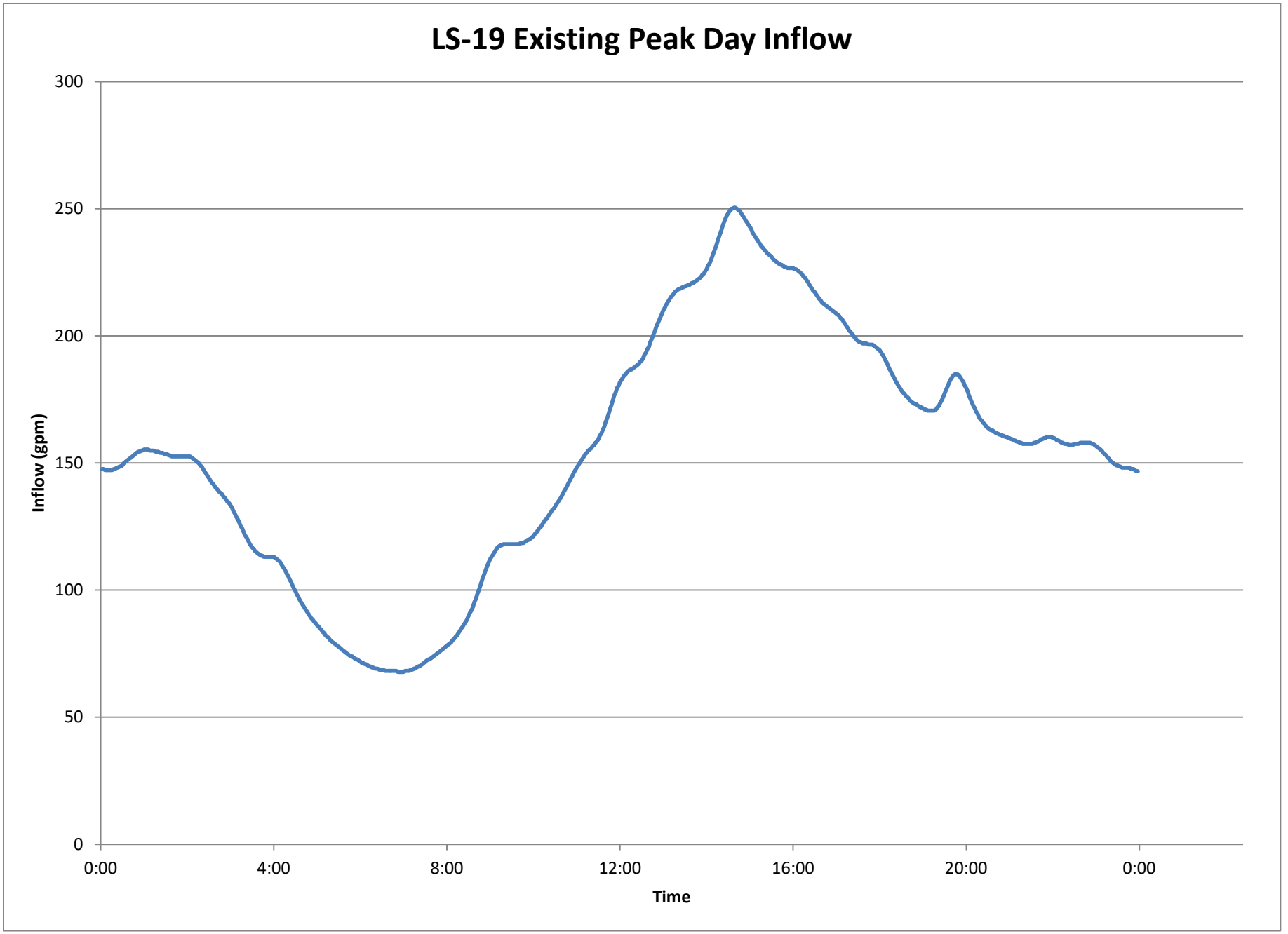

LS-14 Existing Peak Day Inflow
90
80
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

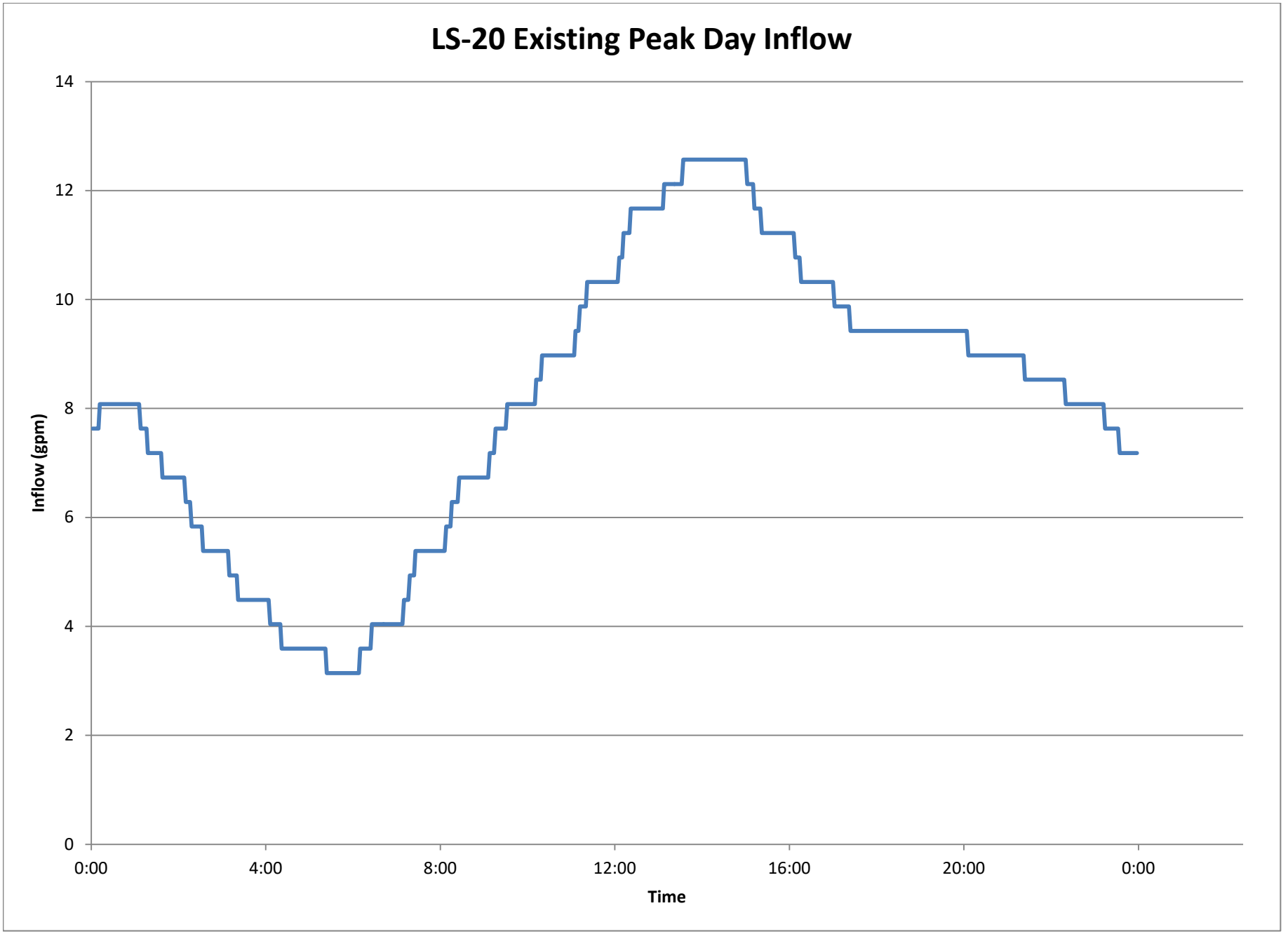

LS-15 Existing Peak Day Inflow
Inflow (gpm)
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

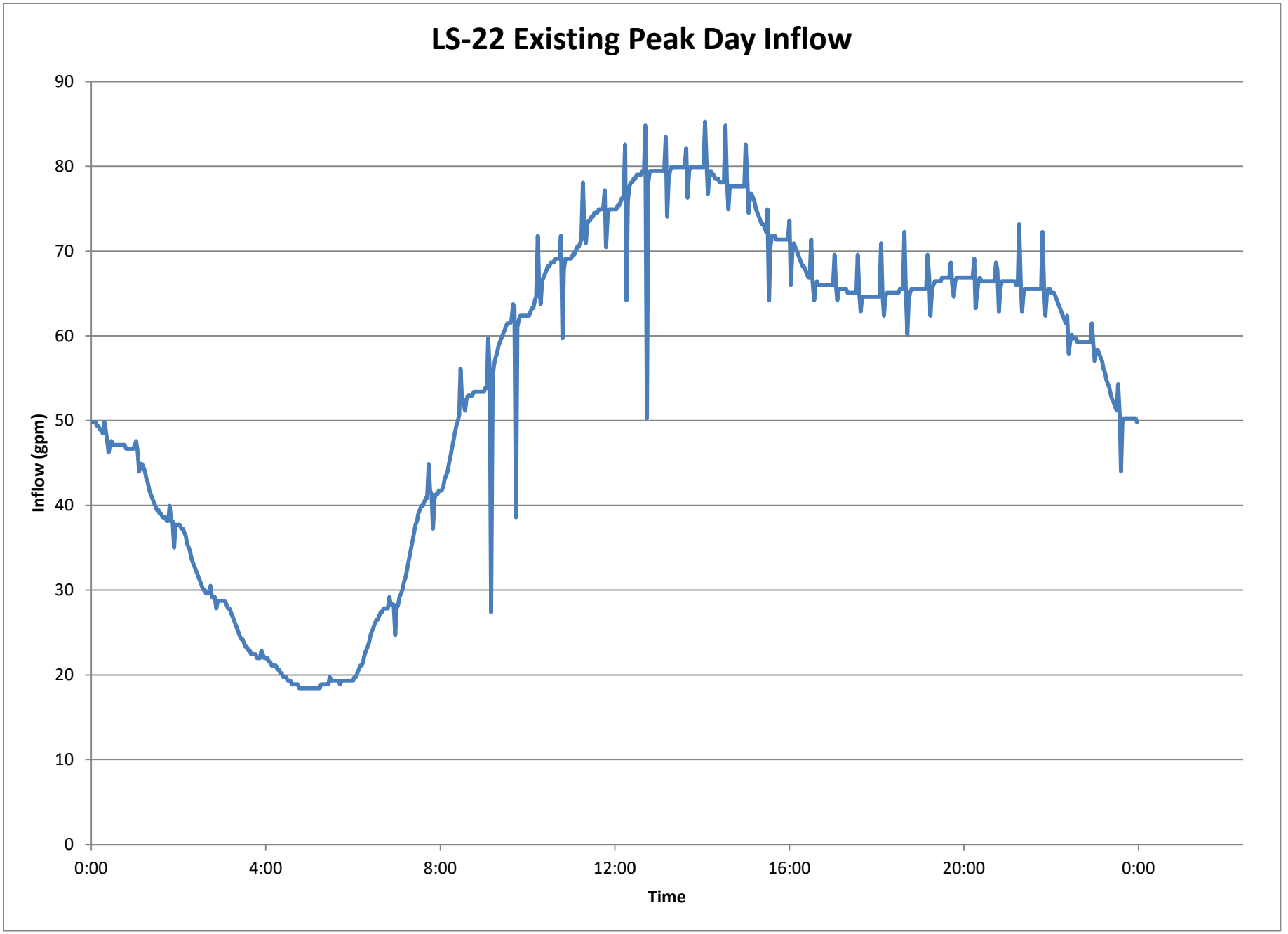

MWPS Existing Peak Day Inflow
Inflow (gpm)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

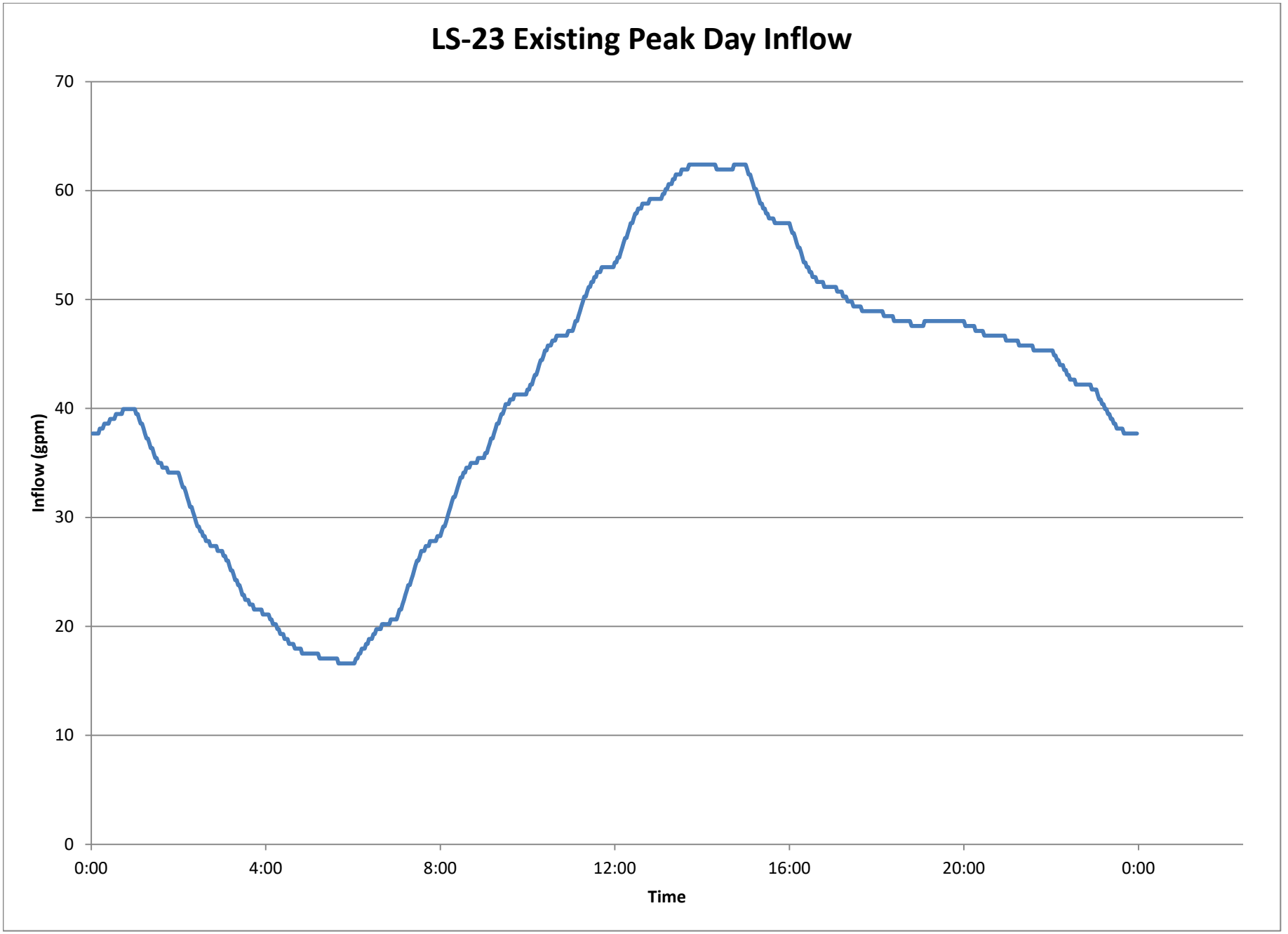

LS-17 Existing Peak Day Inflow
Inflow (gpm)
10
9
8
7
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

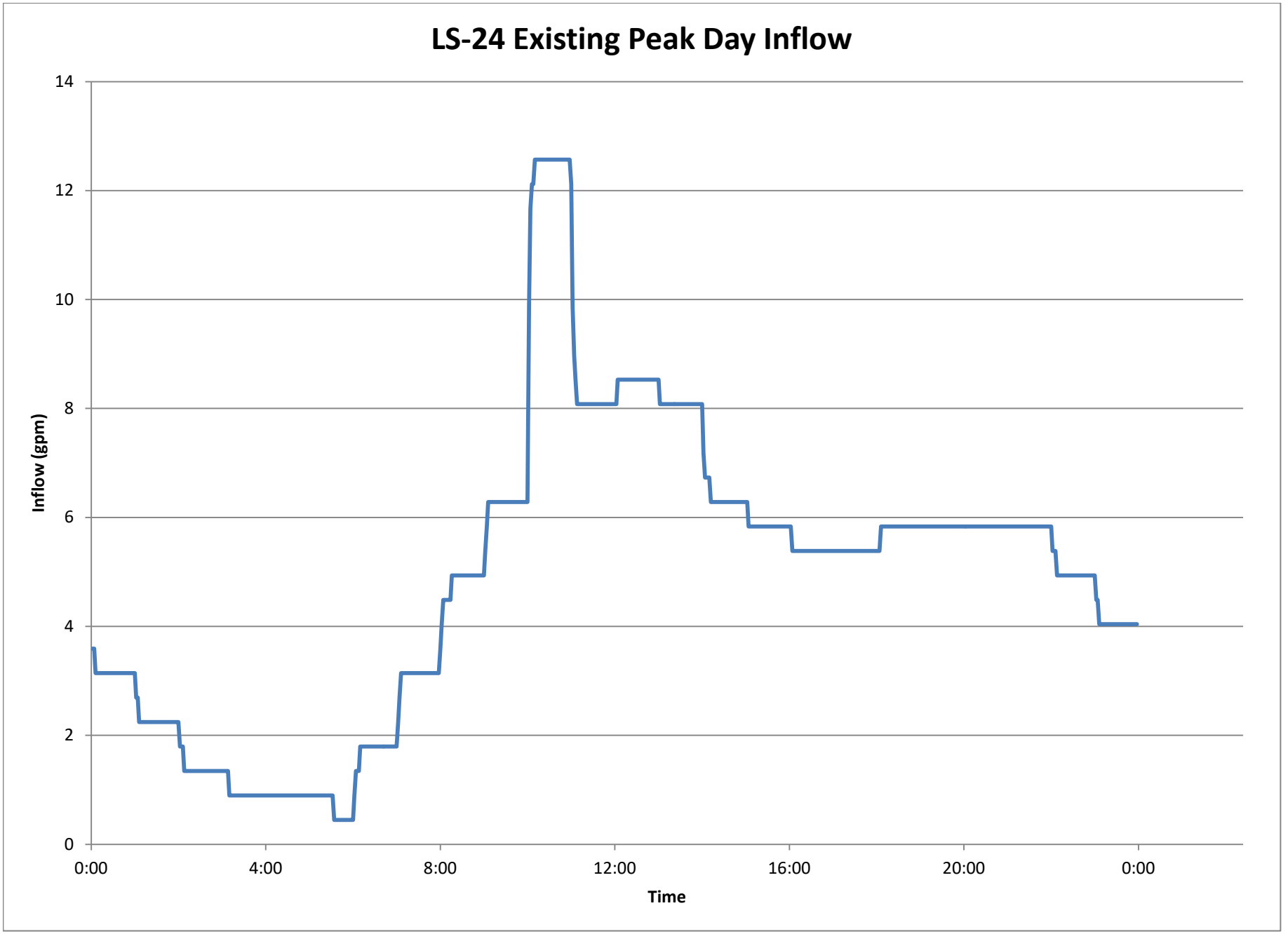

LS-18 Existing Peak Day Inflow
180
160
140
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

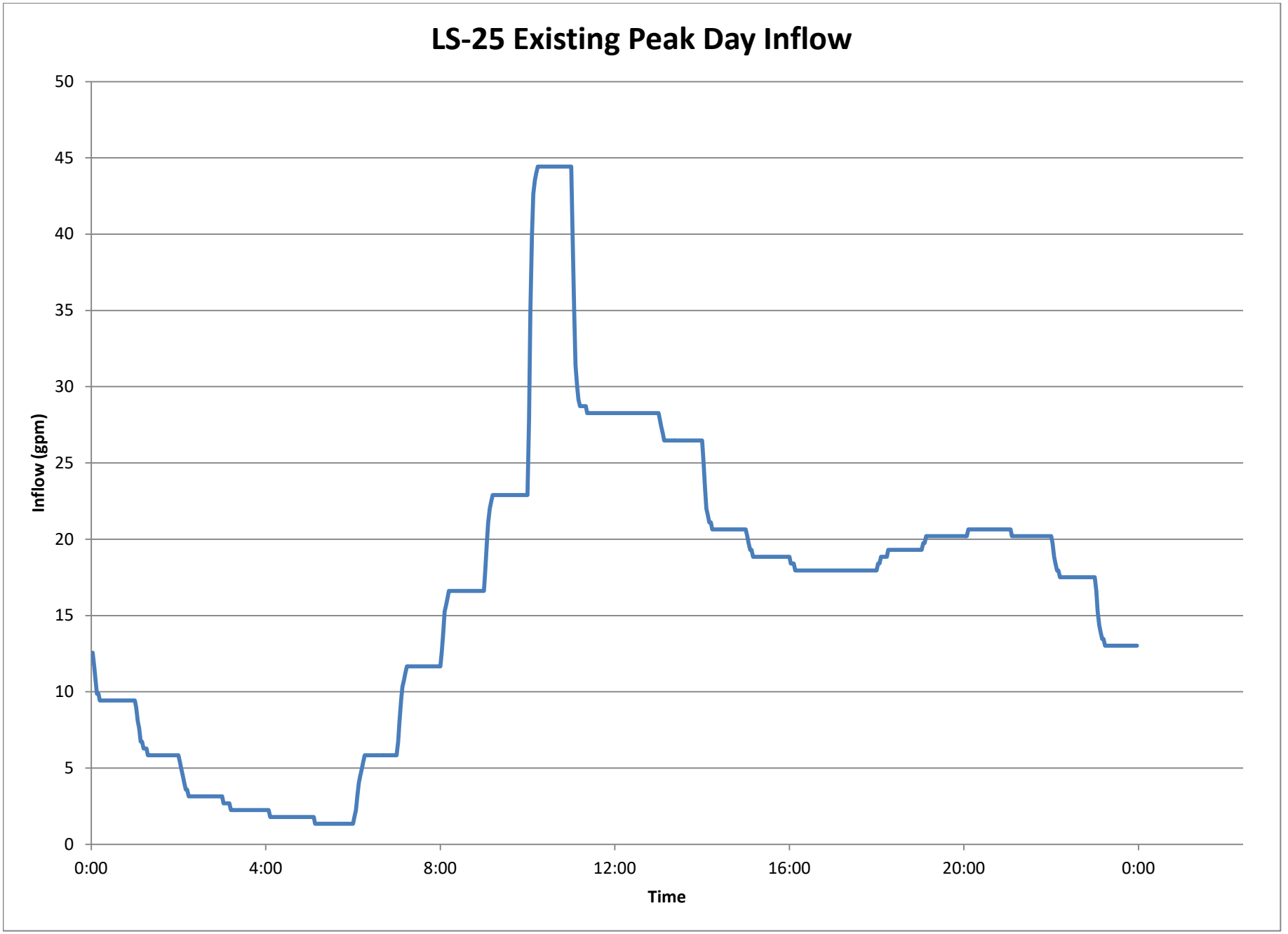

LS-19 Existing Peak Day Inflow
300
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

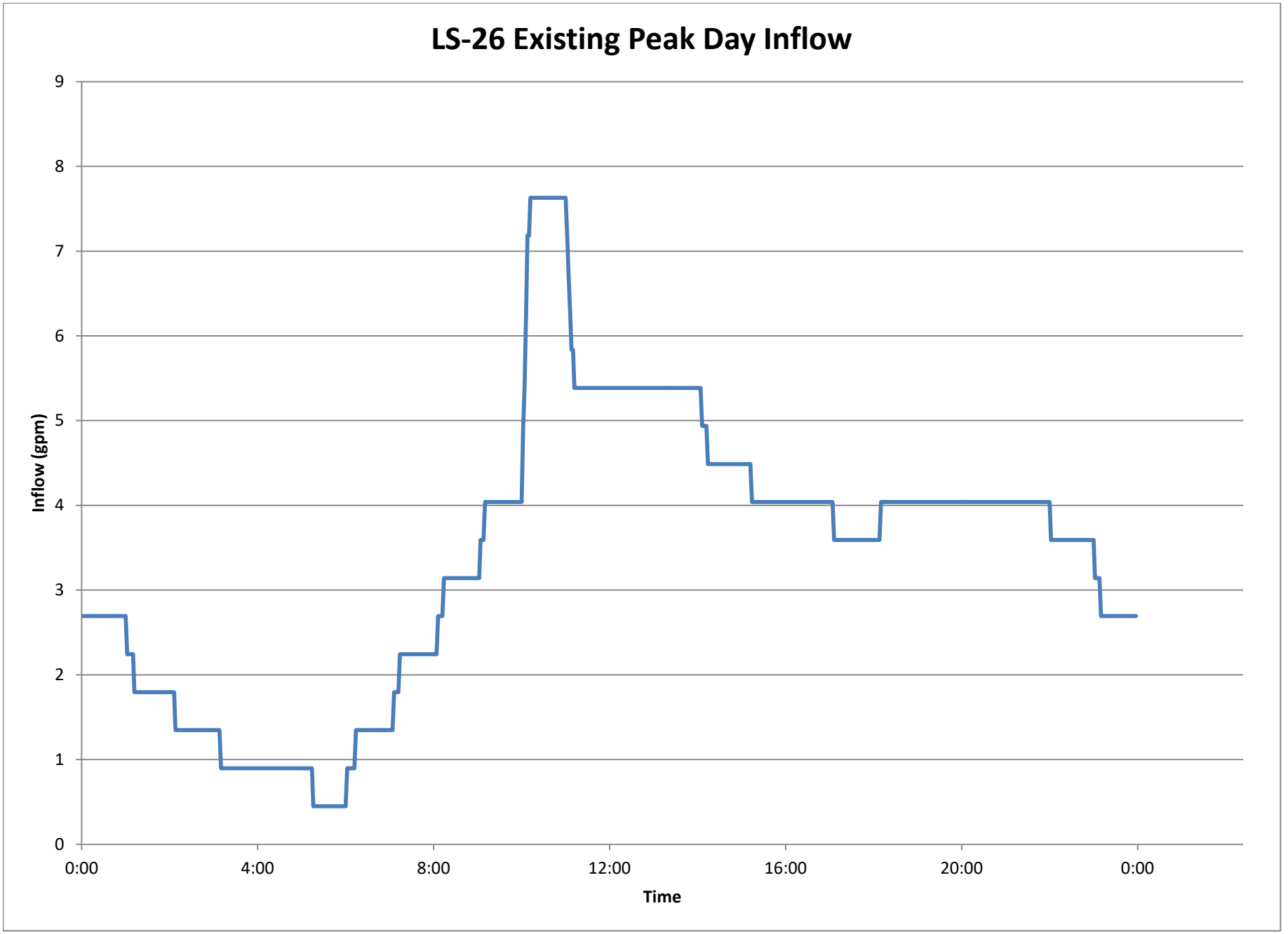

LS-20 Existing Peak Day Inflow
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

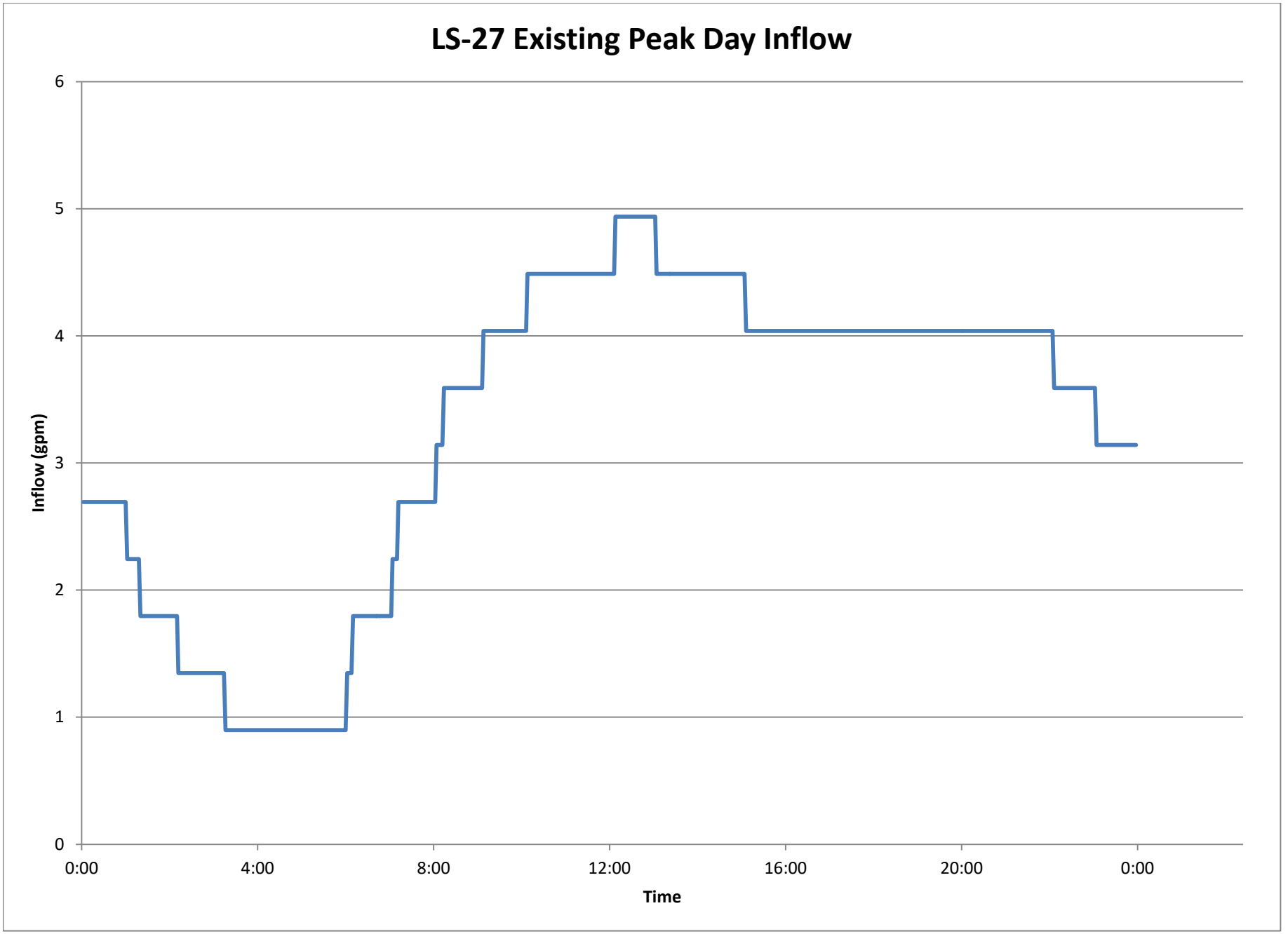

LS-22 Existing Peak Day Inflow
Inflow (gpm)
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

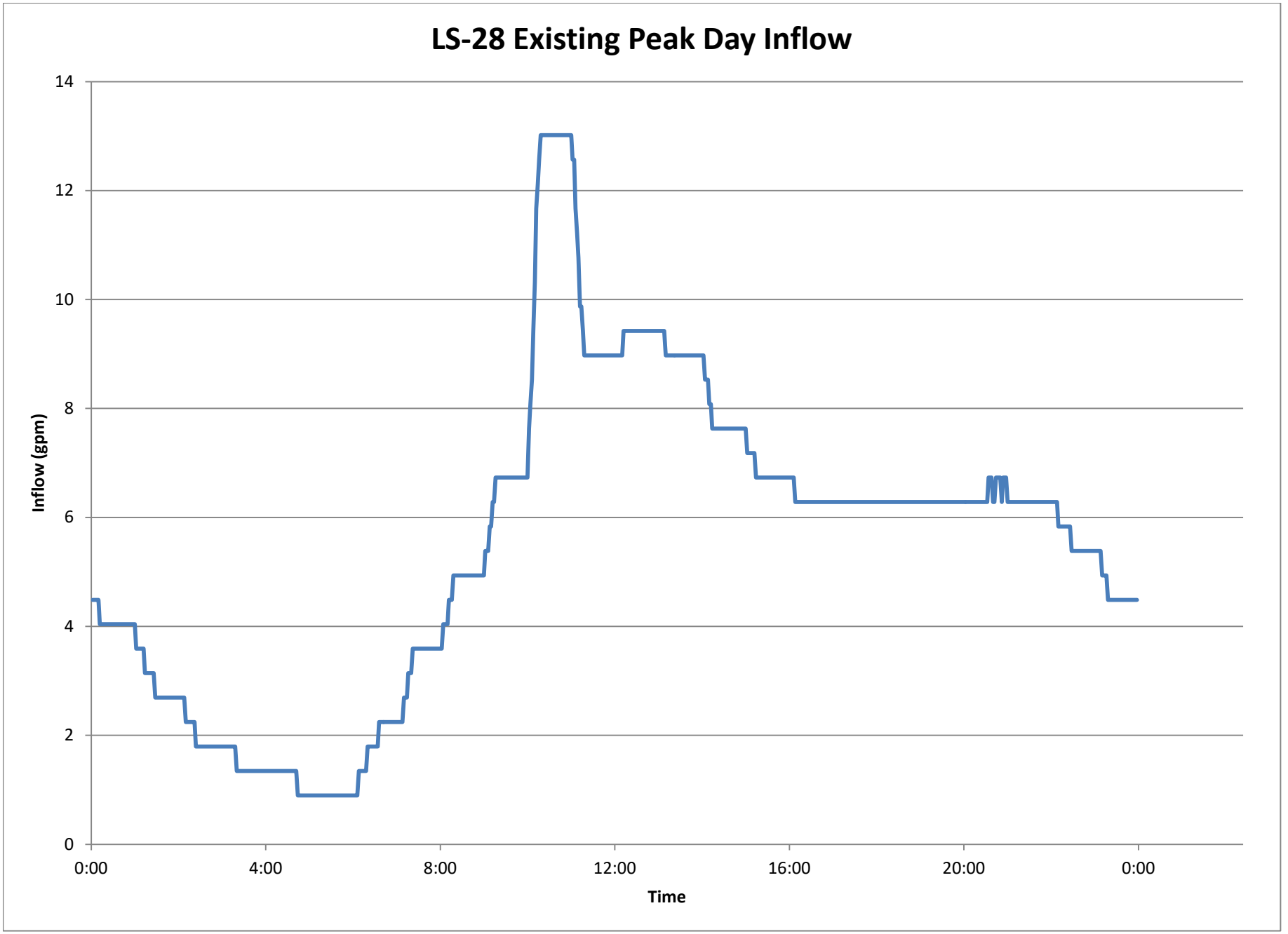

LS-23 Existing Peak Day Inflow
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

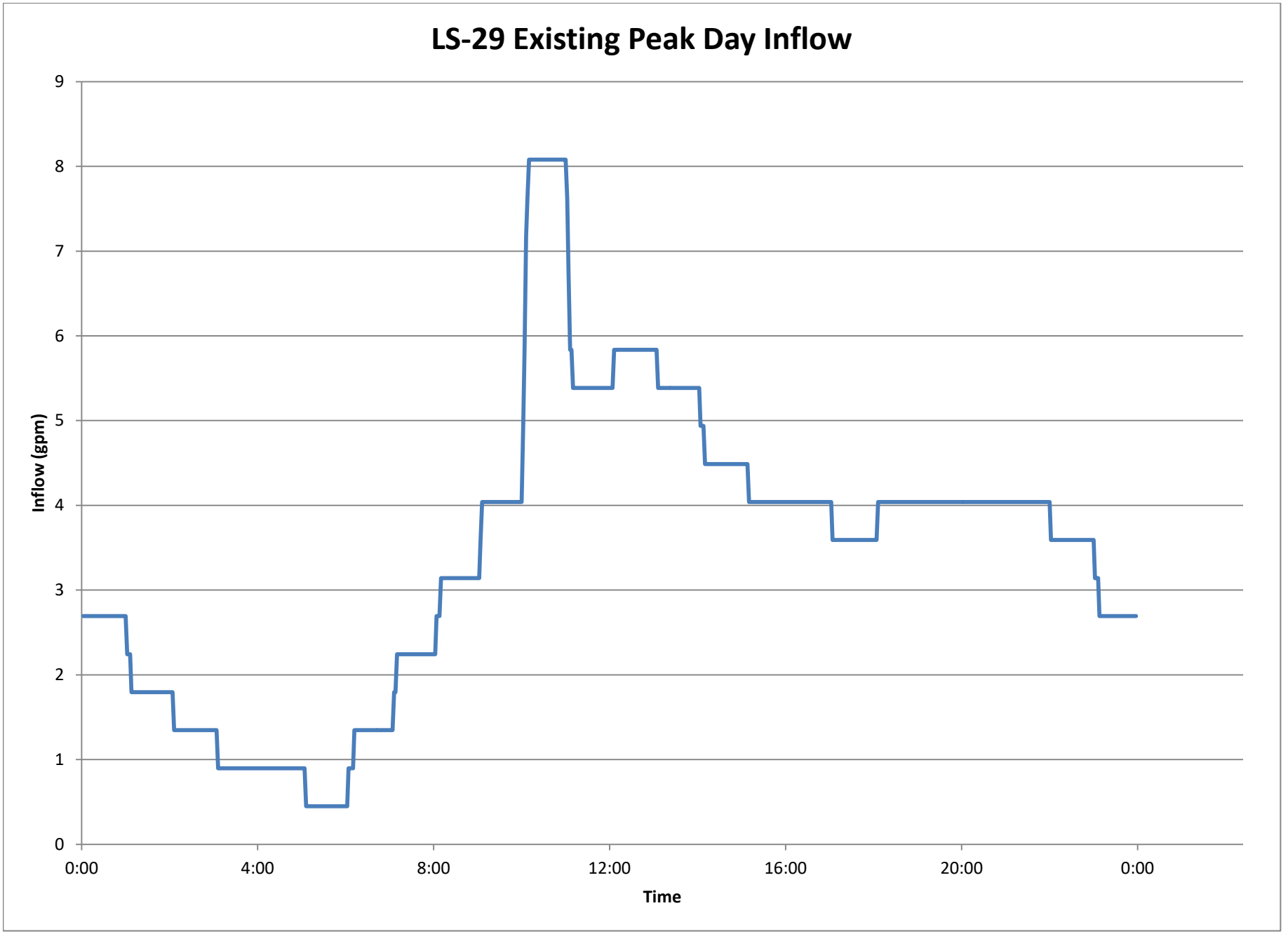

LS-24 Existing Peak Day Inflow
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

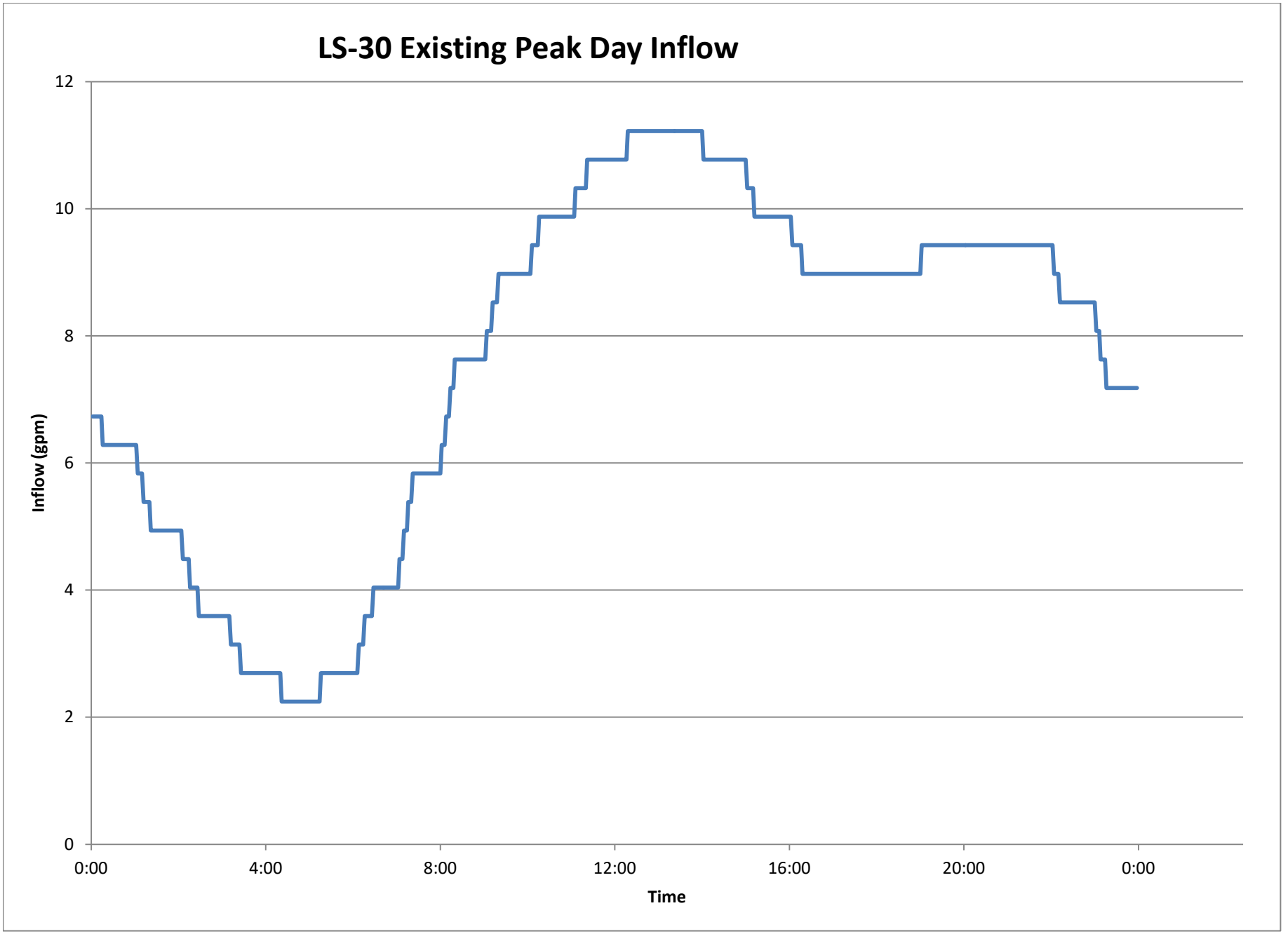

LS-25 Existing Peak Day Inflow
Inflow (gpm)
50
45
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

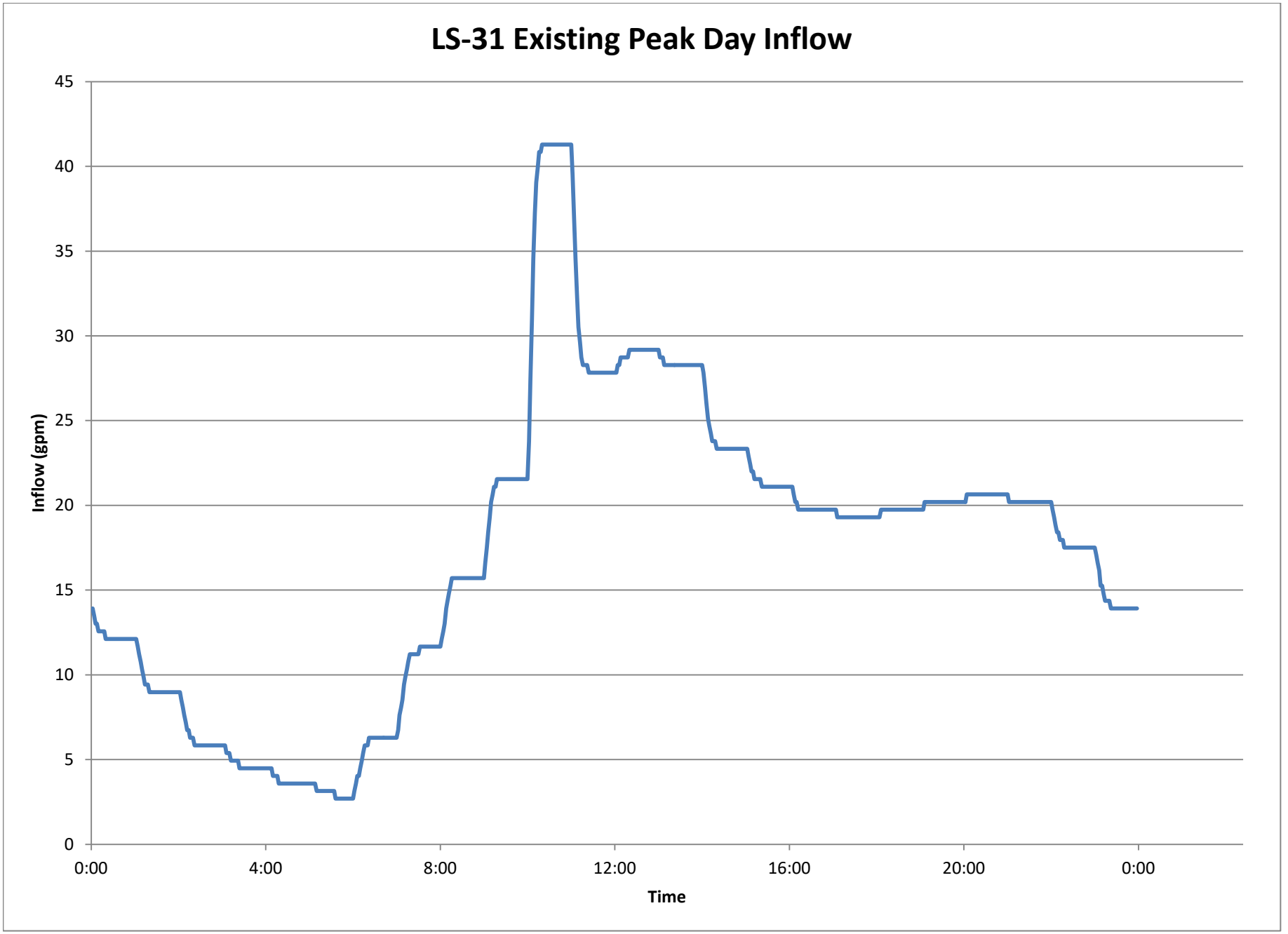

LS-26 Existing Peak Day Inflow
Inflow (gpm)
0
1
2
3
4
5
6
7
8
9
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

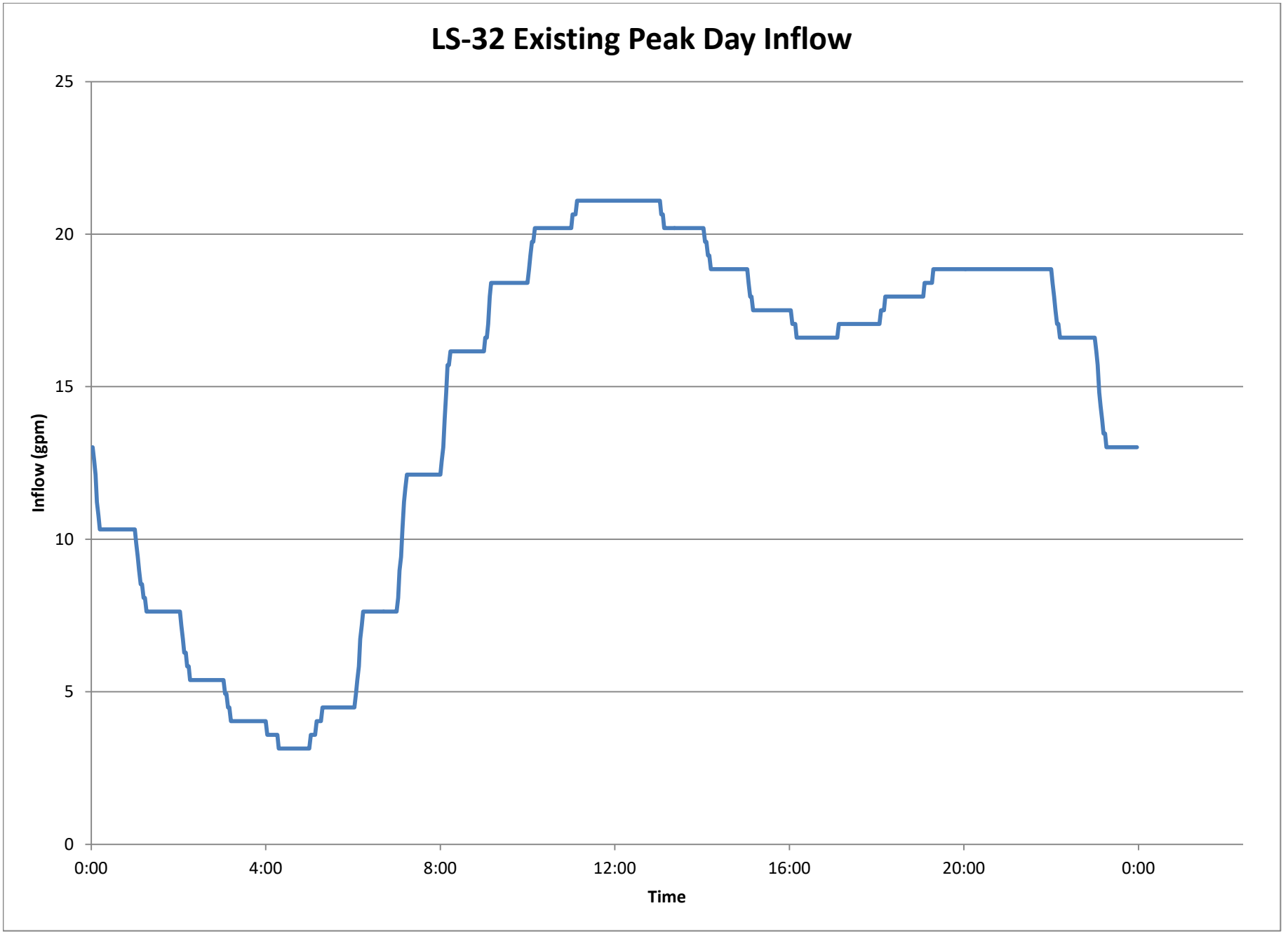

LS-27 Existing Peak Day Inflow
Inflow (gpm)
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

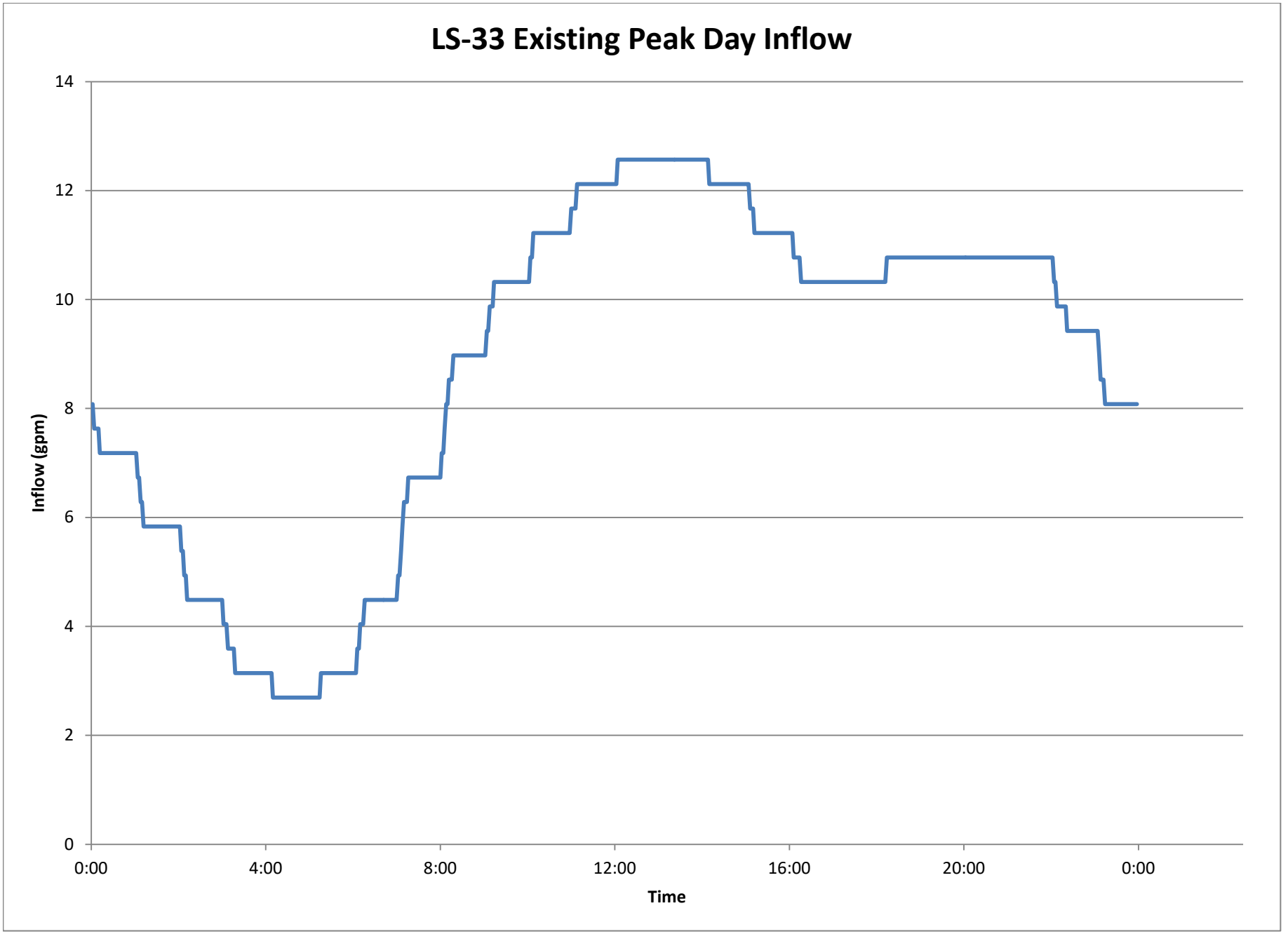

LS-28 Existing Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

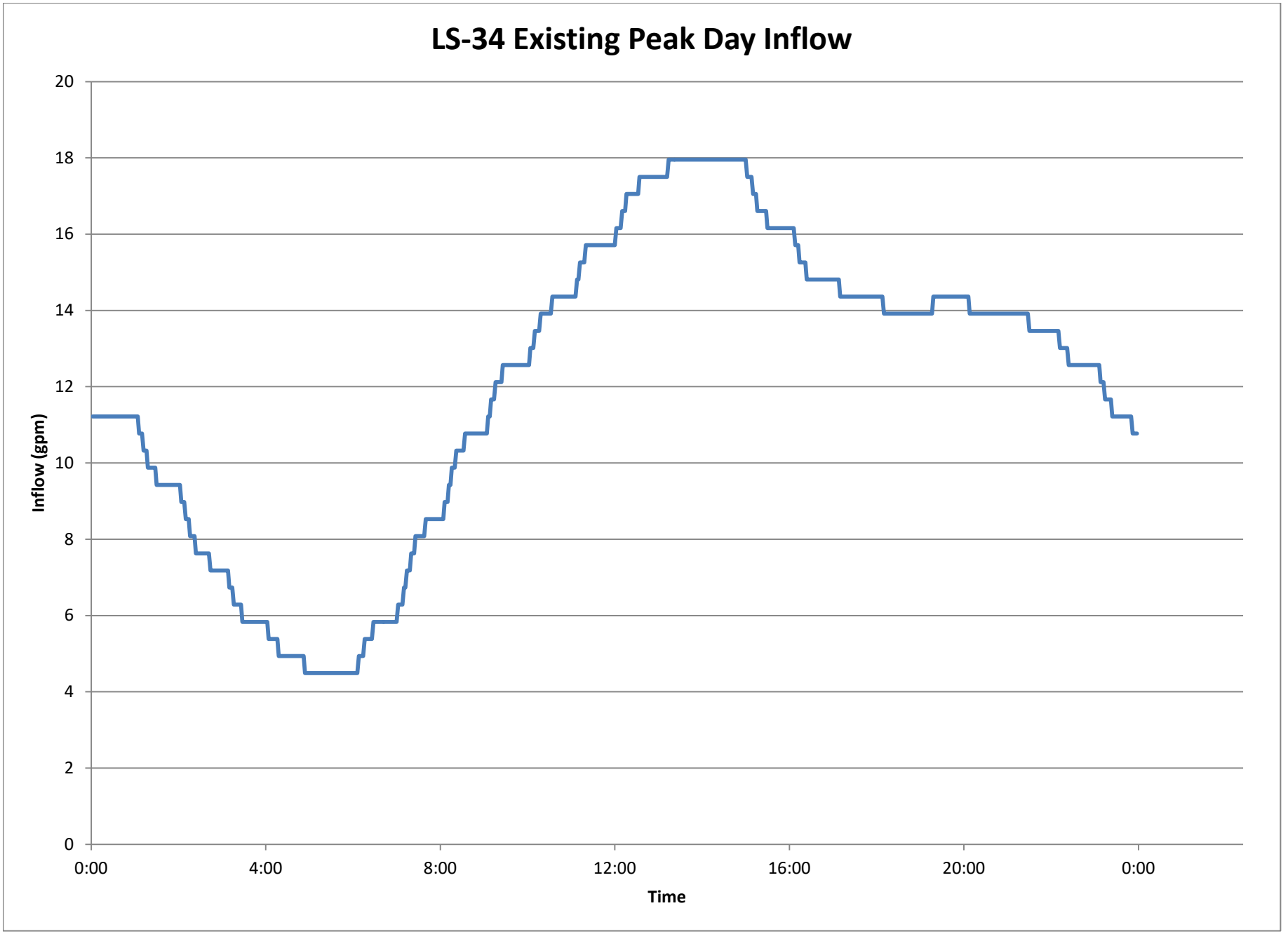

LS-29 Existing Peak Day Inflow
Inflow (gpm)
9
8
7
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

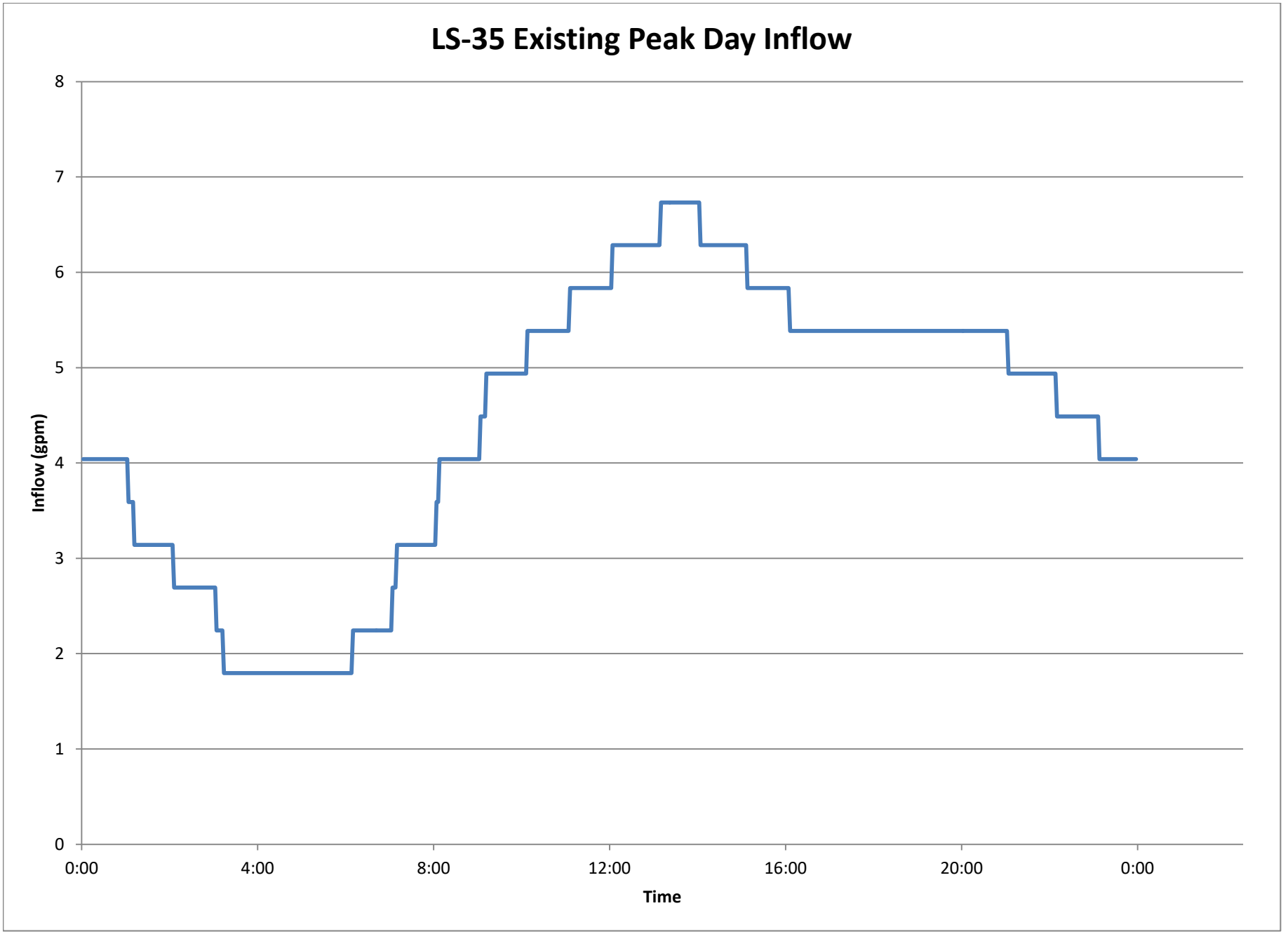

LS-30 Existing Peak Day Inflow
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

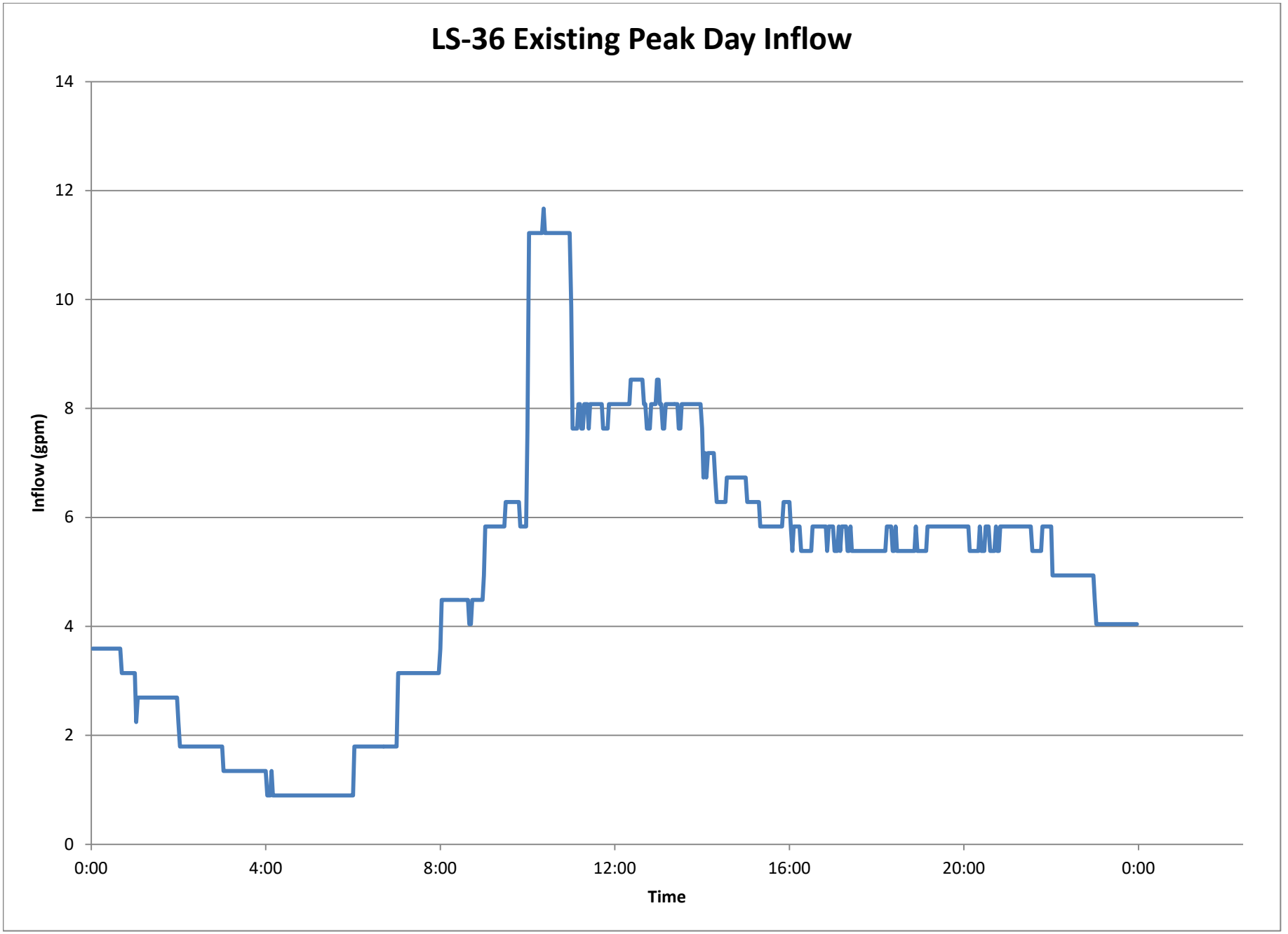

LS-31 Existing Peak Day Inflow
Inflow (gpm)
45
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

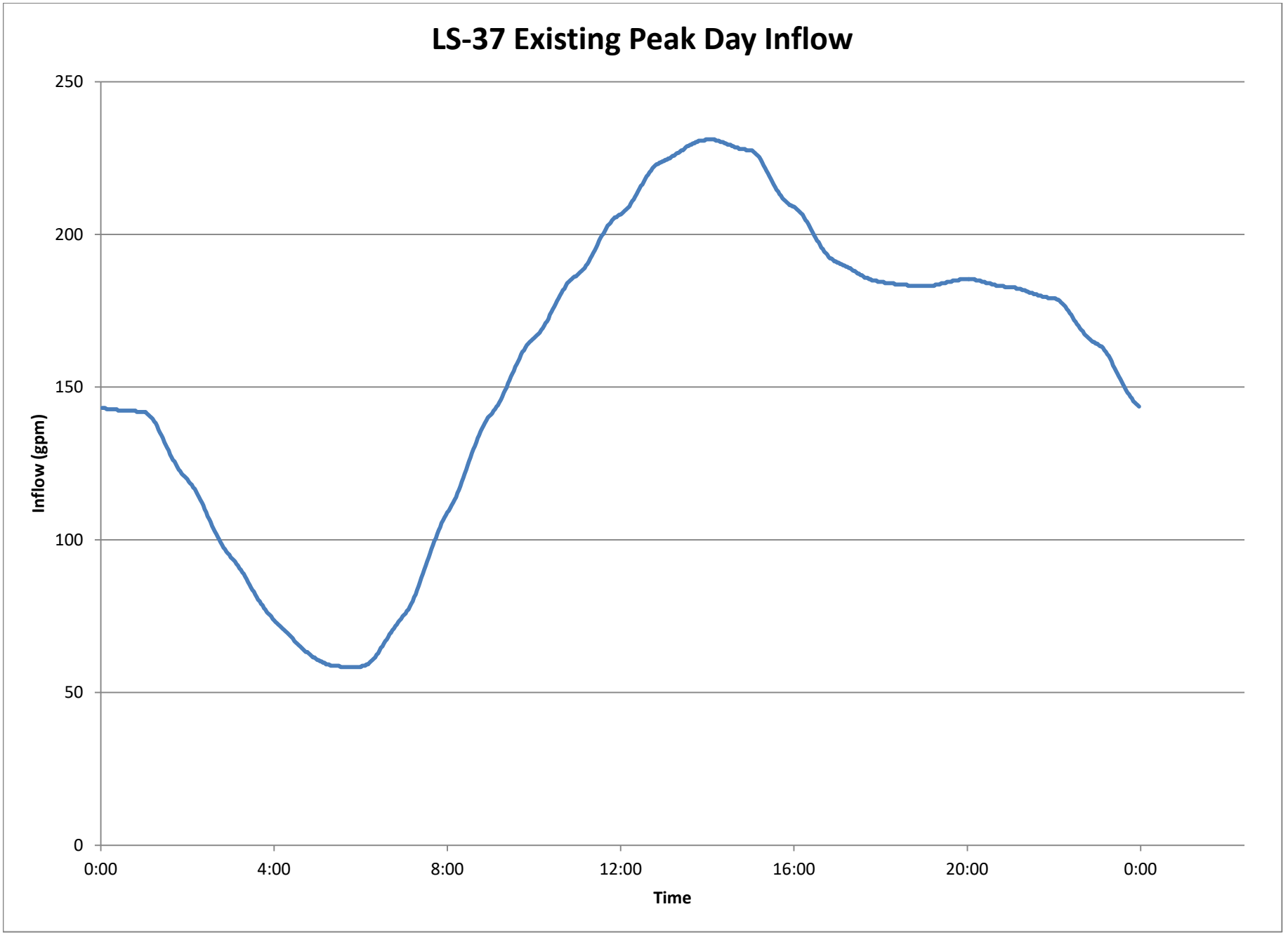

LS-32 Existing Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

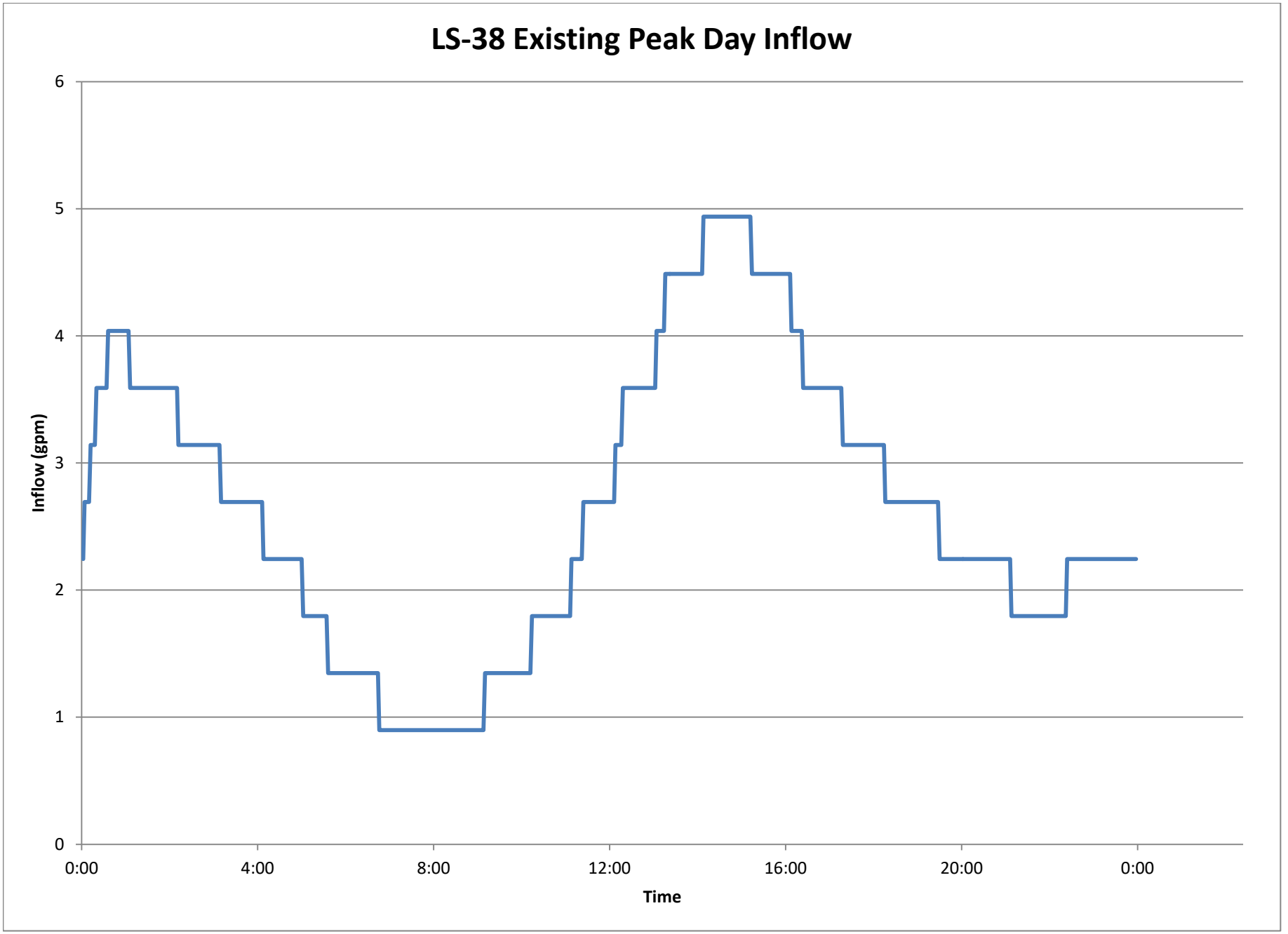

LS-33 Existing Peak Day Inflow
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

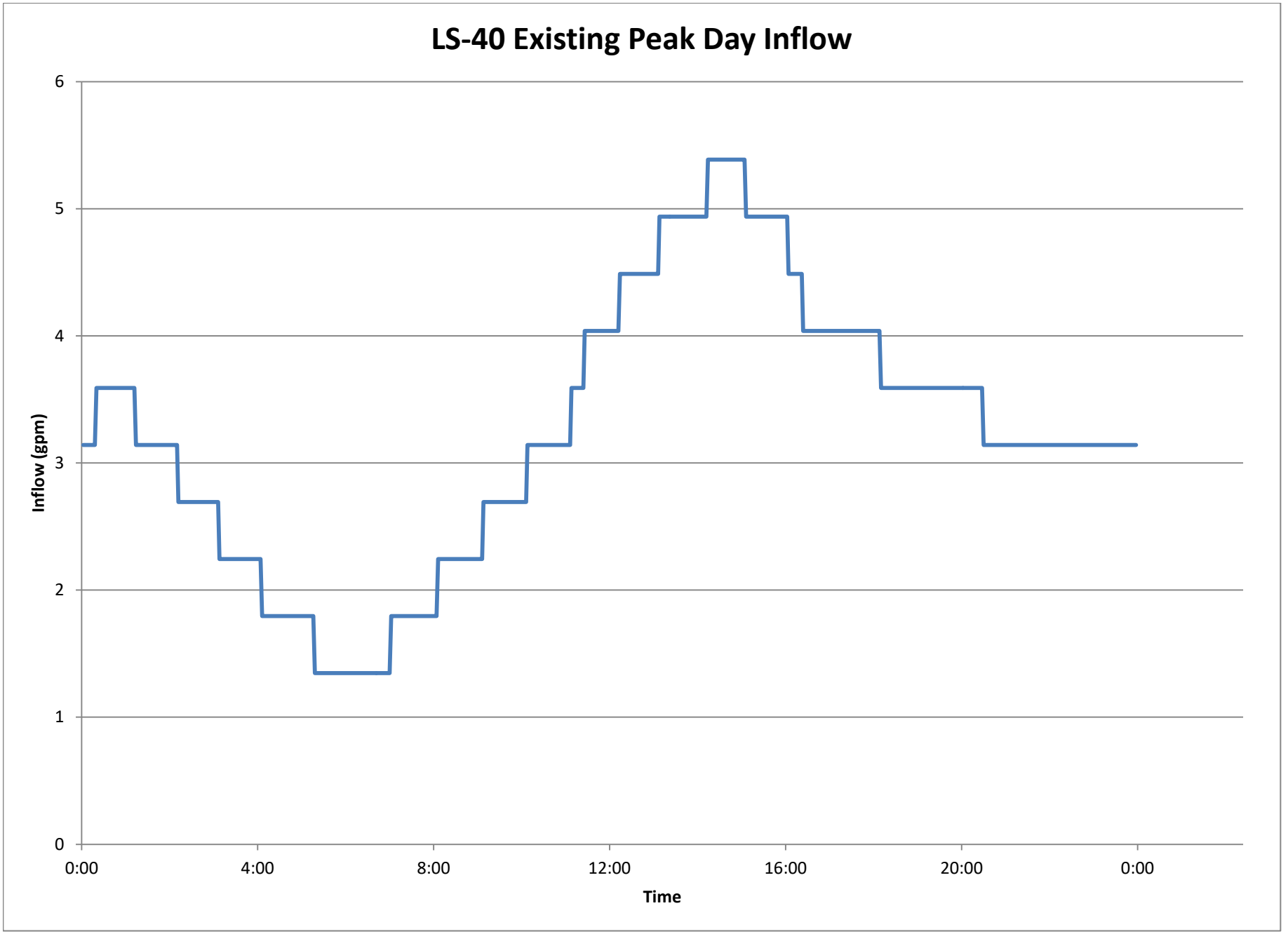

LS-34 Existing Peak Day Inflow
Inflow (gpm)
20
18
16
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

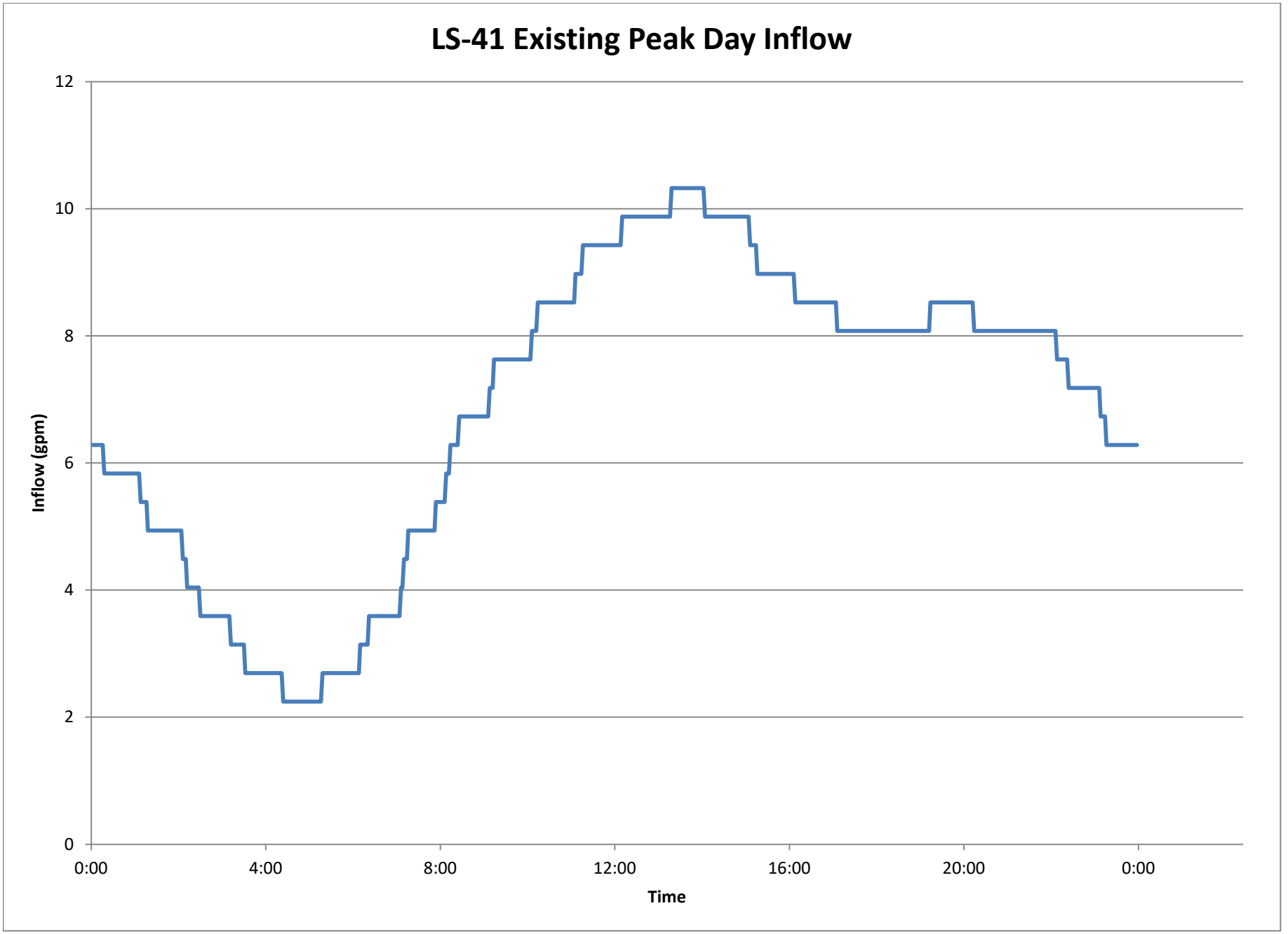

LS-35 Existing Peak Day Inflow
Inflow (gpm)
0
1
2
3
4
5
6
7
8
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

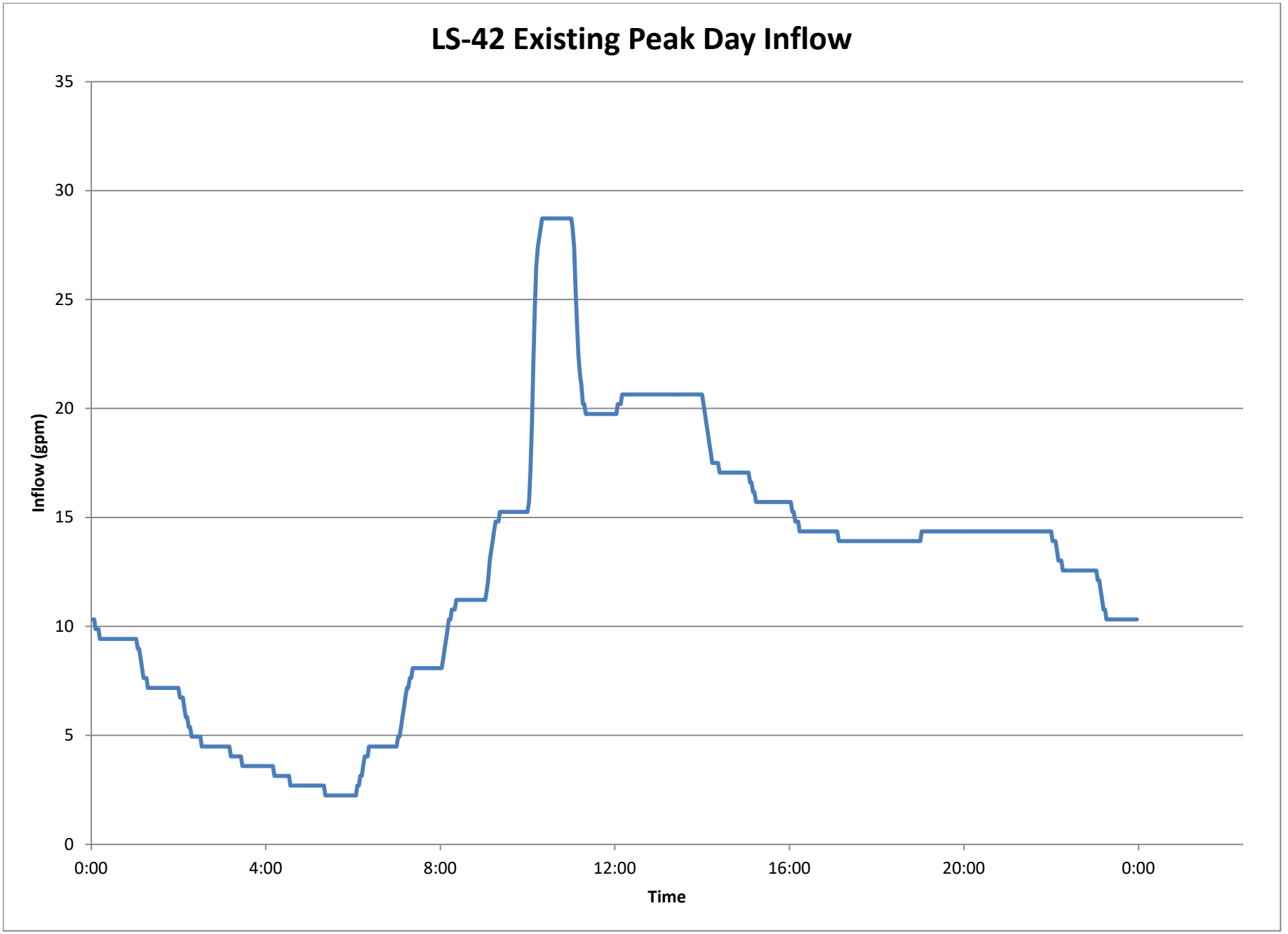

LS-36 Existing Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

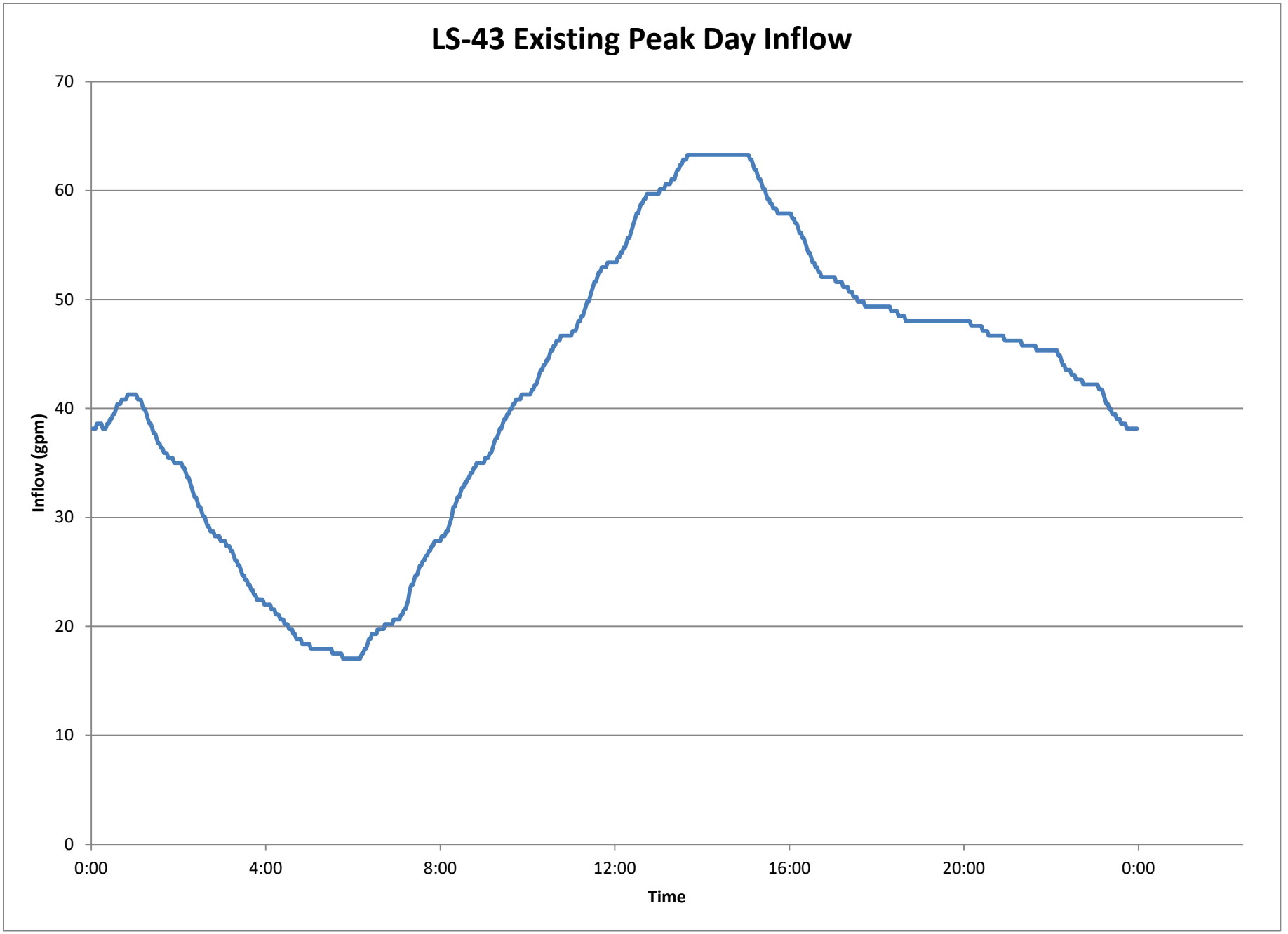

LS-37 Existing Peak Day Inflow
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

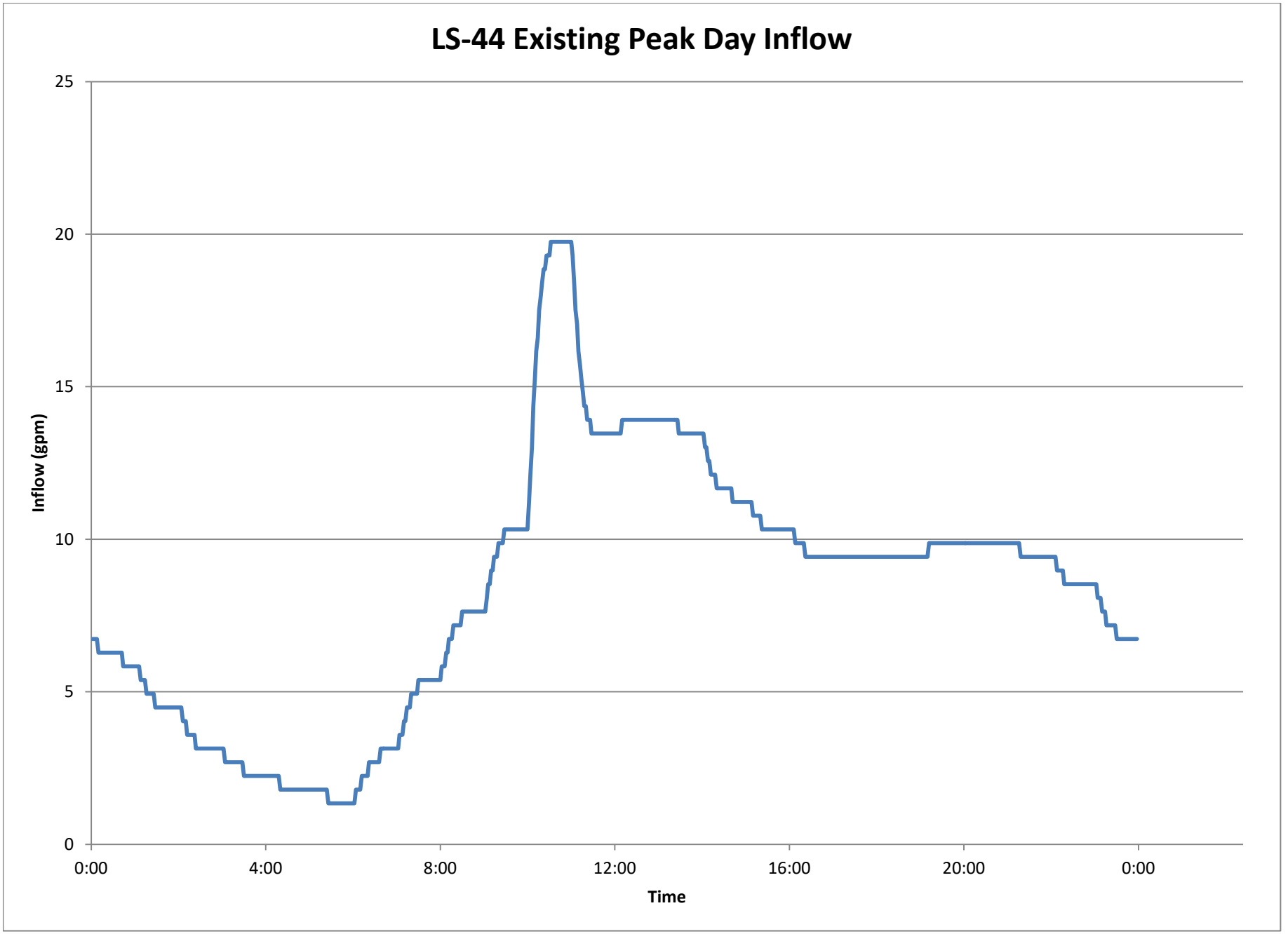

LS-38 Existing Peak Day Inflow
Inflow (gpm)
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

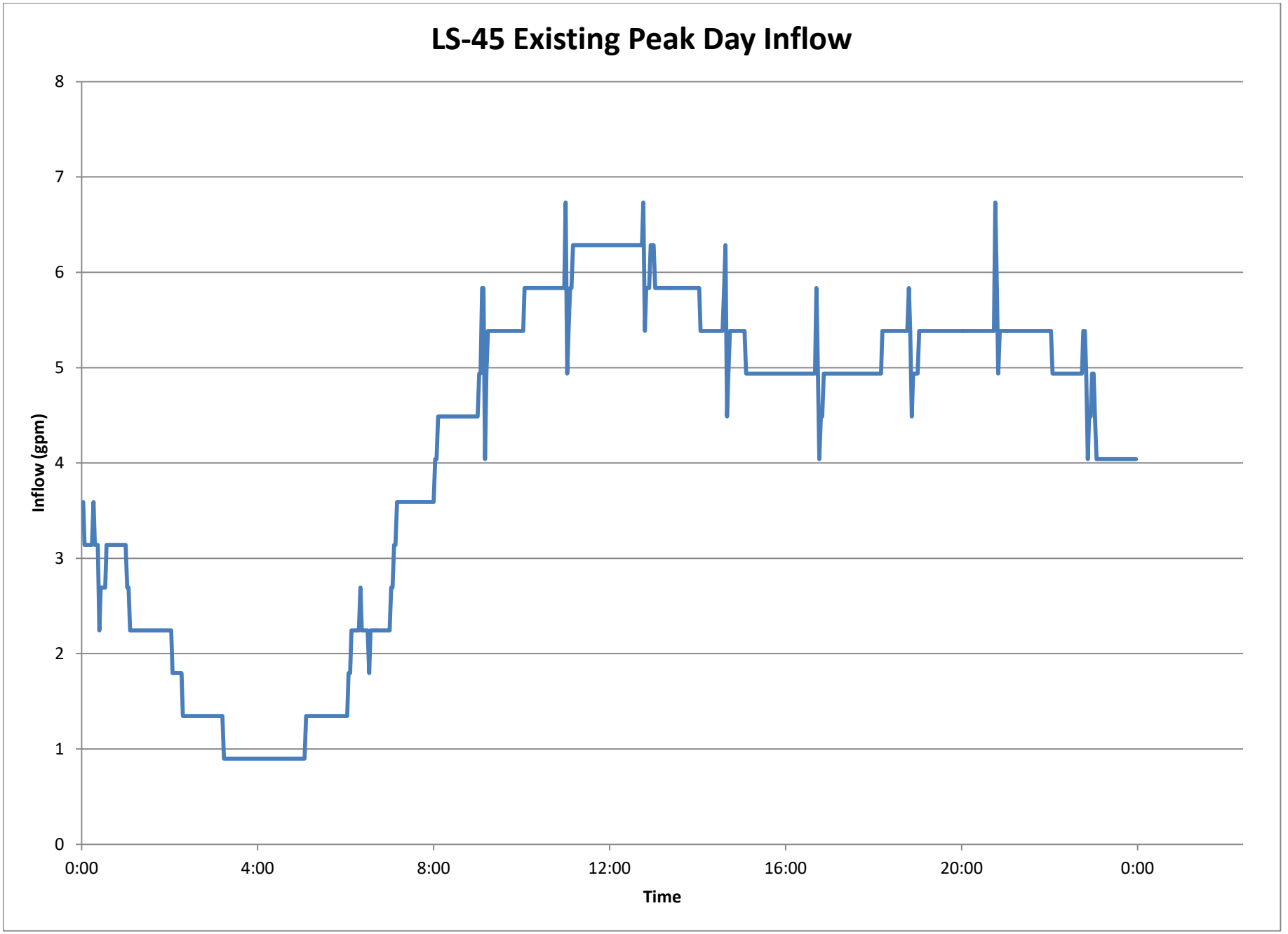

LS-40 Existing Peak Day Inflow
Inflow (gpm)
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

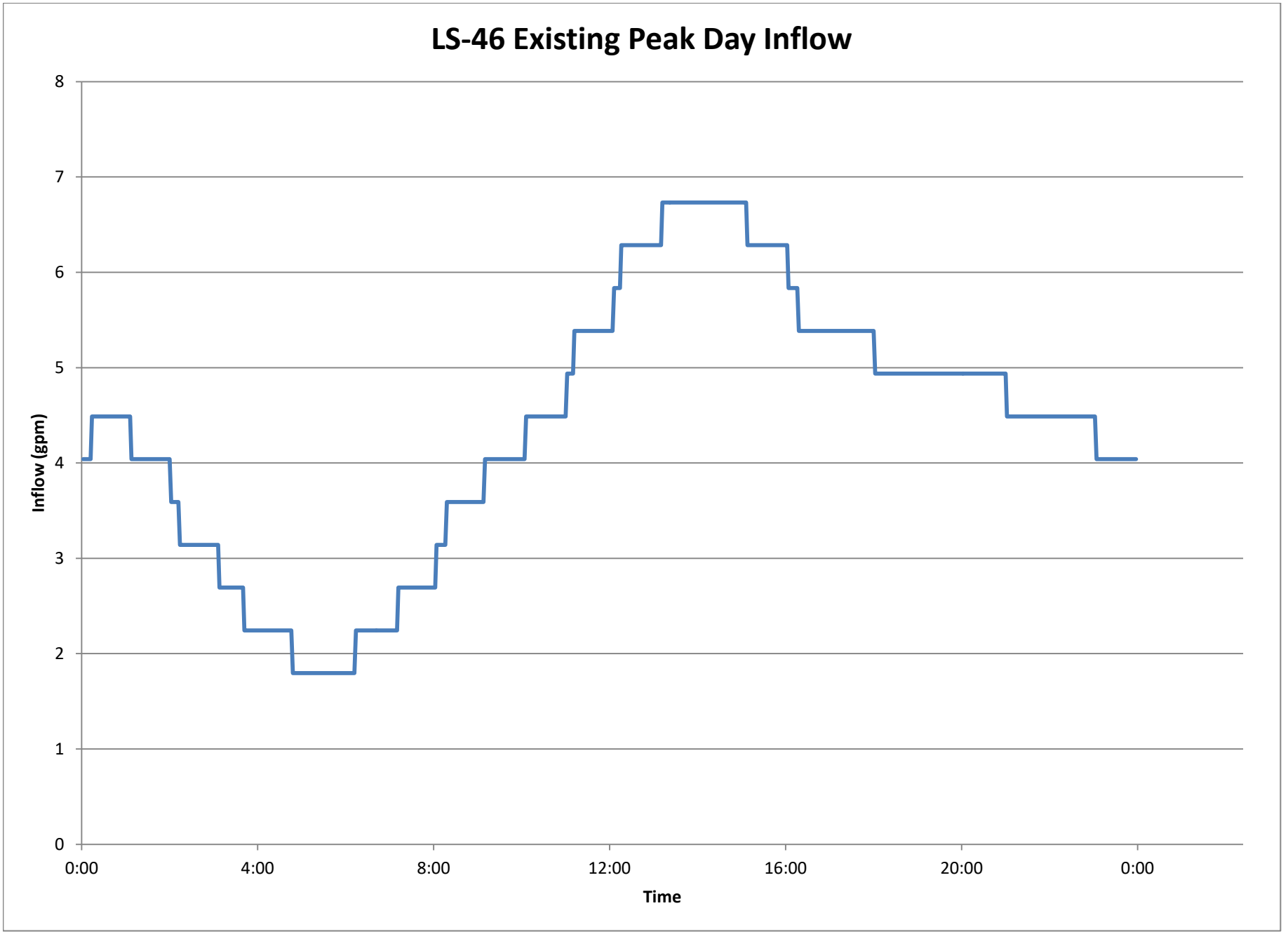

LS-41 Existing Peak Day Inflow
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

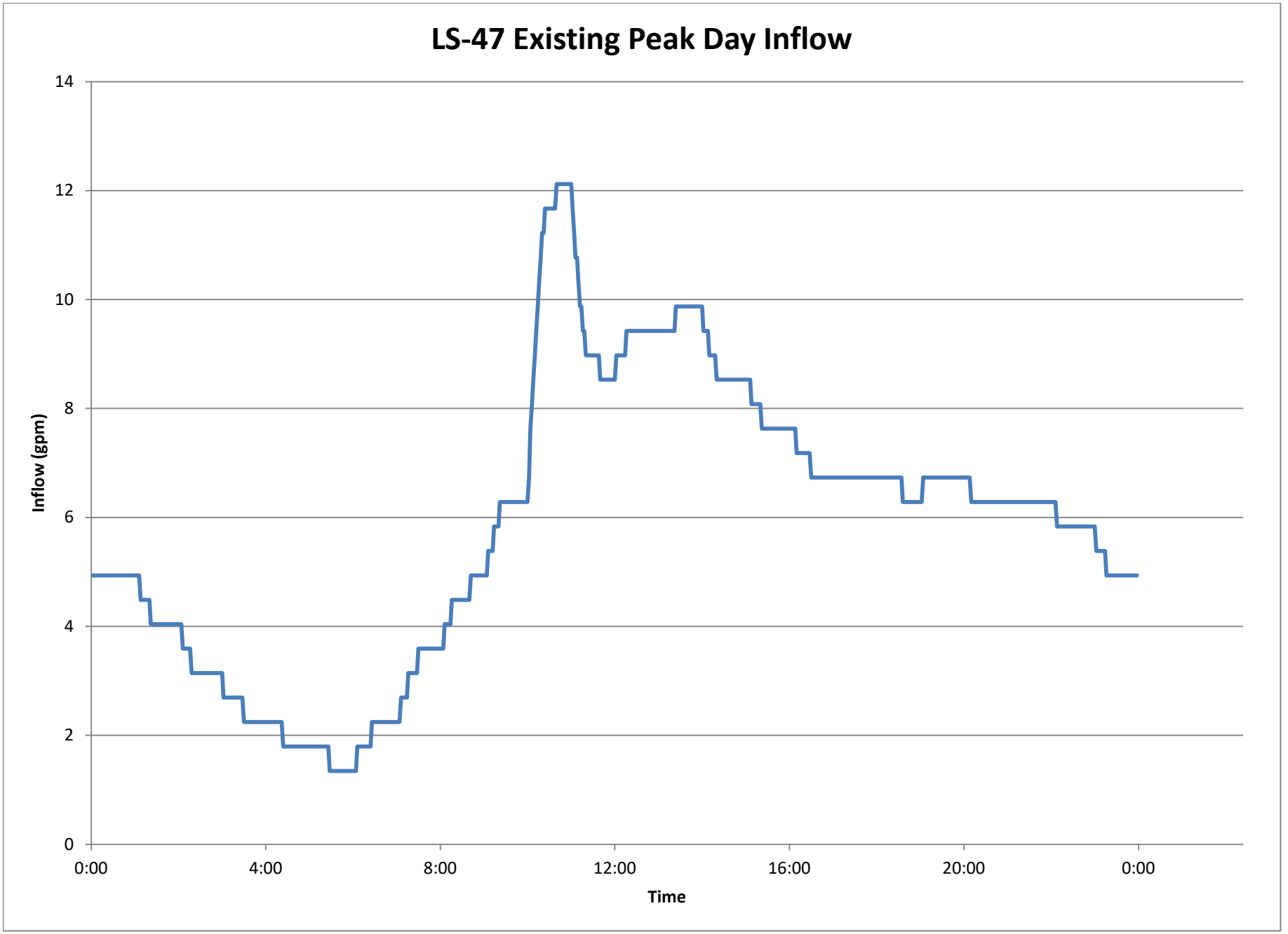

LS-42 Existing Peak Day Inflow
35
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

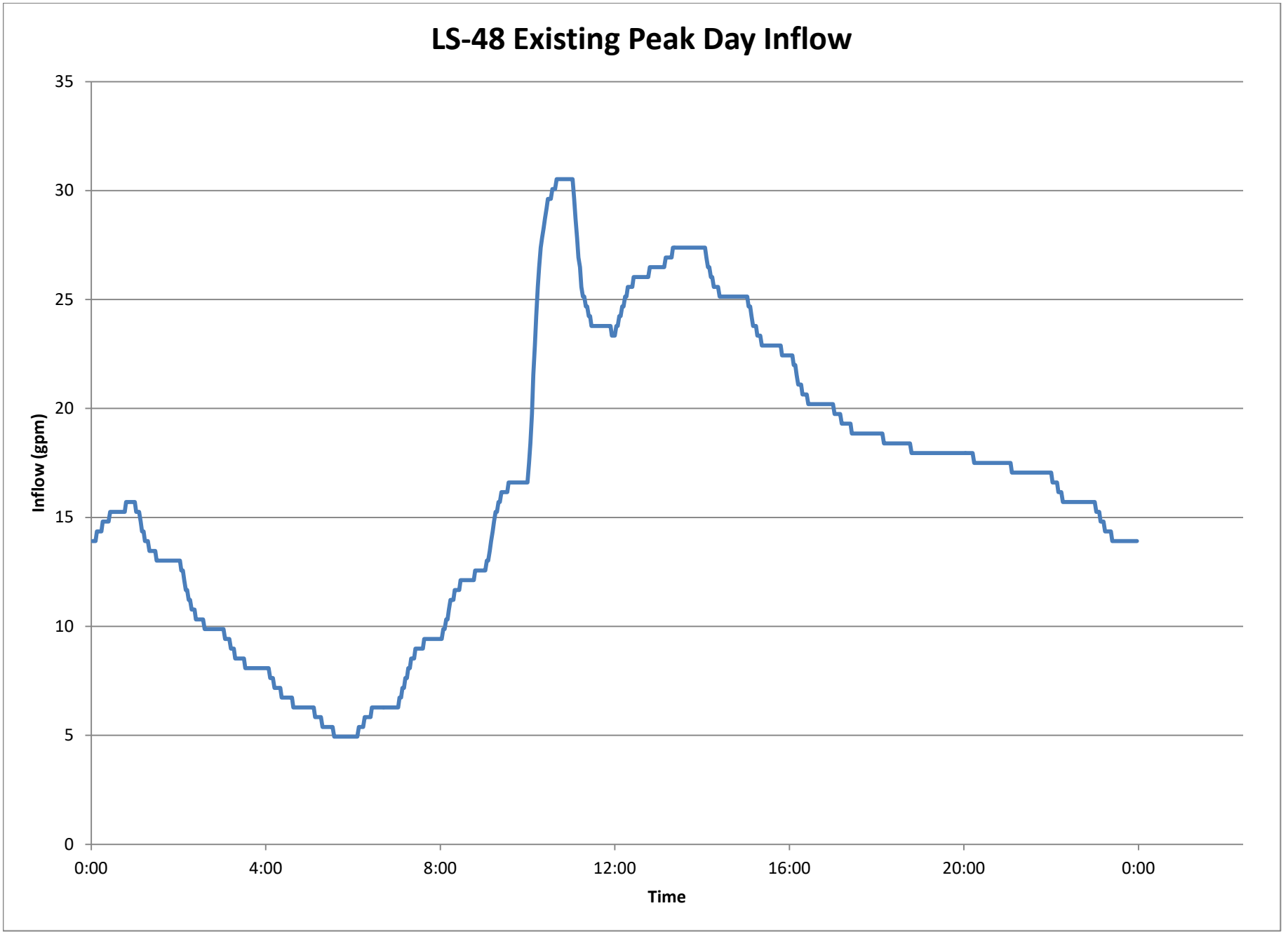

LS-43 Existing Peak Day Inflow
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

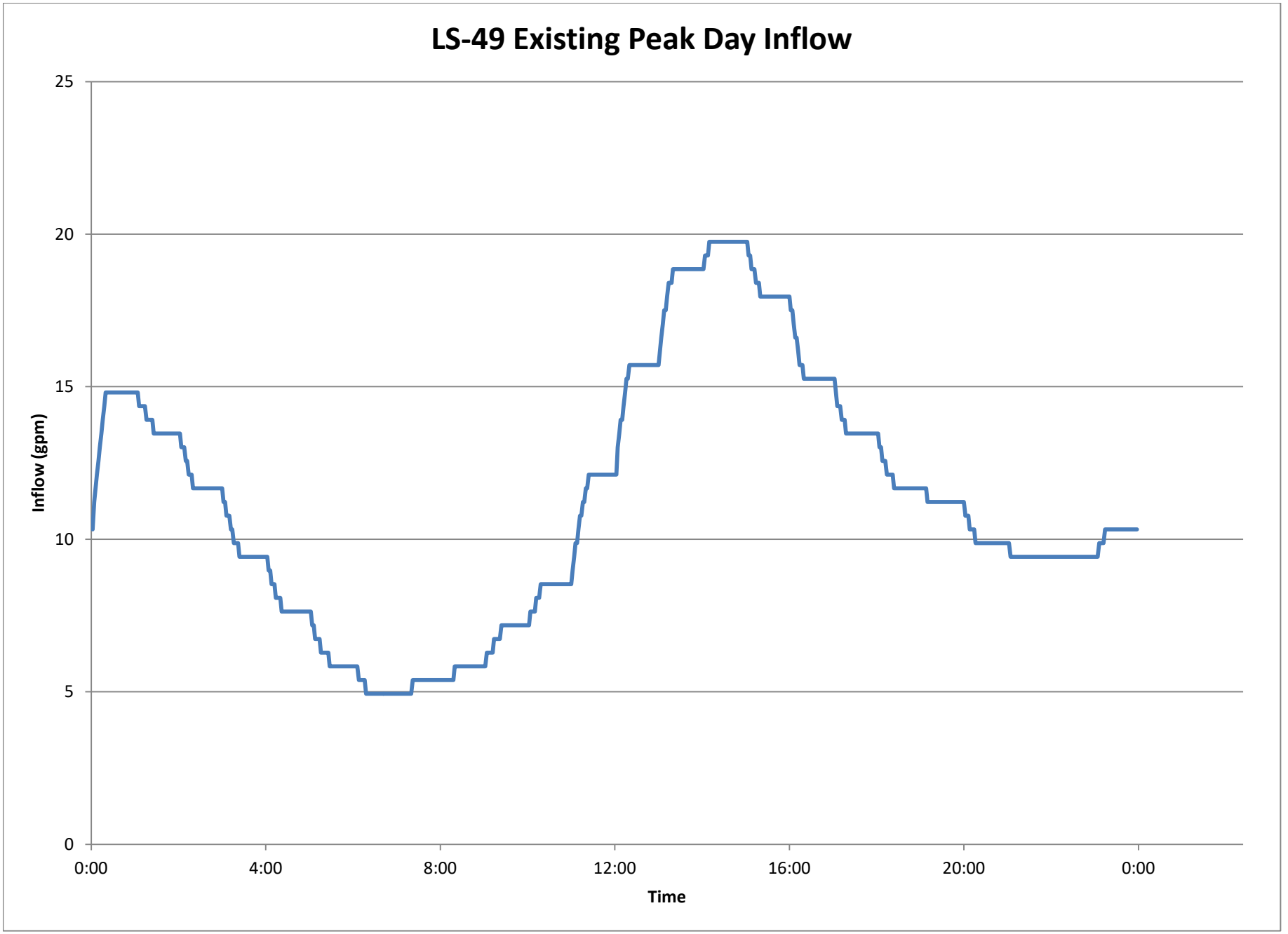

LS-44 Existing Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

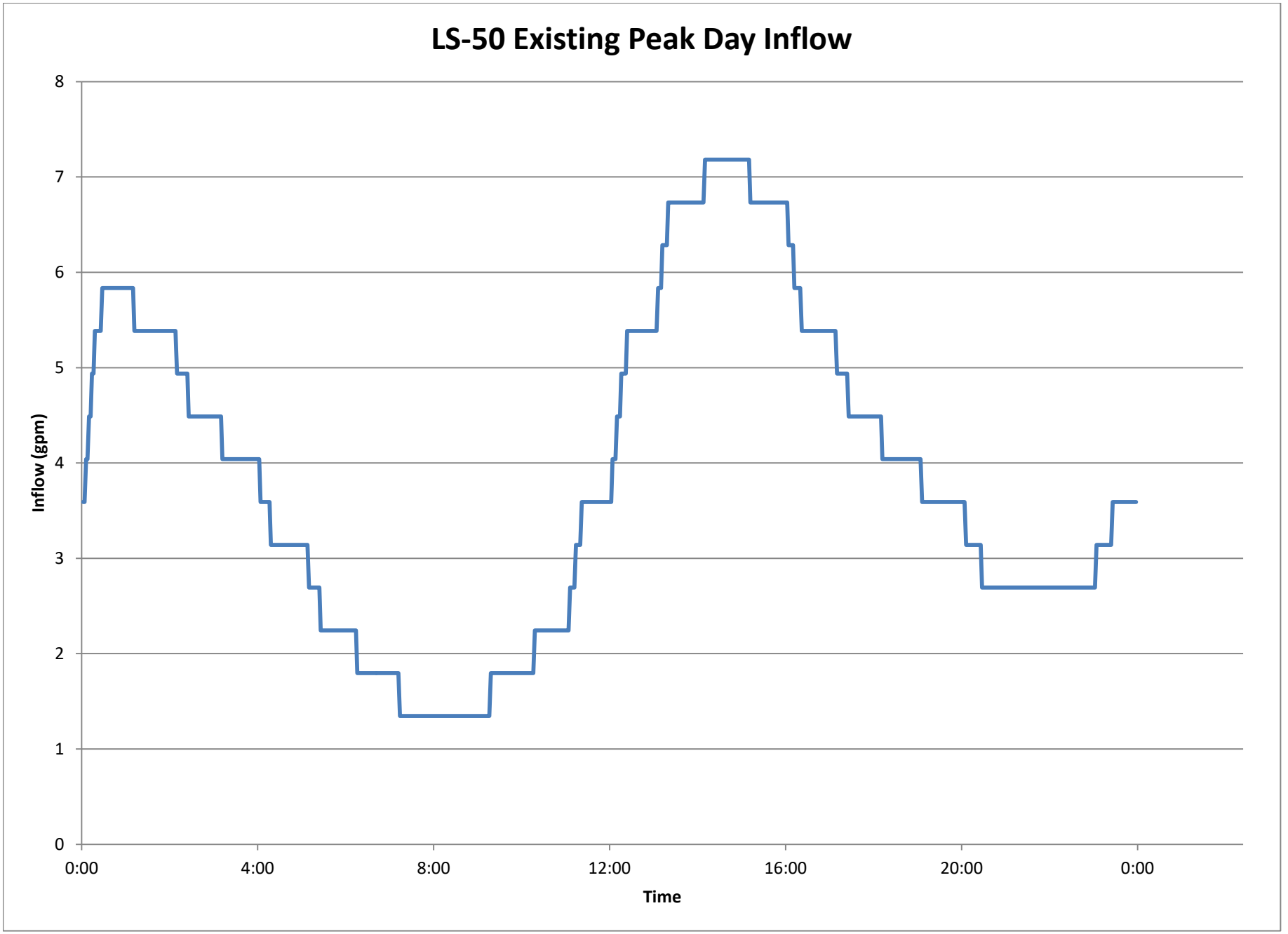

LS-45 Existing Peak Day Inflow
Inflow (gpm)
0
1
2
3
4
5
6
7
8
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

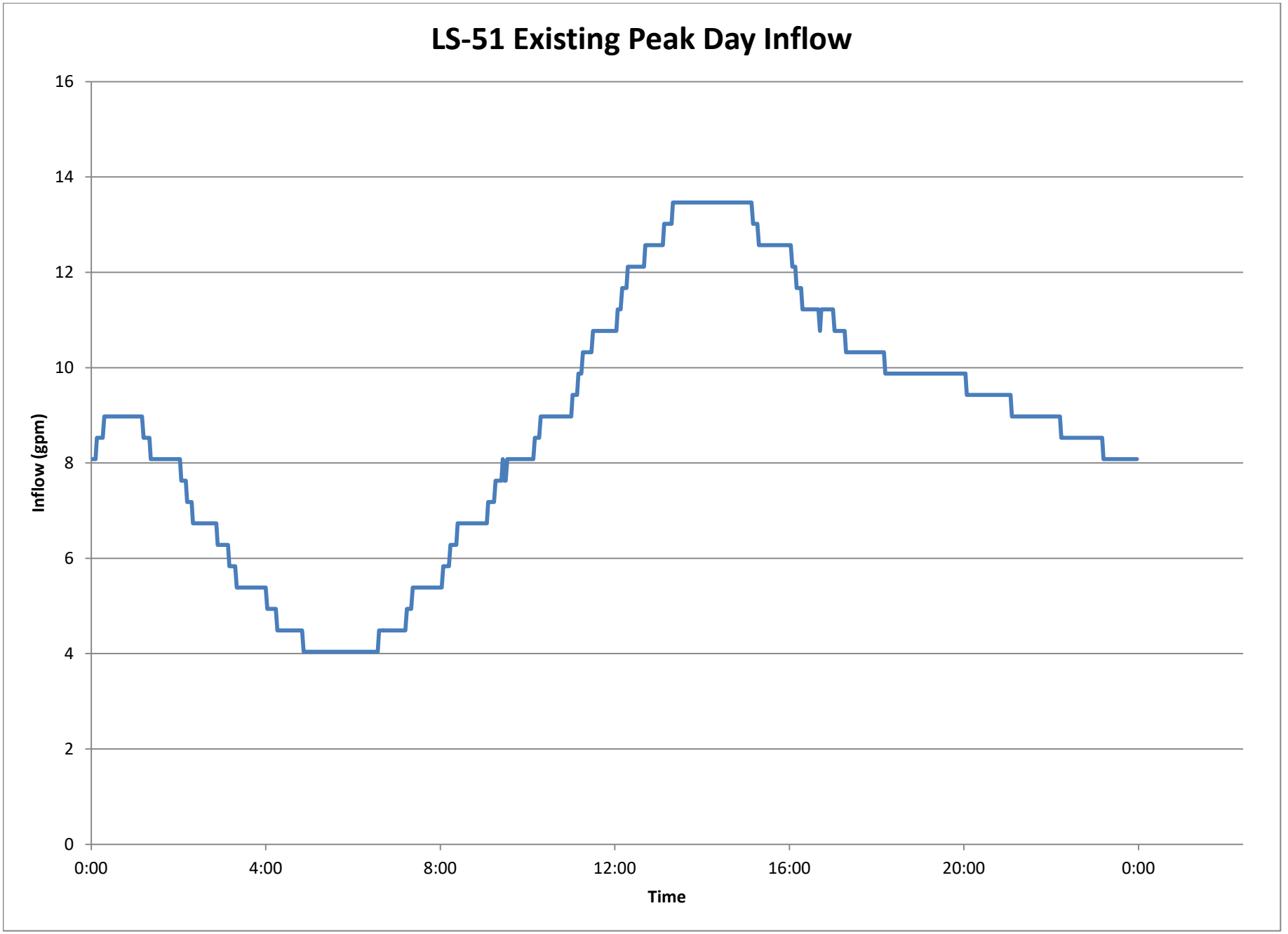

LS-46 Existing Peak Day Inflow
Inflow (gpm)
8
7
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

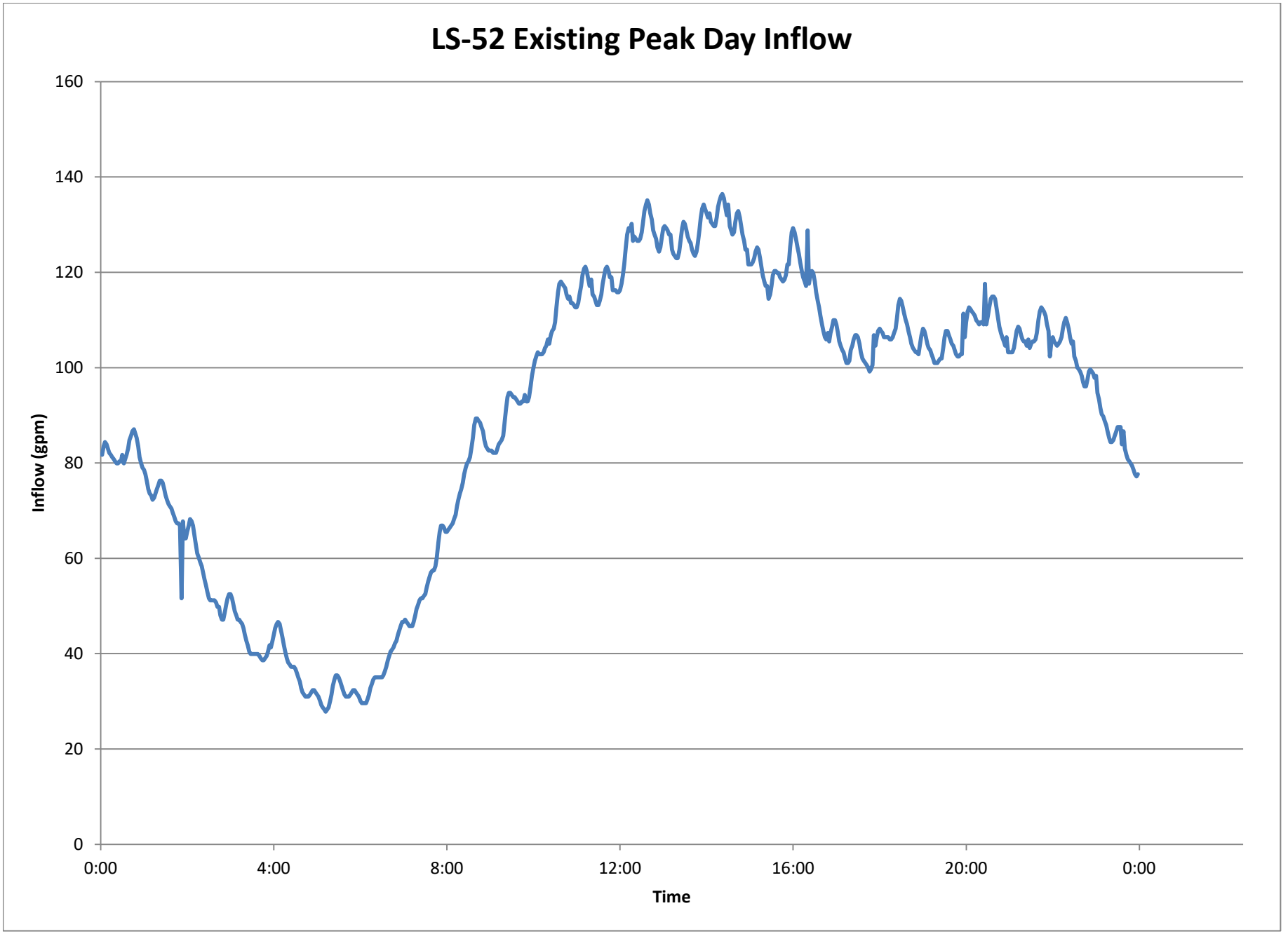

LS-47 Existing Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

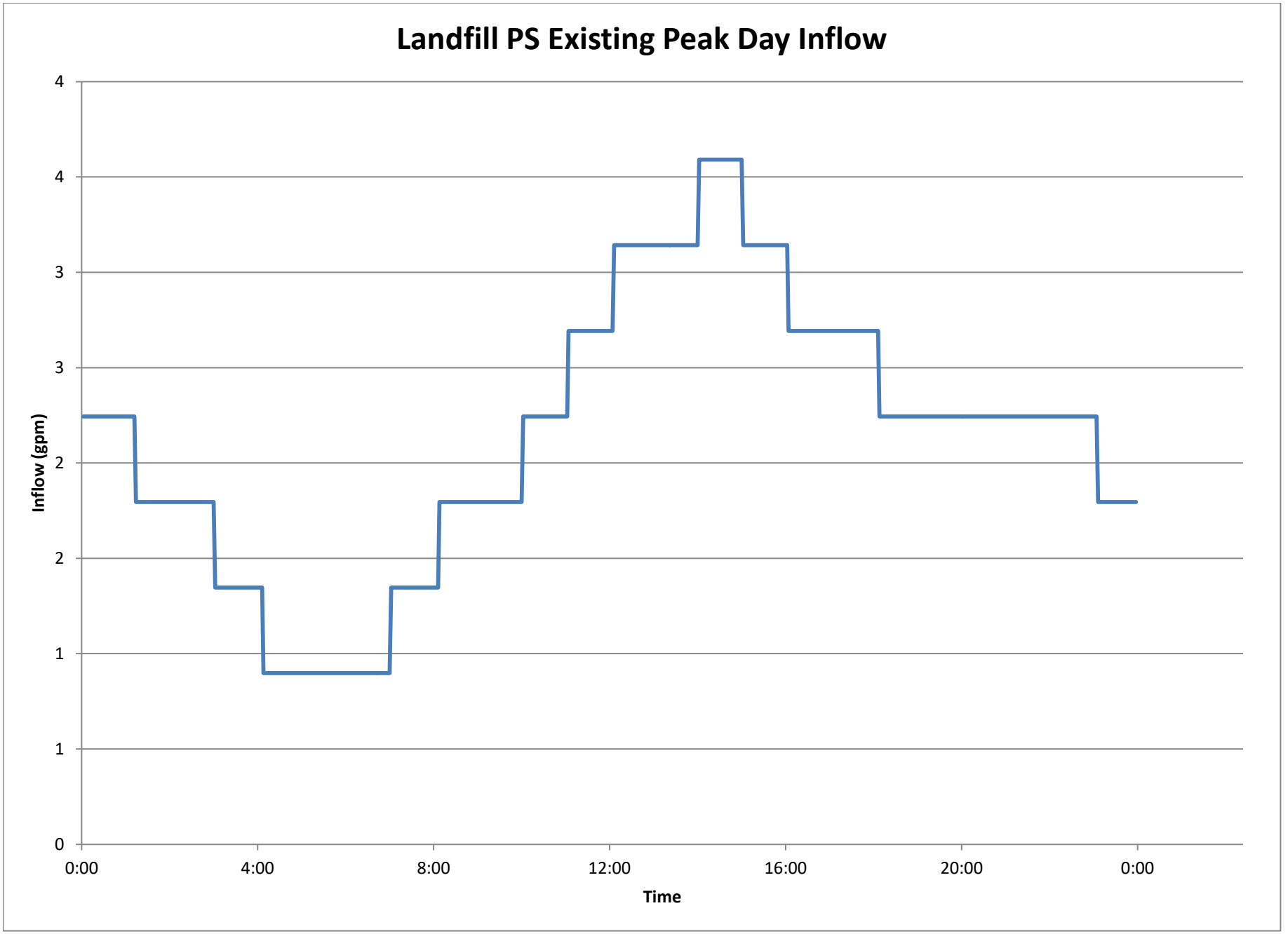

LS-48 Existing Peak Day Inflow
35
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

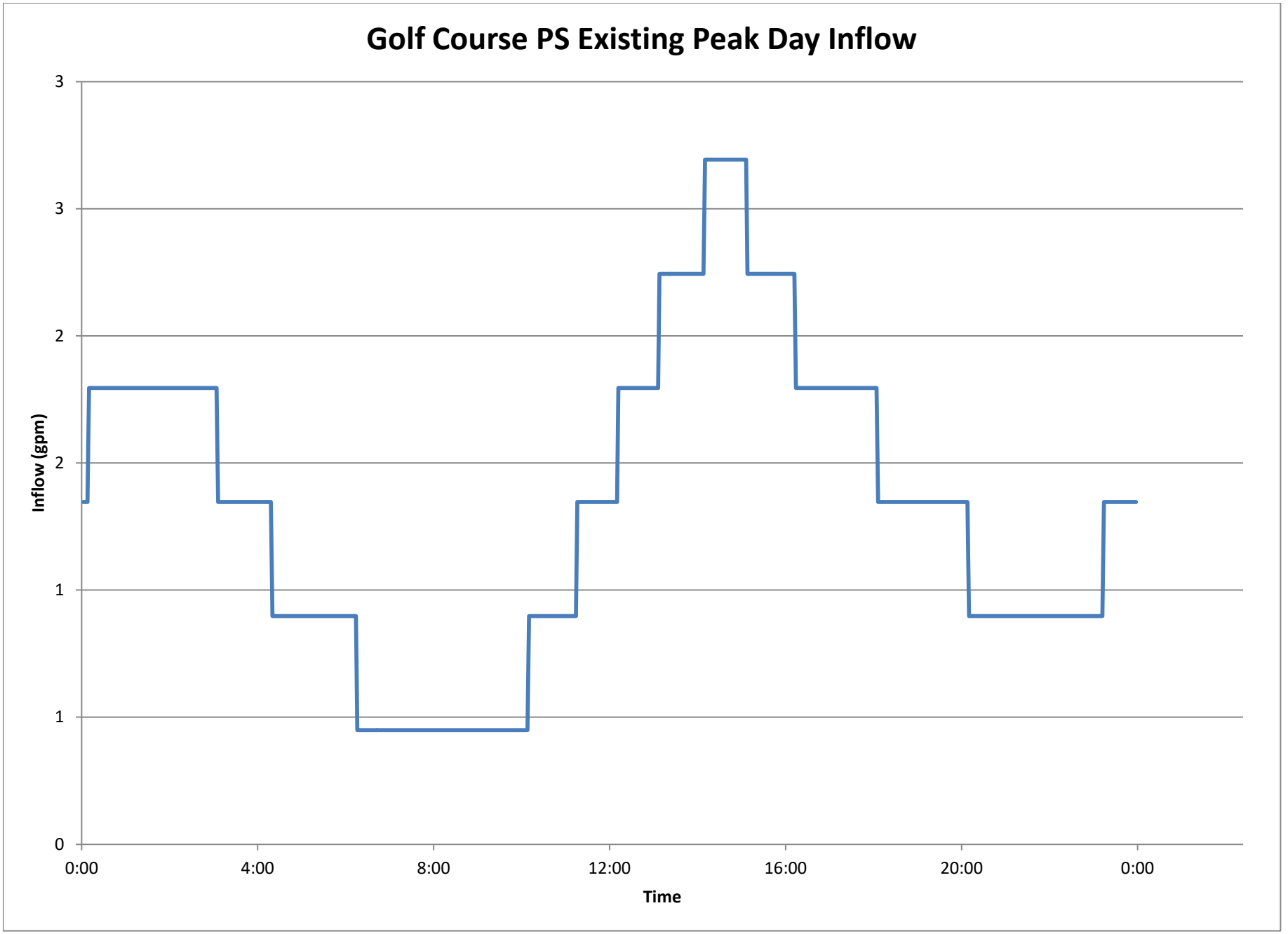

LS-49 Existing Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

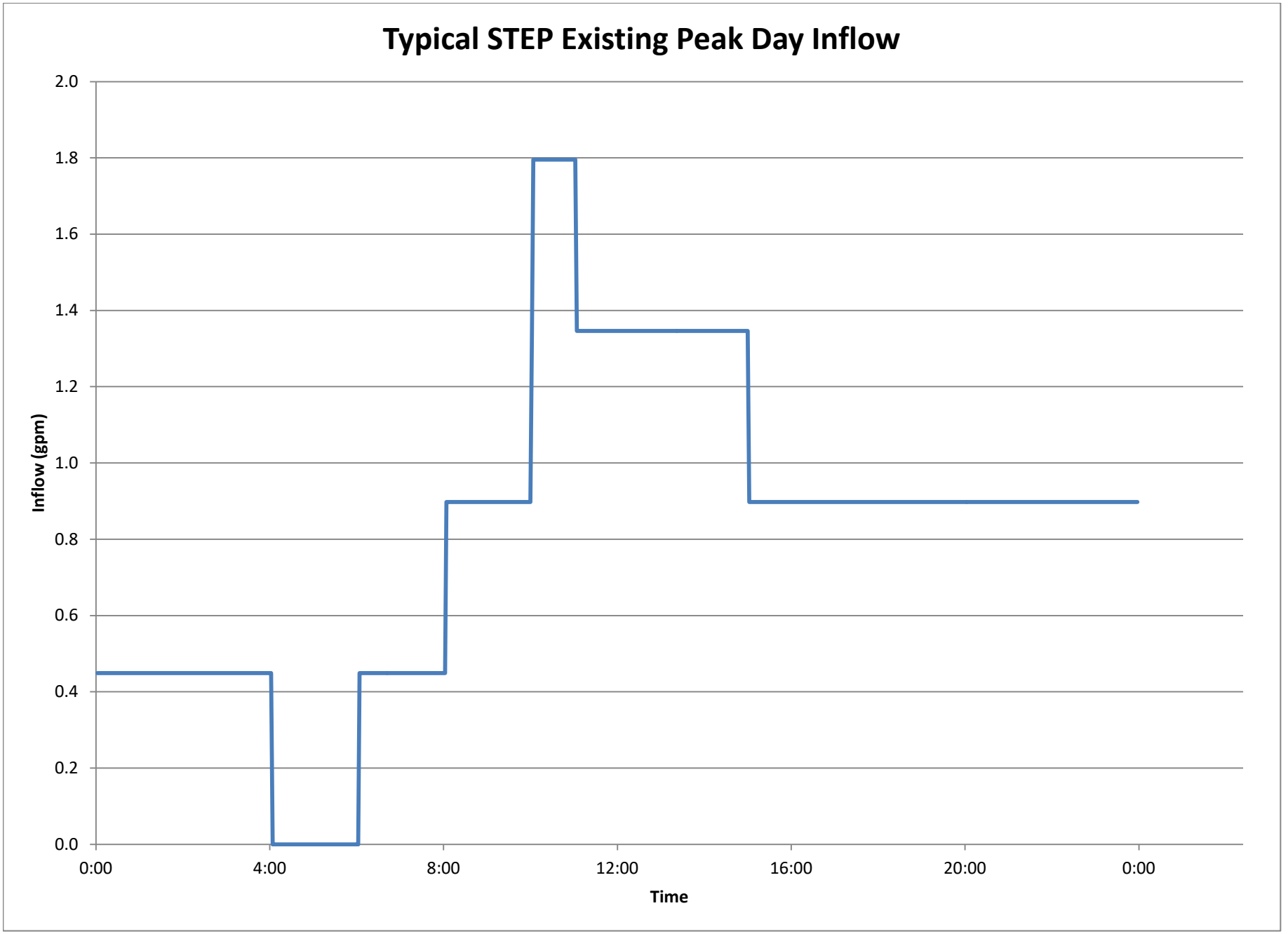

LS-50 Existing Peak Day Inflow
Inflow (gpm)
0
1
2
3
4
5
6
7
8
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-51 Existing Peak Day Inflow
16
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-52 Existing Peak Day Inflow
160
140
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Landfill PS Existing Peak Day Inflow
Inflow (gpm)
4
4
3
3
2
2
1
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

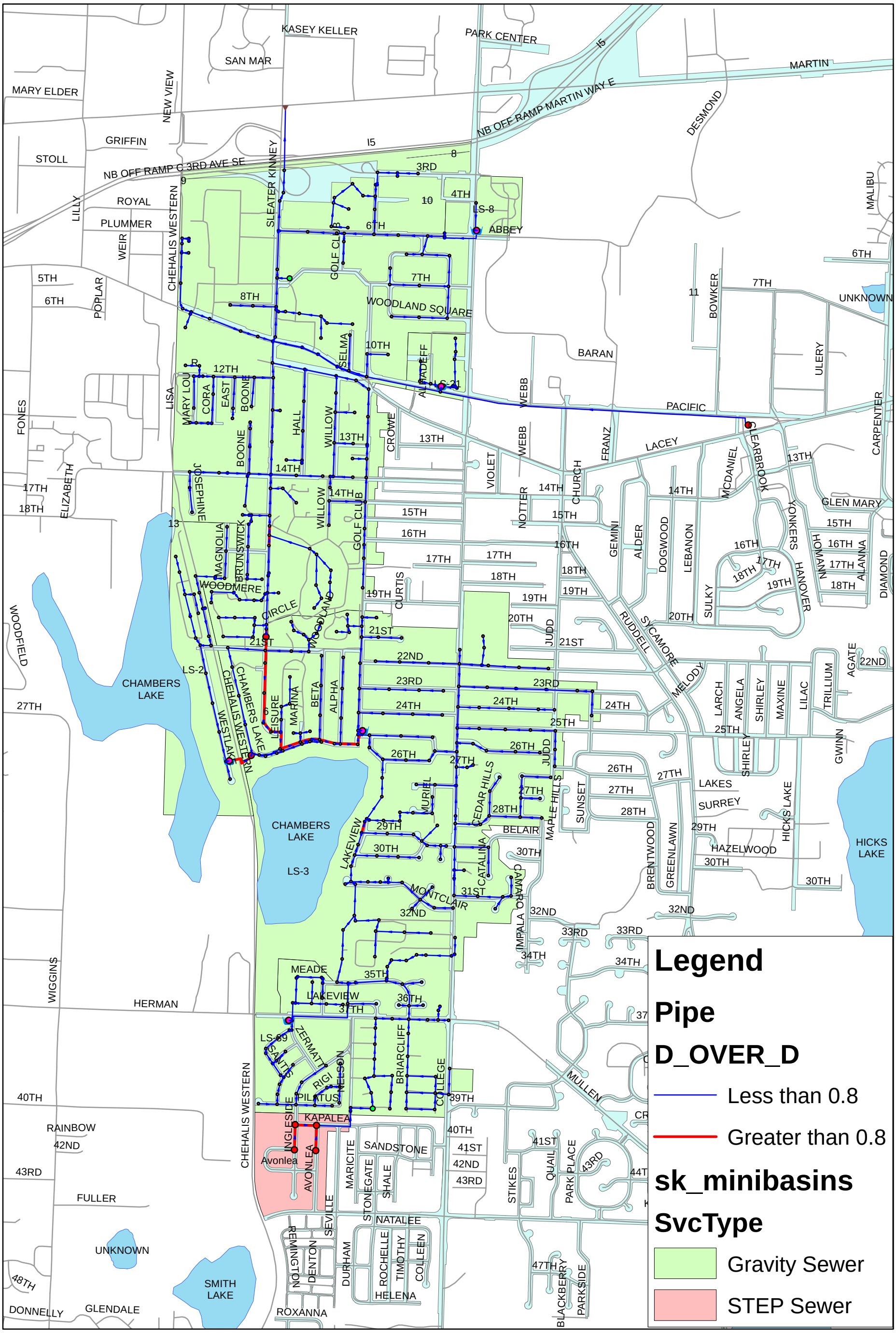

Golf Course PS Existing Peak Day Inflow
3
3
2
2
1
1
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Typical STEP Existing Peak Day Inflow
Inflow (gpm)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

2012 MODEL RESULTS

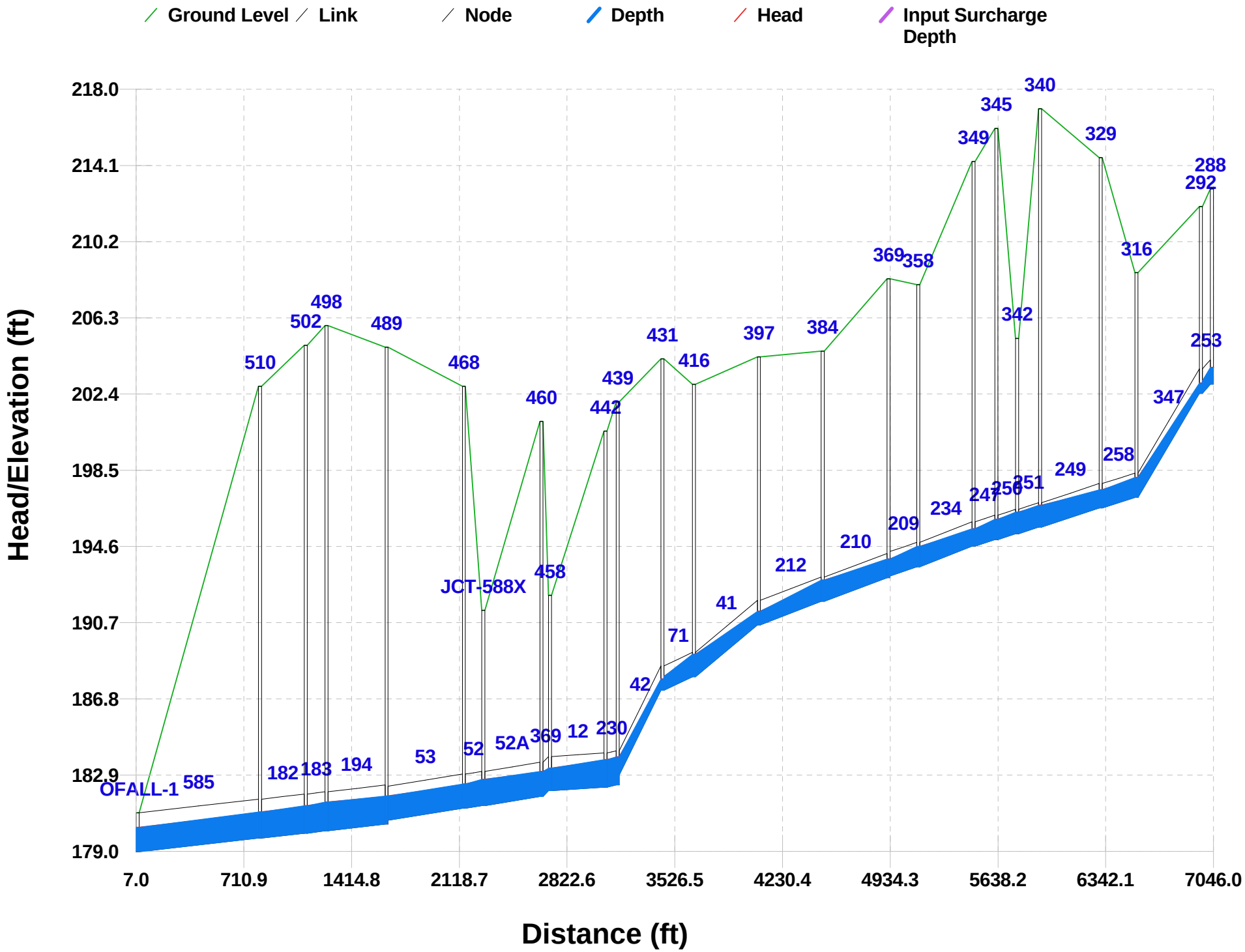
SLEATER KINNEY BASIN

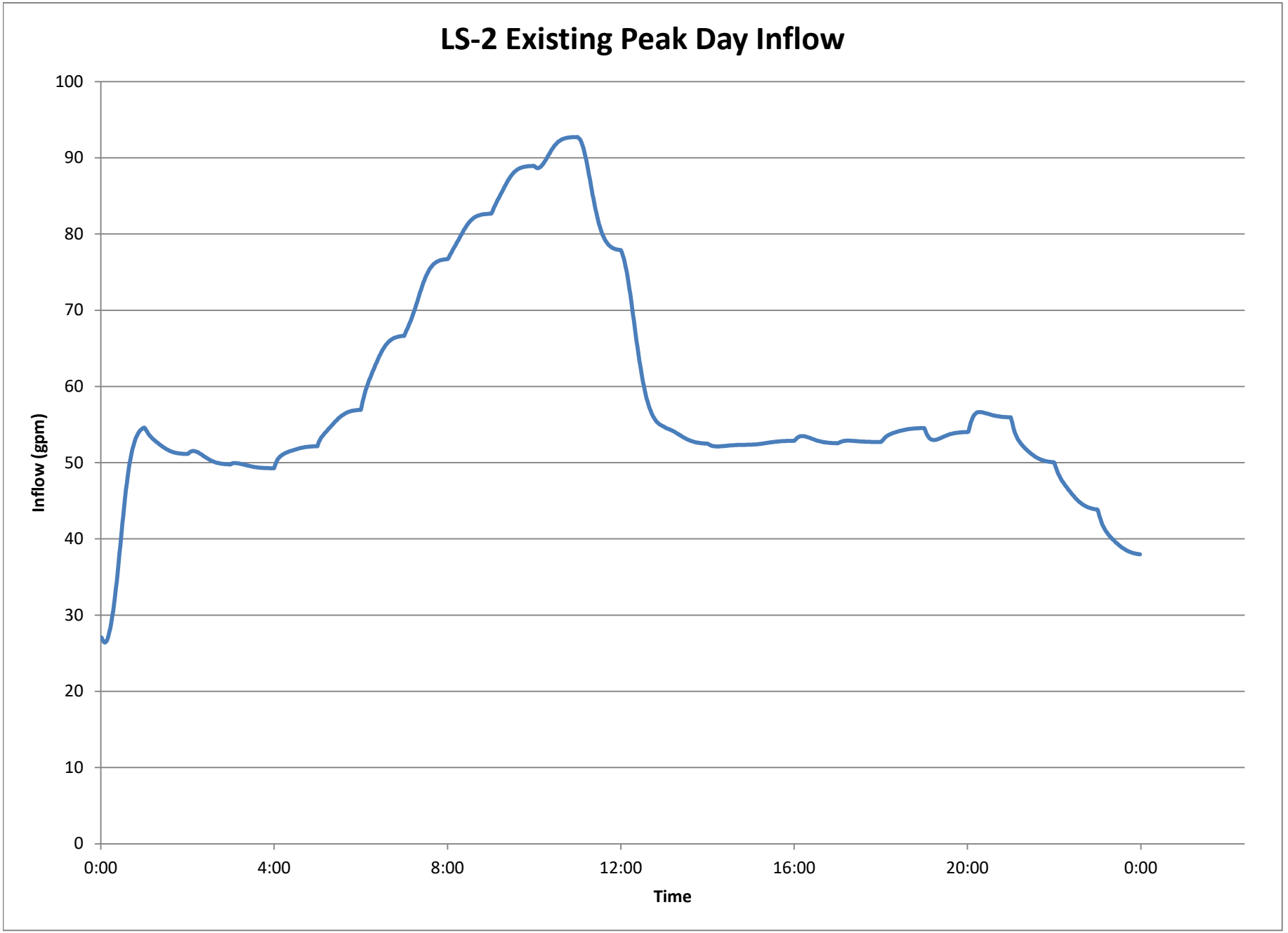
Lacey - Sleater Kinney Collection System Model
2012 Peak Day Surcharging
d/D Criteria = 0.80

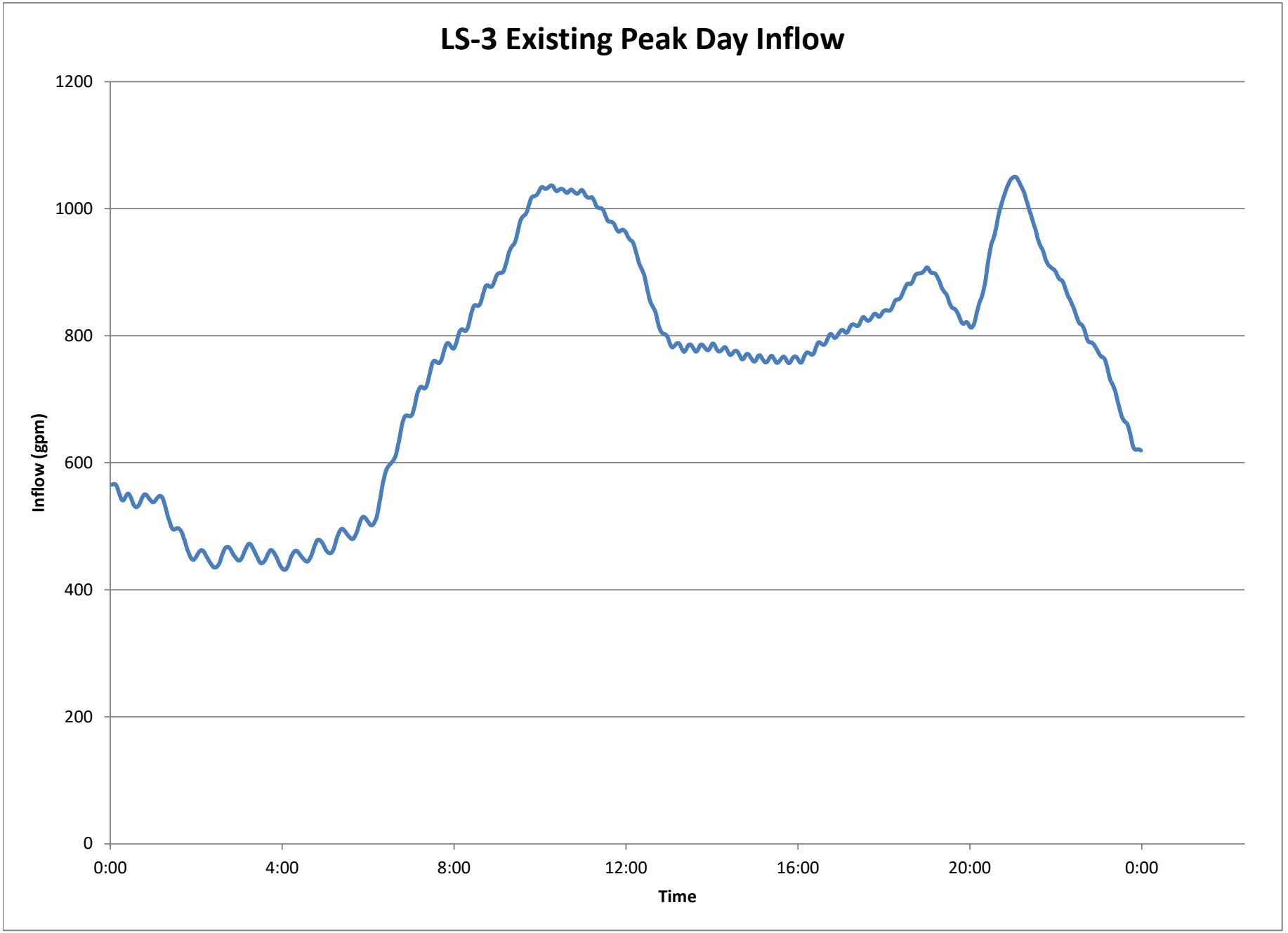


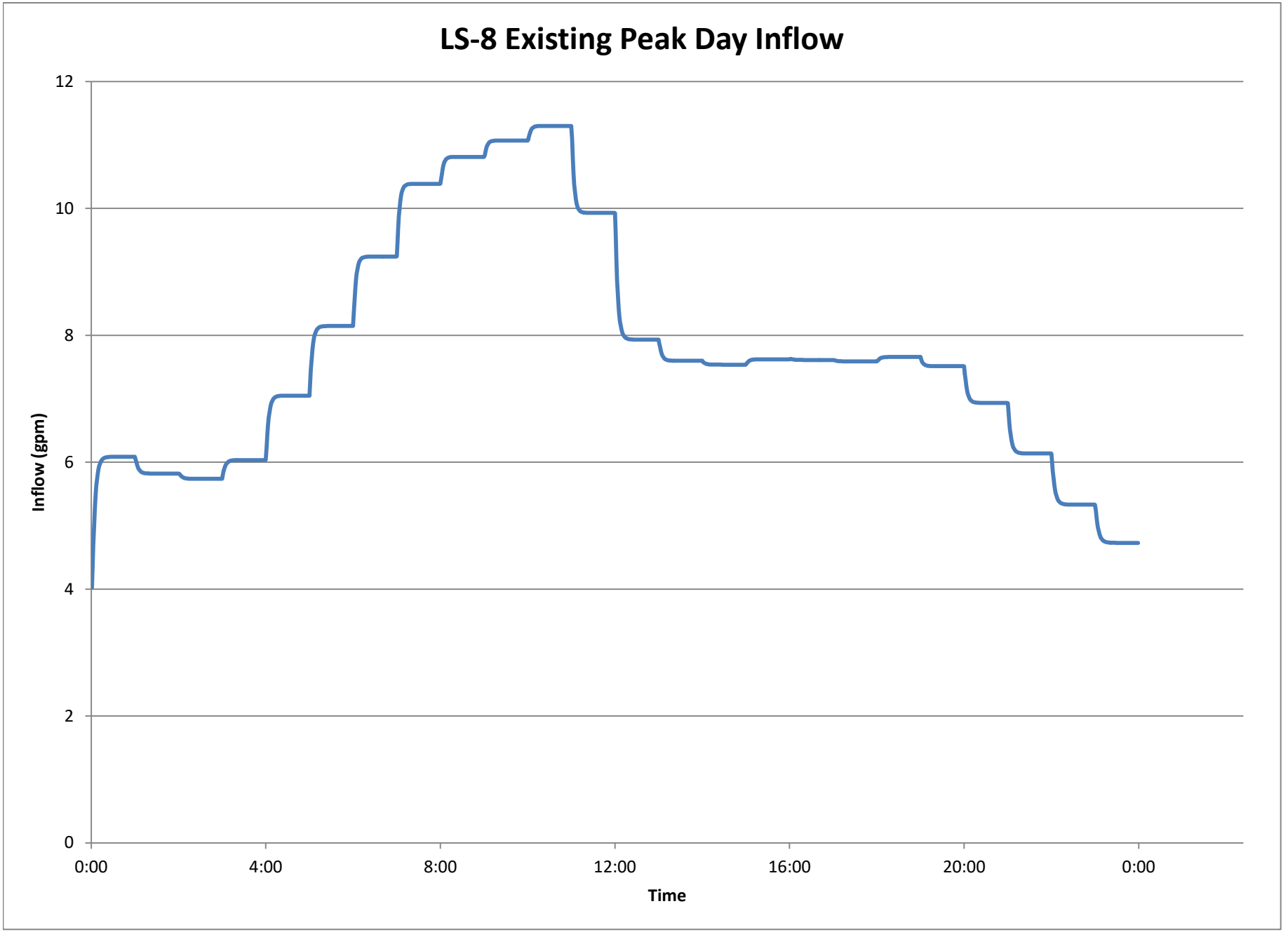
Note: Force mains and STEP mains are always full and are shown as always surcharging.

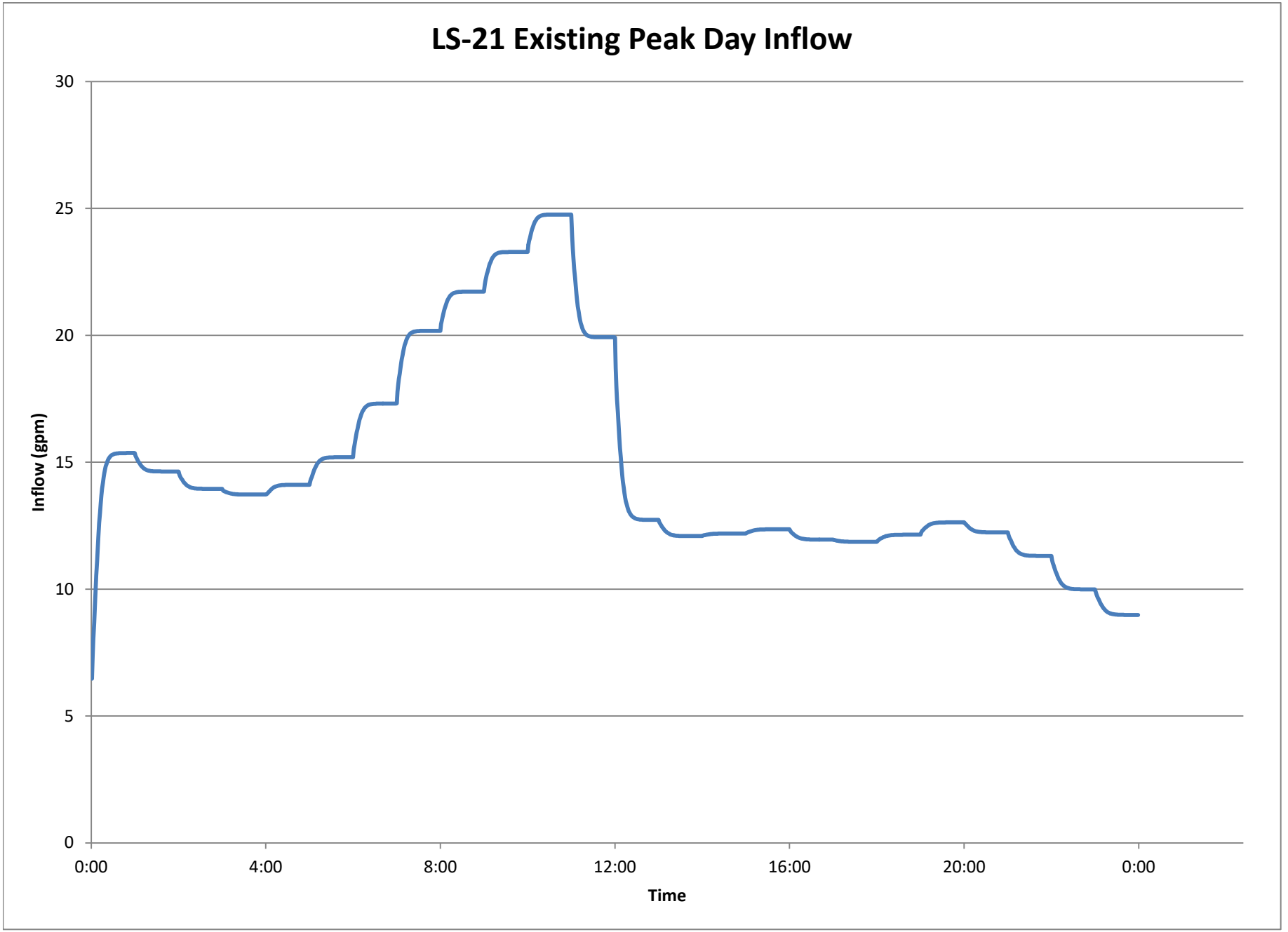
Sleater Kinney Alignment: 2012 Peak HGL

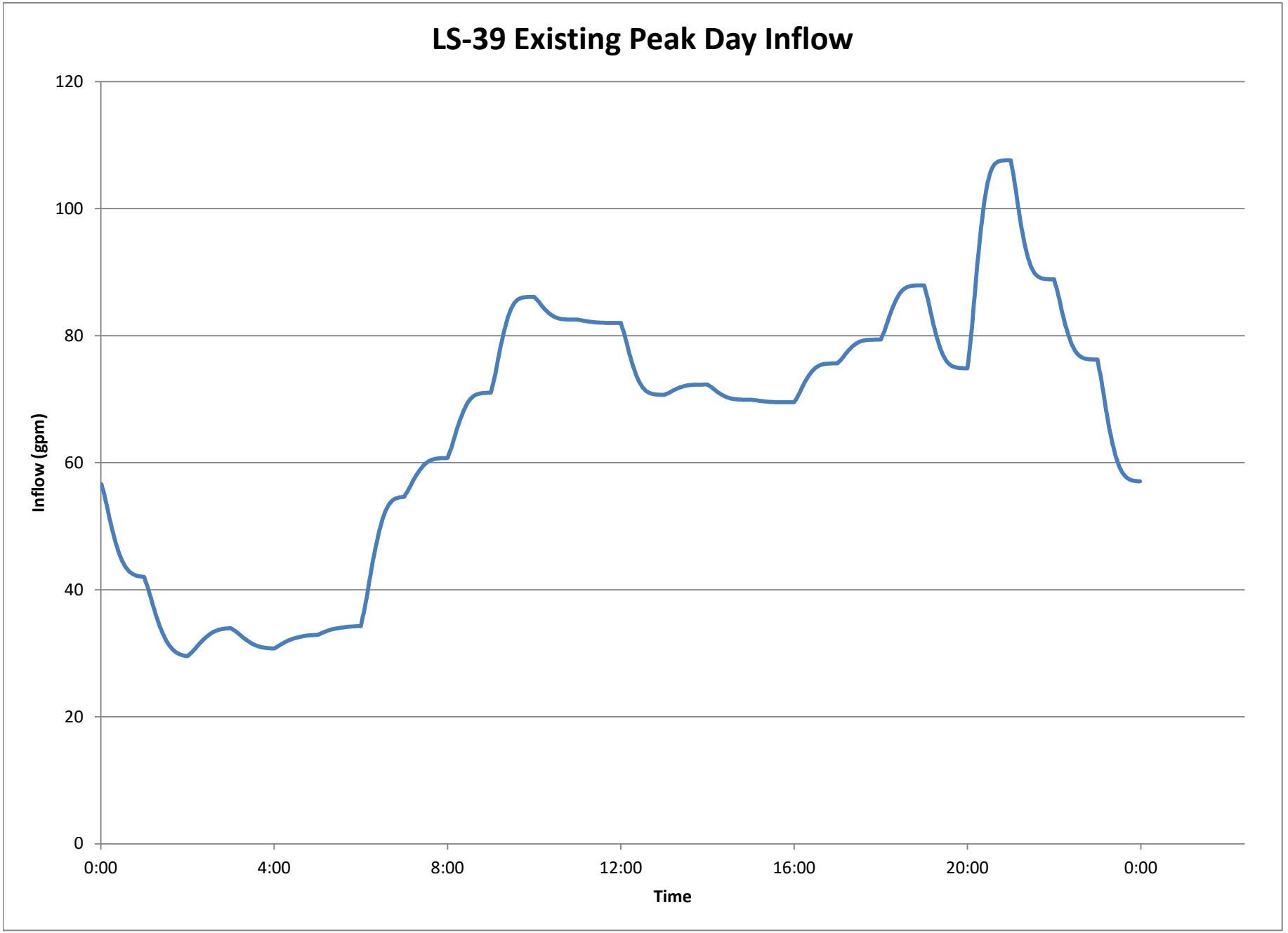



LS-2 Existing Peak Day Inflow
Inflow (gpm)
100
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-3 Existing Peak Day Inflow
1200
1000
800
600
400
200
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-8 Existing Peak Day Inflow
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-21 Existing Peak Day Inflow
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-39 Existing Peak Day Inflow
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

2018 MODEL RESULTS

MARTIN WAY BASIN

Lacey - Martin Way Collection System Model
2018 Peak Day Surcharging
d/D Criteria = 0.8

Conduit

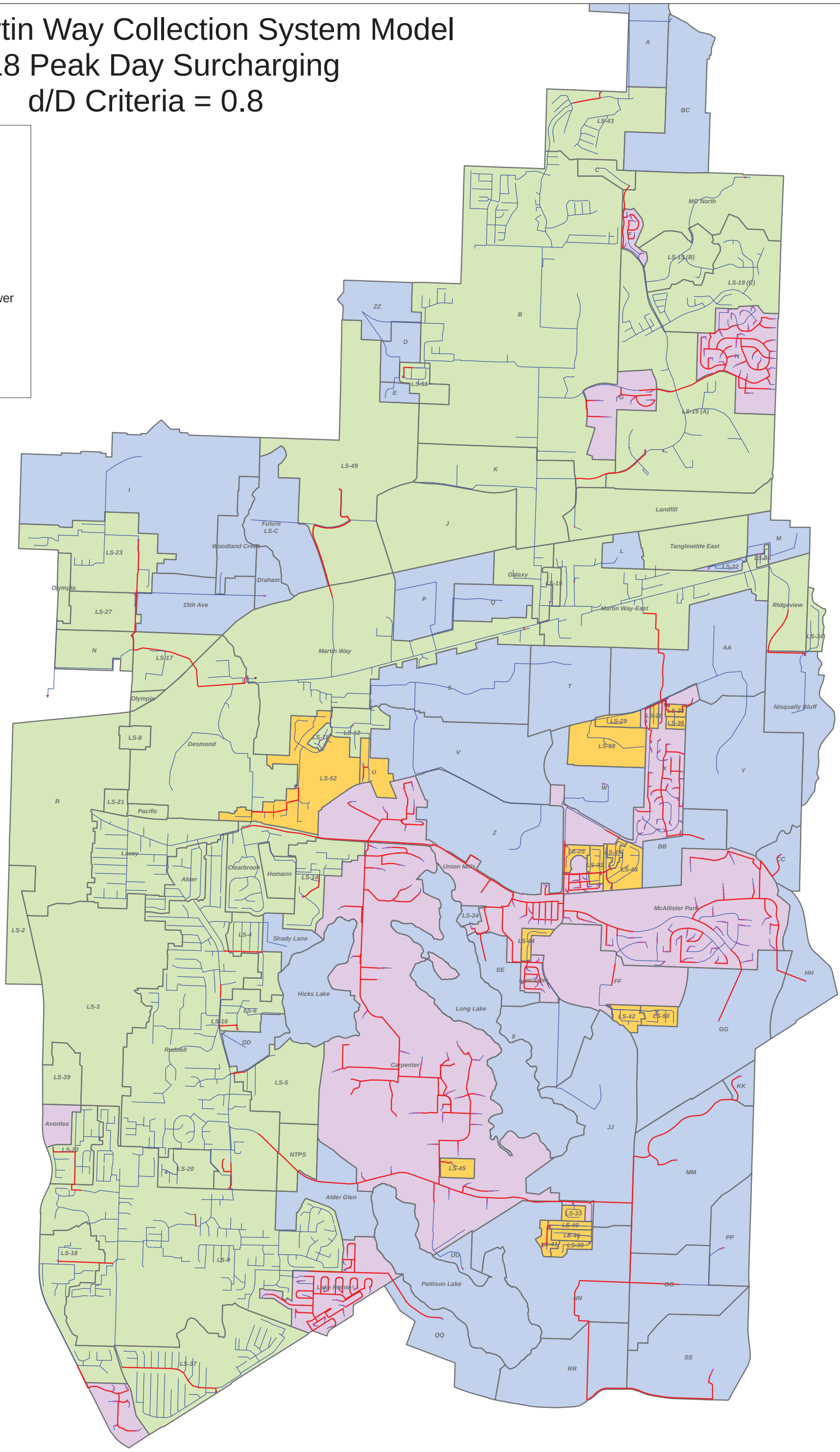
D_OVER_D

- Less than 0.8
- Greater than 0.8

Minibasins_72013

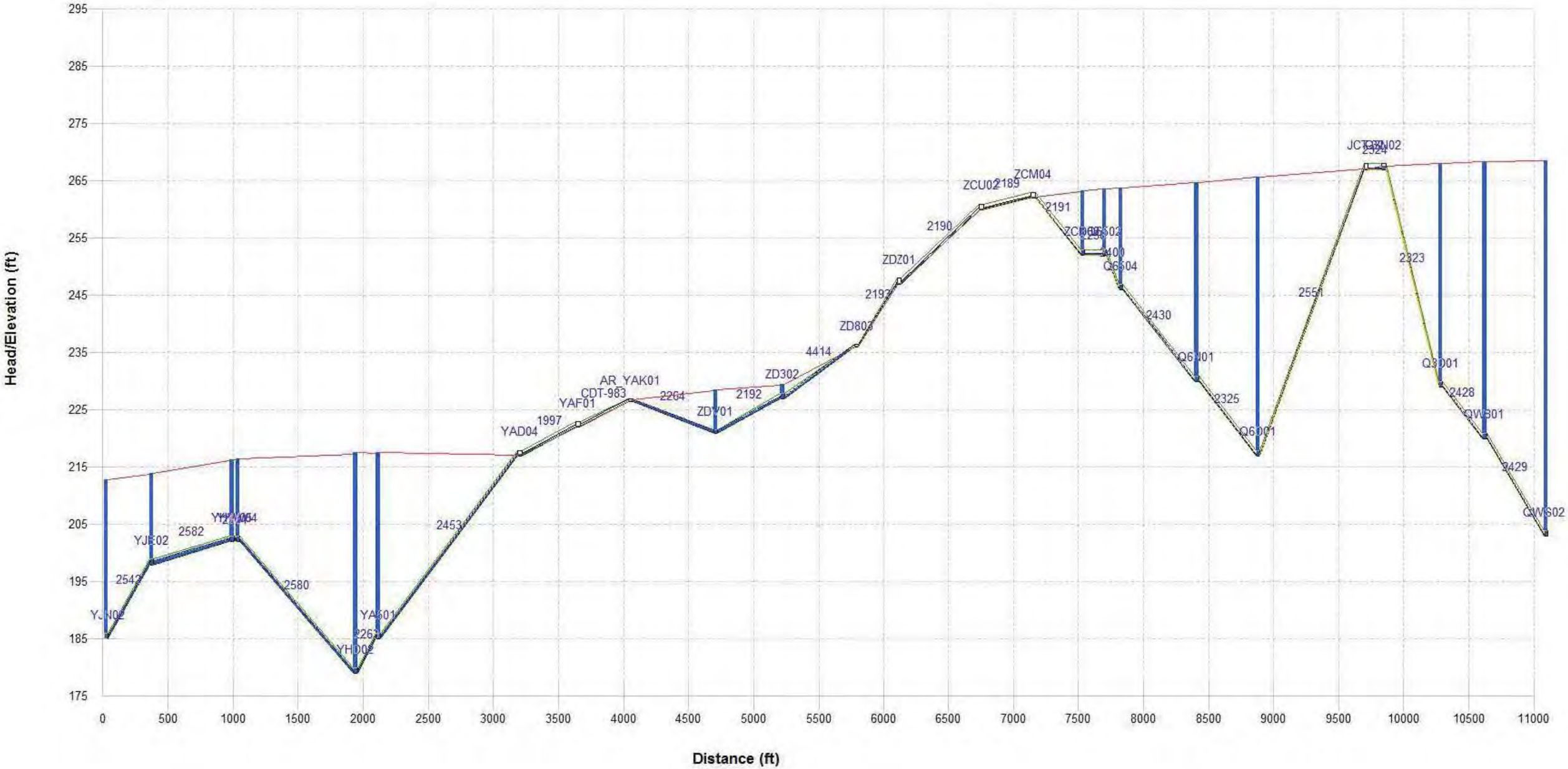
SvcType

- Gravity & STEP Sewer
- Gravity Sewer
- No Sewer
- STEP Sewer



Basin X Alignment: 2018 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



Carpenter Alignment: 2018 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

230
225
220
215
210
205
200
195
190
185
180
175
170
165
160
155

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 15000

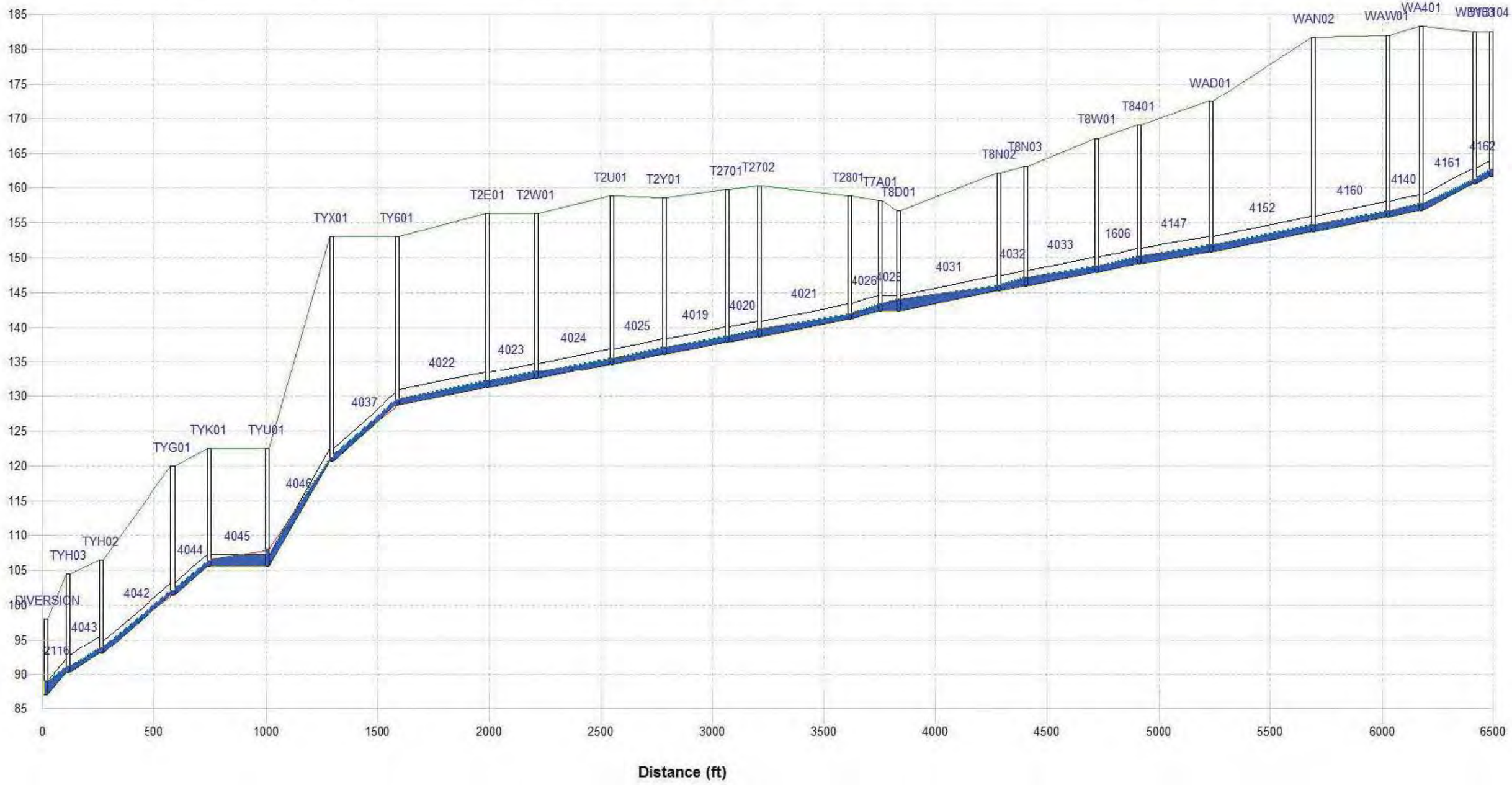
Distance (ft)

Desmond Alignment: 2018 Peak Flow Depth

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

Distance (ft)



Galaxy Alignment: 2018 Peak Flow Depth (Max d/D=0.70)

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

230
225
220
215
210
205
200
195
190

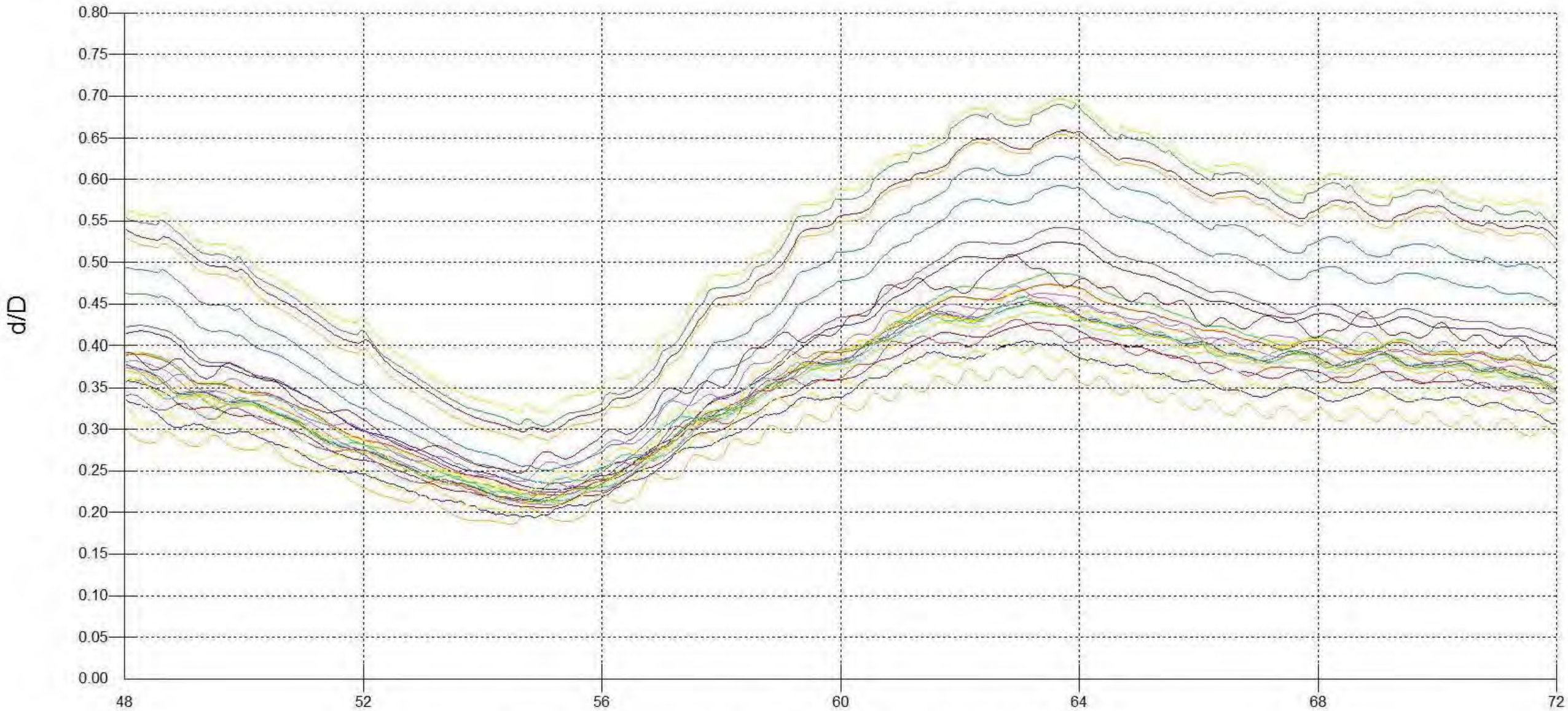
RG502 RG501 RG402 RGW01 805 809 808 810 230 231 234 667 674 673 675 676 170
RKM03 RKM01 806 807
RQN02 RQN01 RQE01 RK501 RK401 RKW01 RKV01
2347 3938 3907 3906 3926 3925 3922 3920 1608 3895 3894 3896 2949 2771 2775 2948 2772 2773 2867 2952 3464 2866 2878 2951 2882 2881 2767

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000

Distance (ft)

Galaxy Alignment d/D: 2018 Peak Day

2347 3938 3907 3906 3925 3922 3920 1608 3894 3895 3896 2949 2771 2772 2775 2948 3926 2773 2867 2952 3464 2866 2878 2882 2951 2767 2881



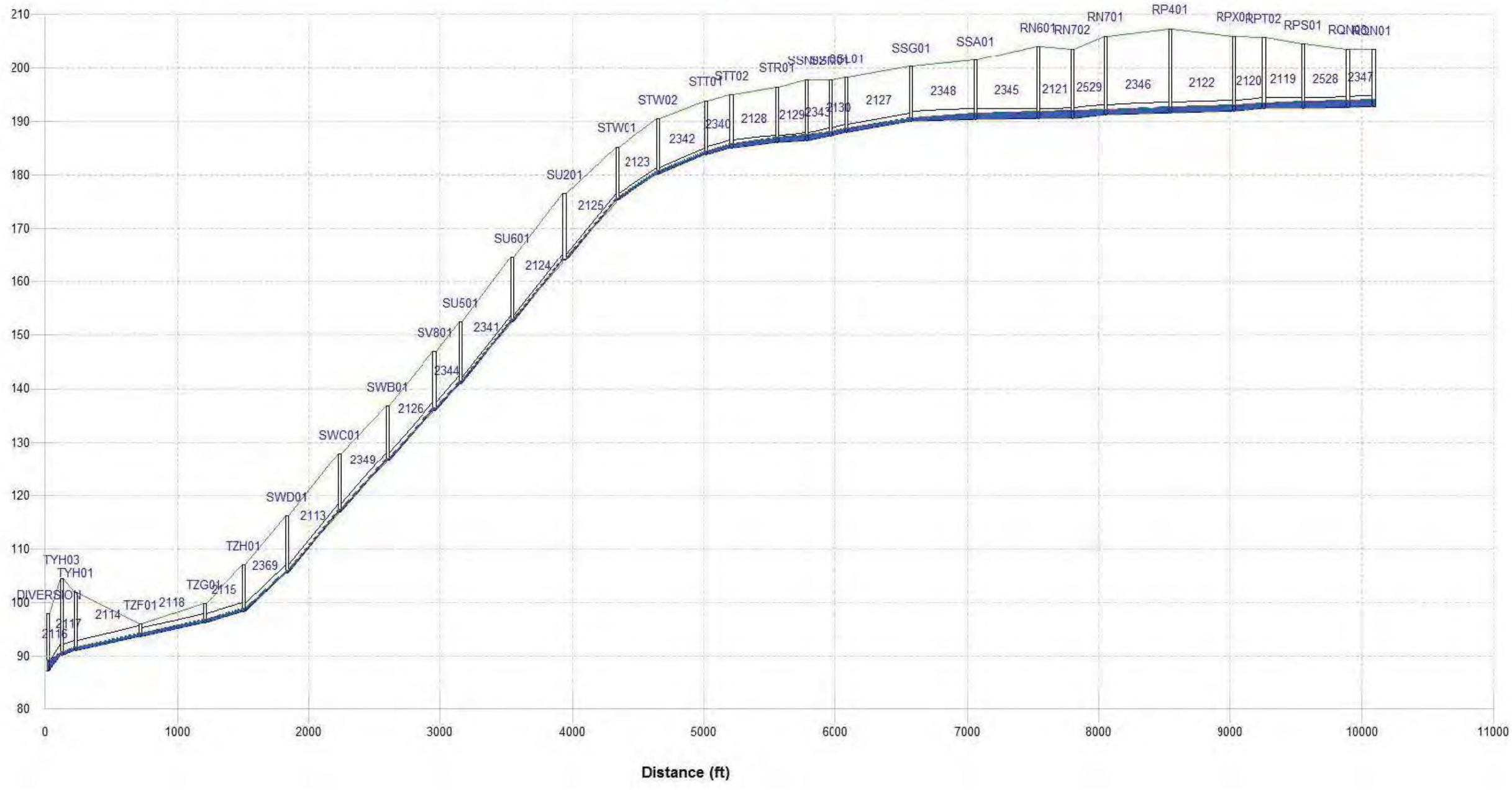
Elapsed Time (hours) [Starts @01/21/2012, 00:01:58]

Martin Way Alignment: 2018 Peak Flow Depth

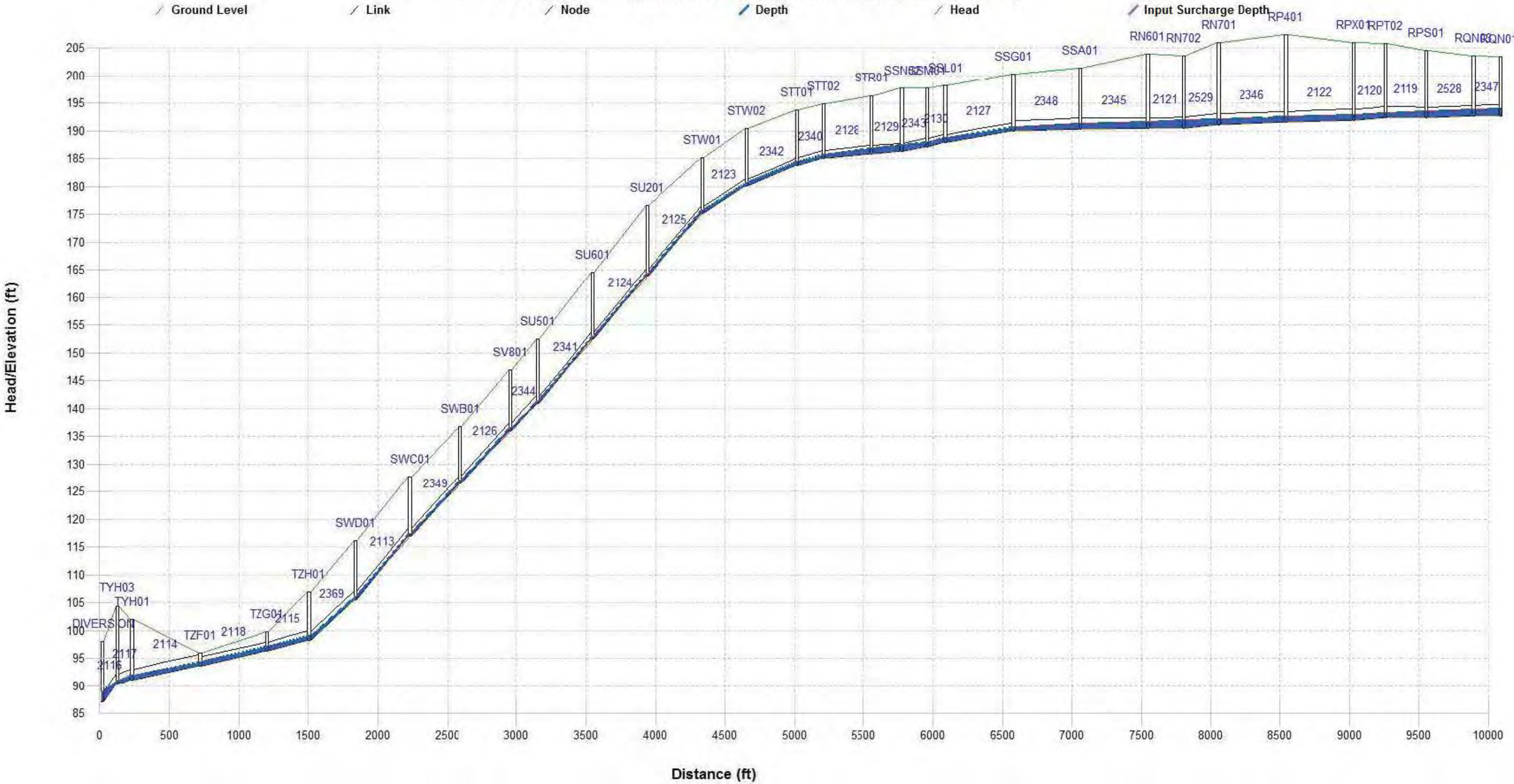
Ground Level Link Node Depth Head Input Surcharge Depth

Head/Elevation (ft)

Distance (ft)

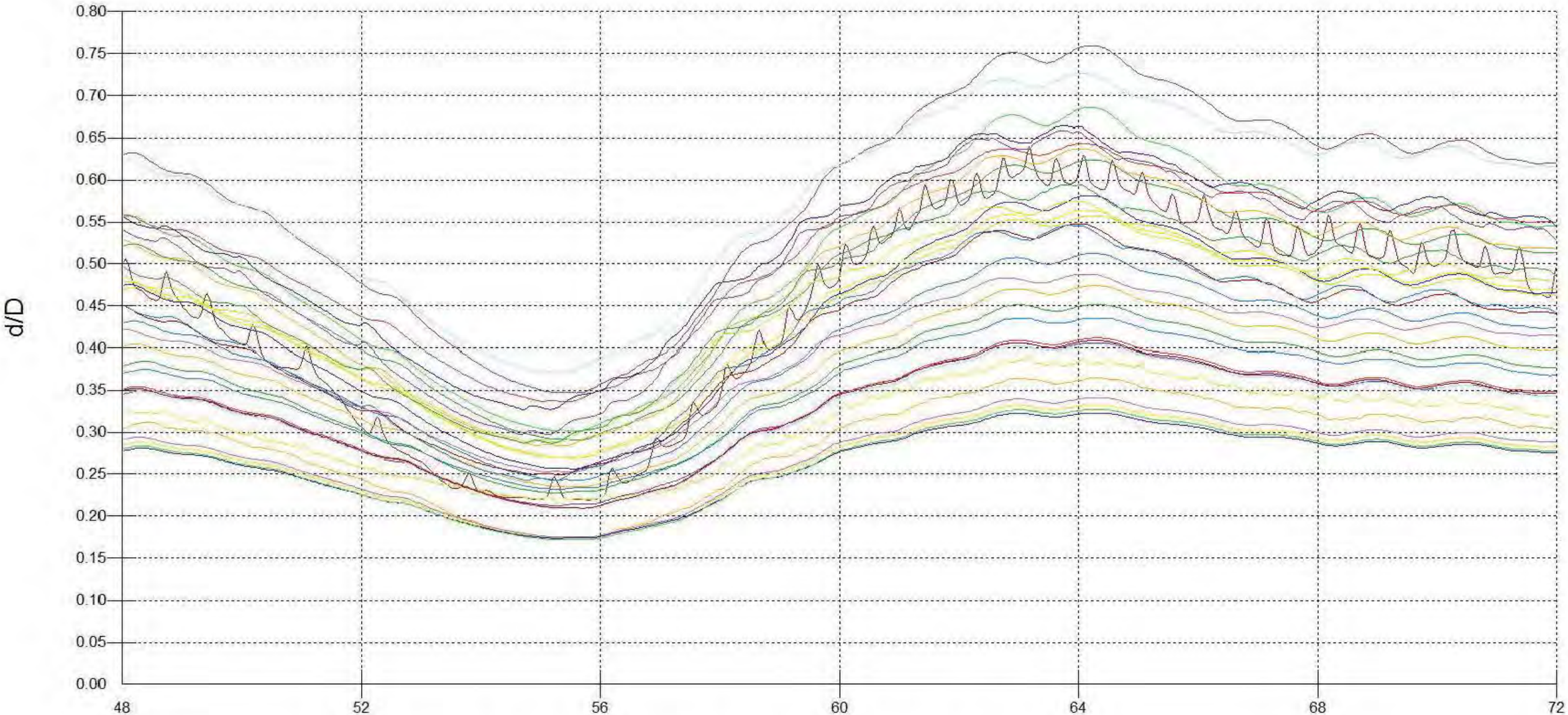


Martin Way South Alignment: 2018 Peak Flow Depth (Max d/D=0.76)



Martin Way South Alignment d/D: 2018 Peak Day

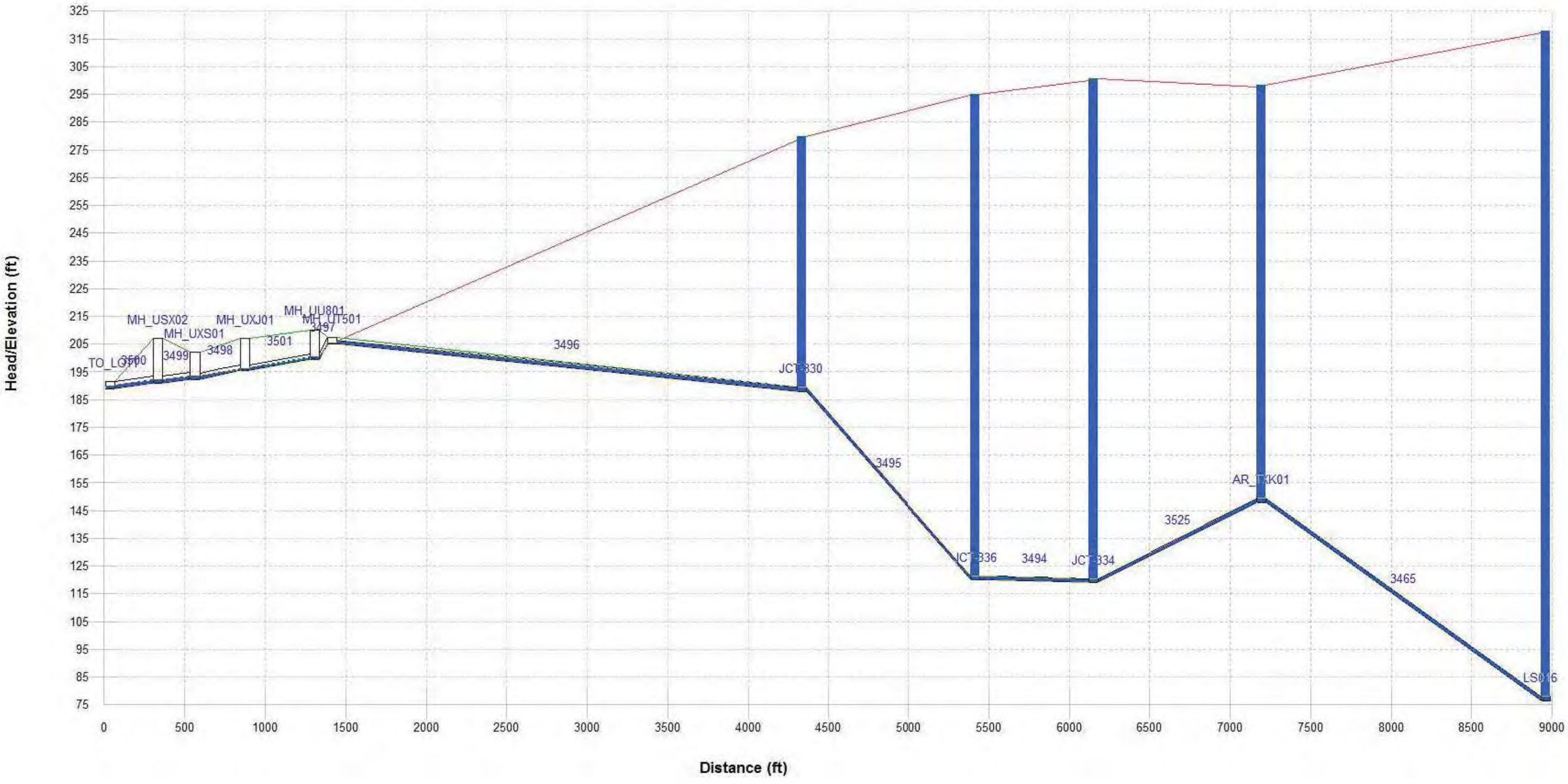
2116 2114 2117 2115 2118 2369 2113 2349 2126 2341 2344 2124 2125 2123 2342 2128 2340 2129 2130 2343 2127 2345 2346 2121 2346 2529 2122 2119 2120 2347 2528



Elapsed Time (hours) [Starts @01/21/2012, 00:01:58]

Martin Way South Pump Station Alignment: 2018 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

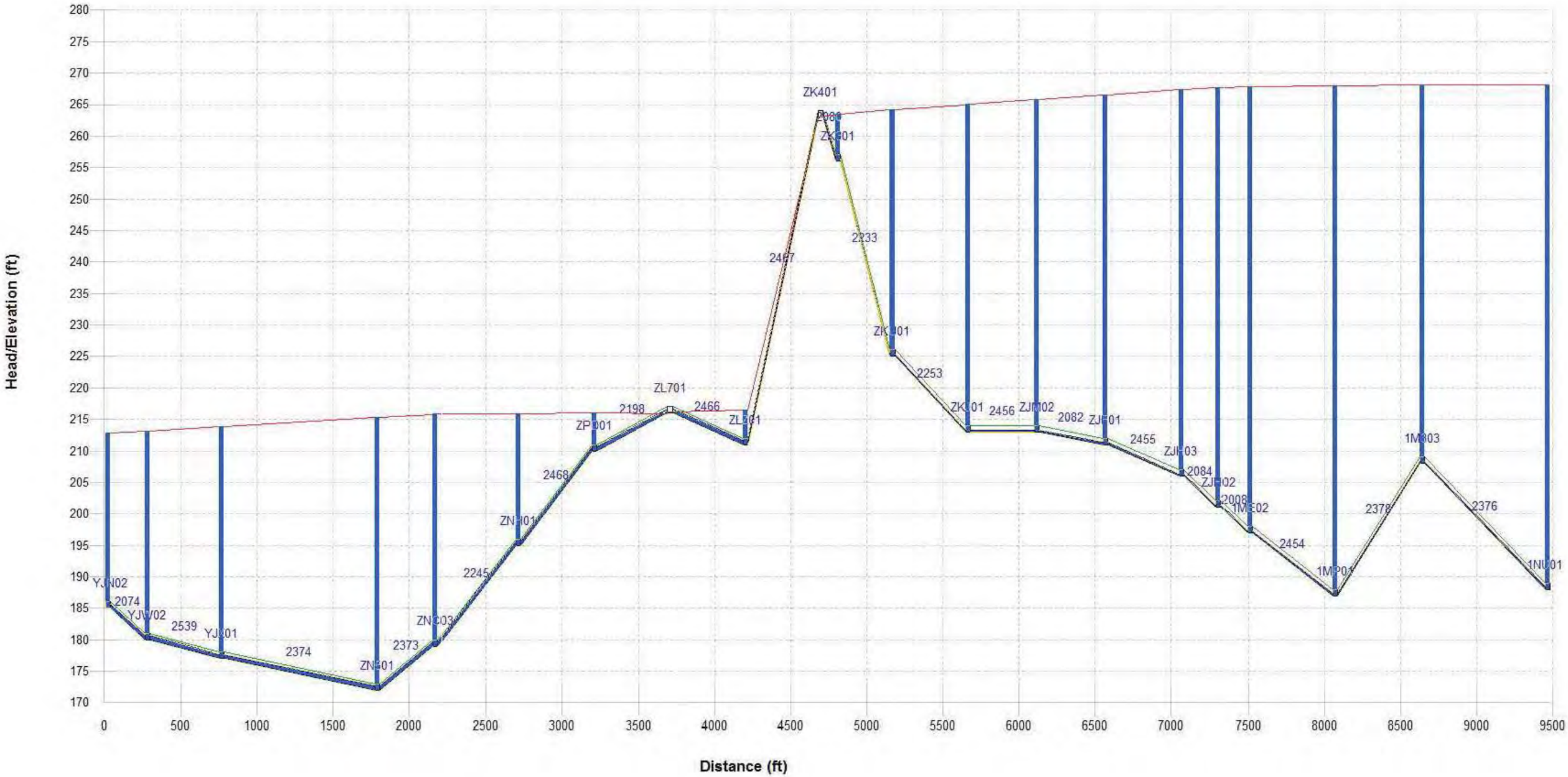


McAllister Park Alignment: 2018 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

Distance (ft)



Mullen Road Alignment (Ruddell to Basin SS): 2018 Peak Flow Depth

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

Distance (ft)

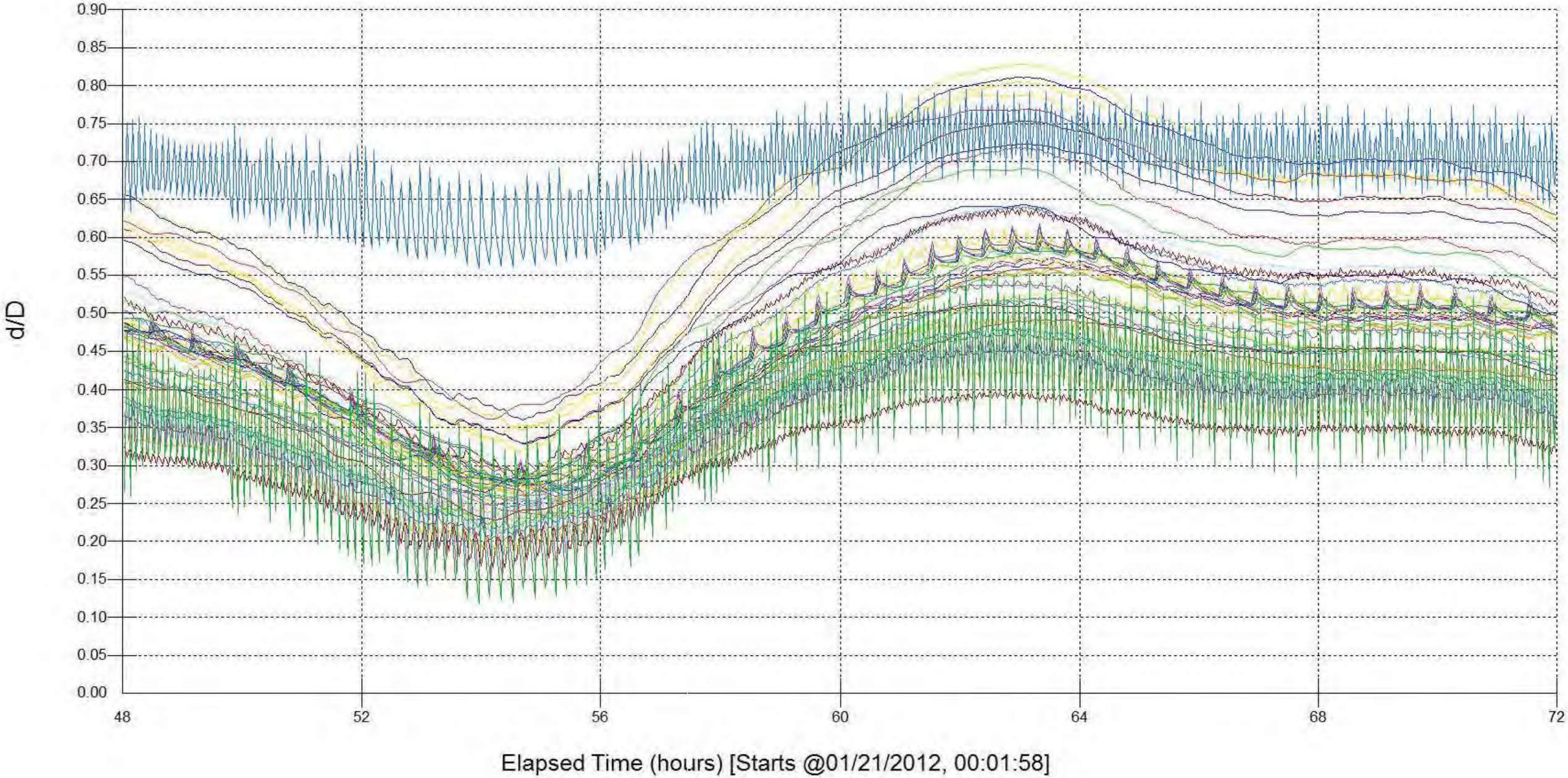
Ruddell Alignment: 2018 Peak Flow Depth (Max d/D=0.83)

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

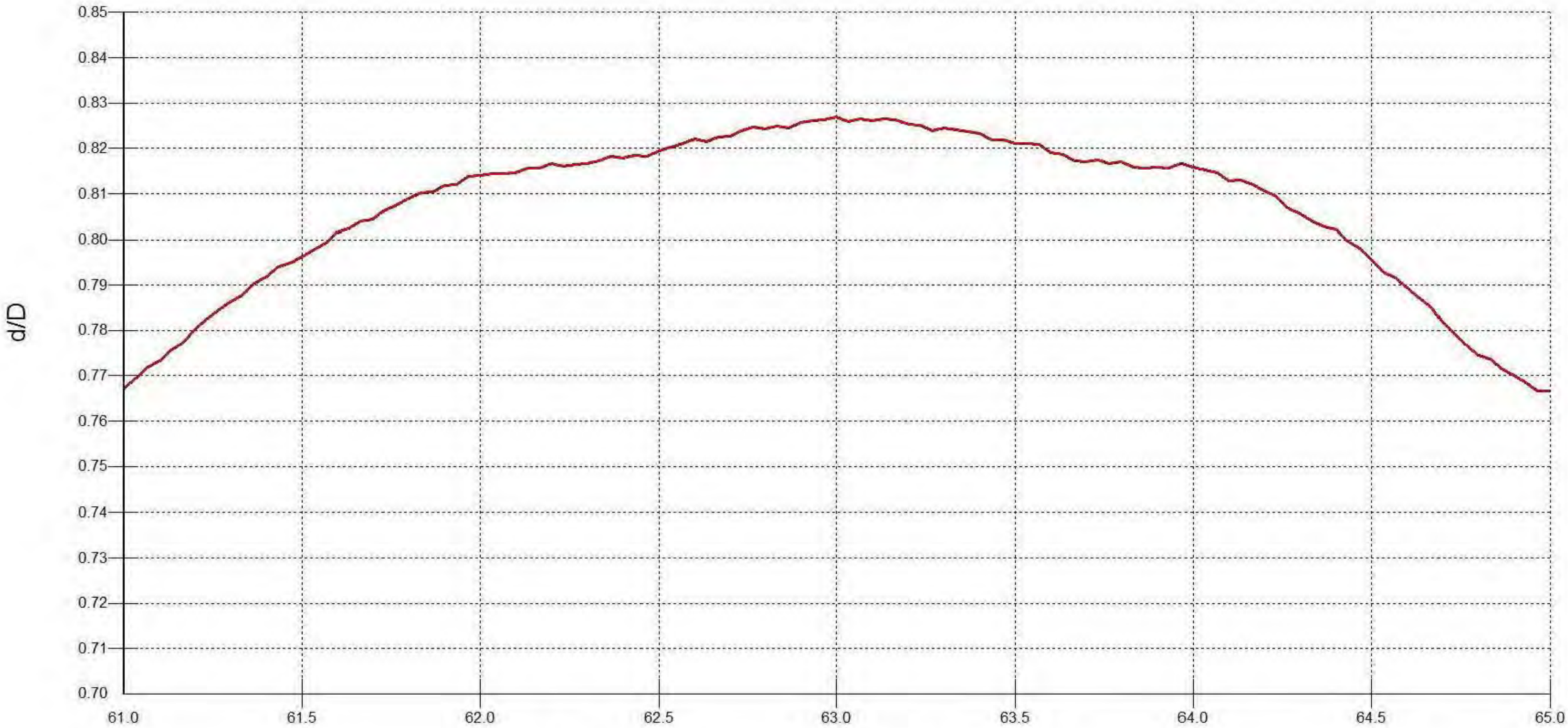
Head/Elevation (ft)

Distance (ft)

Ruddell Alignrment d/D: 2018 Peak Day



2018 Peak Day: Ruddell Road (@ 29th) d/D



Union Mills Alignment: 2018 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

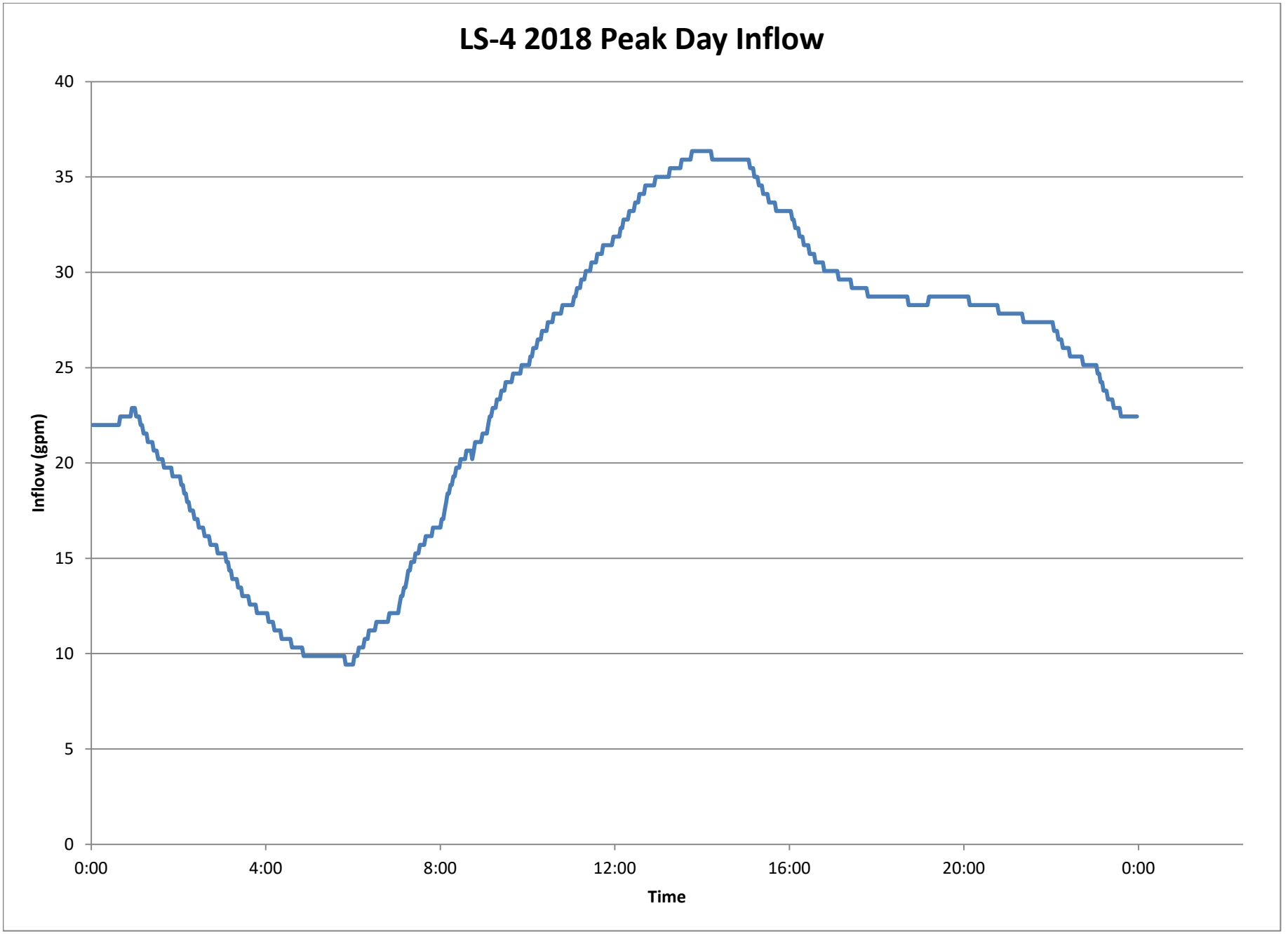
Head/Elevation (ft)

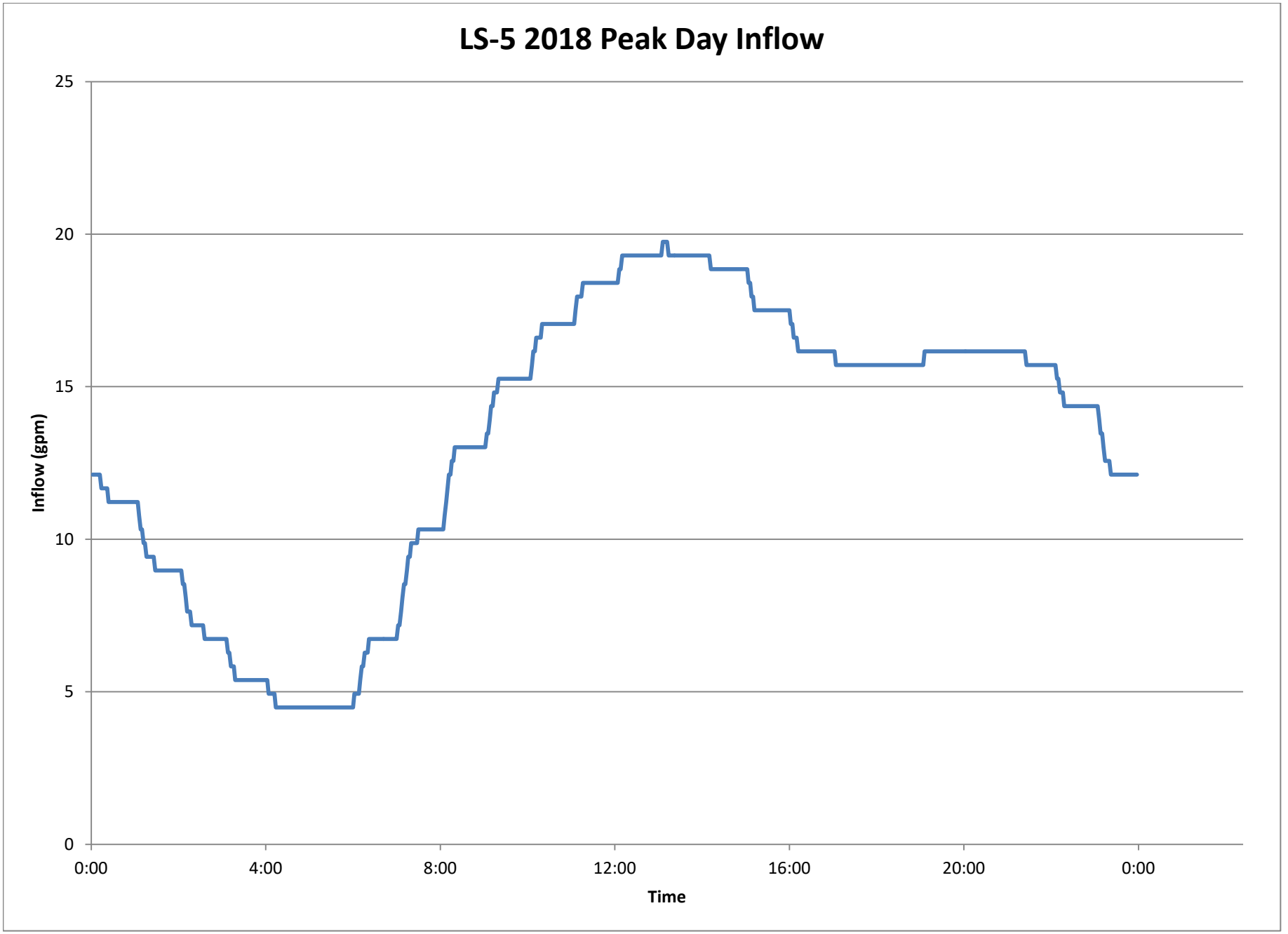
225
220
215
210
205
200
195
190
185
180
175
170
165
160
155
150

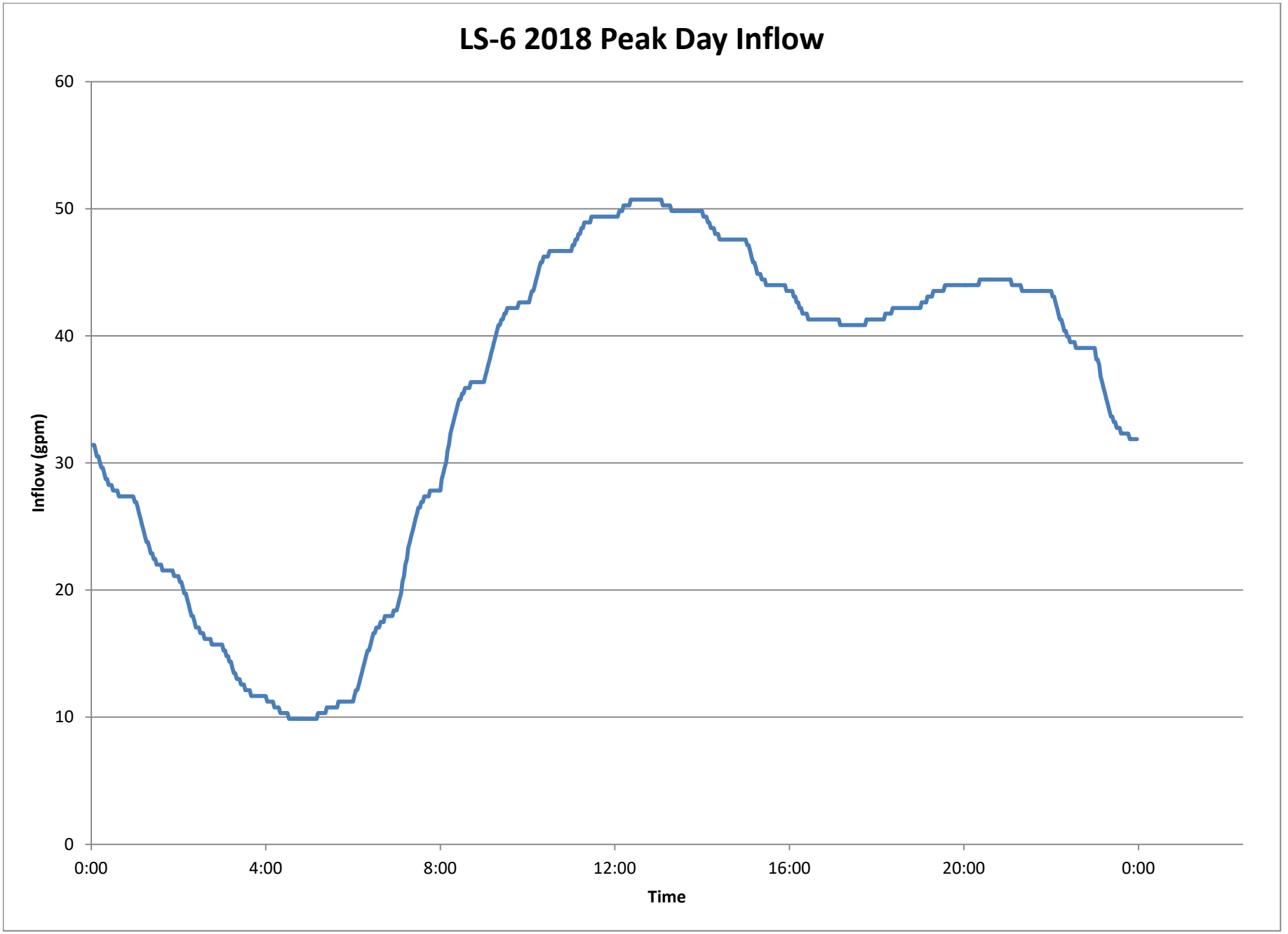
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000 10500 11000 11500 12000

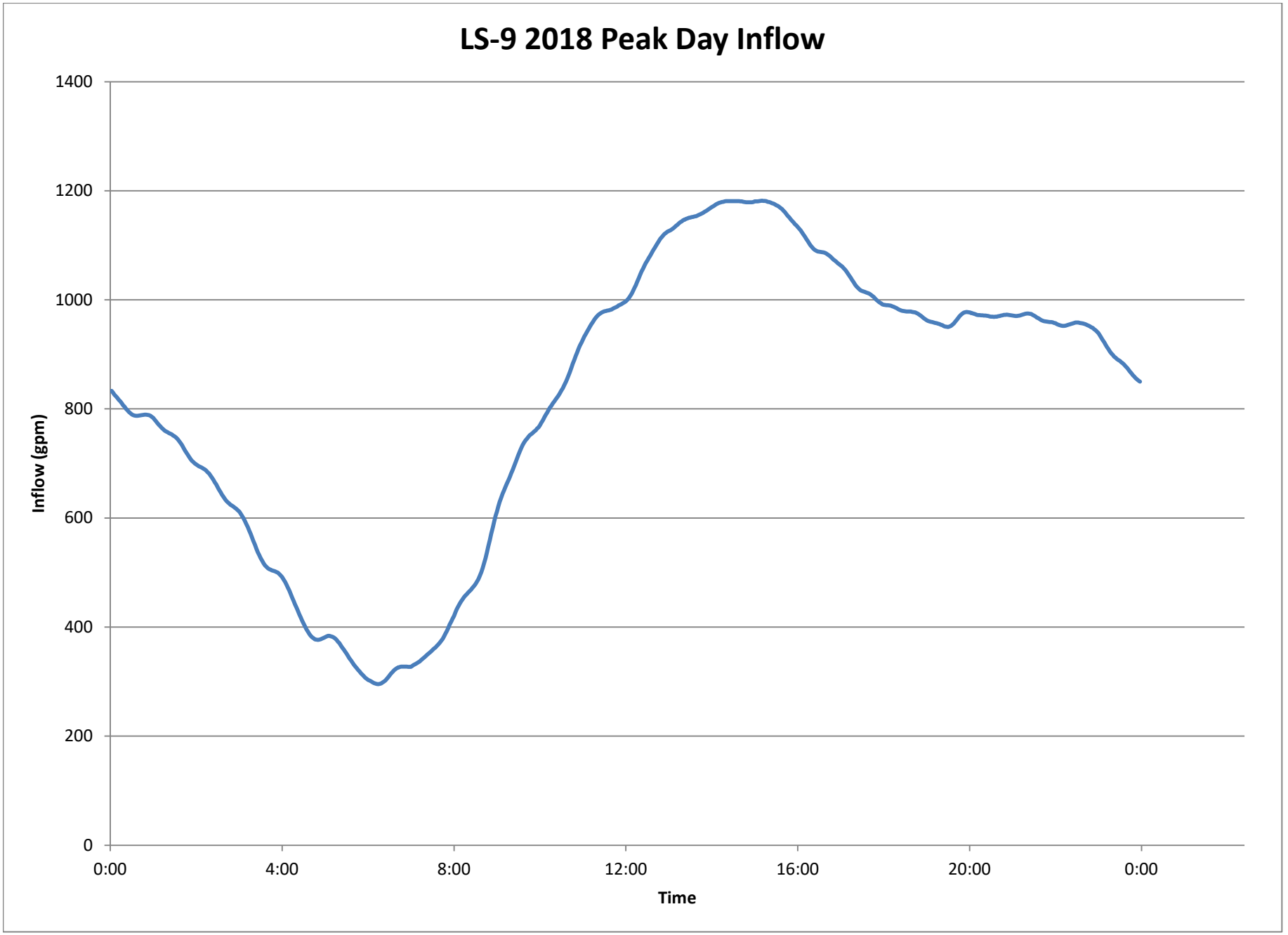
Distance (ft)

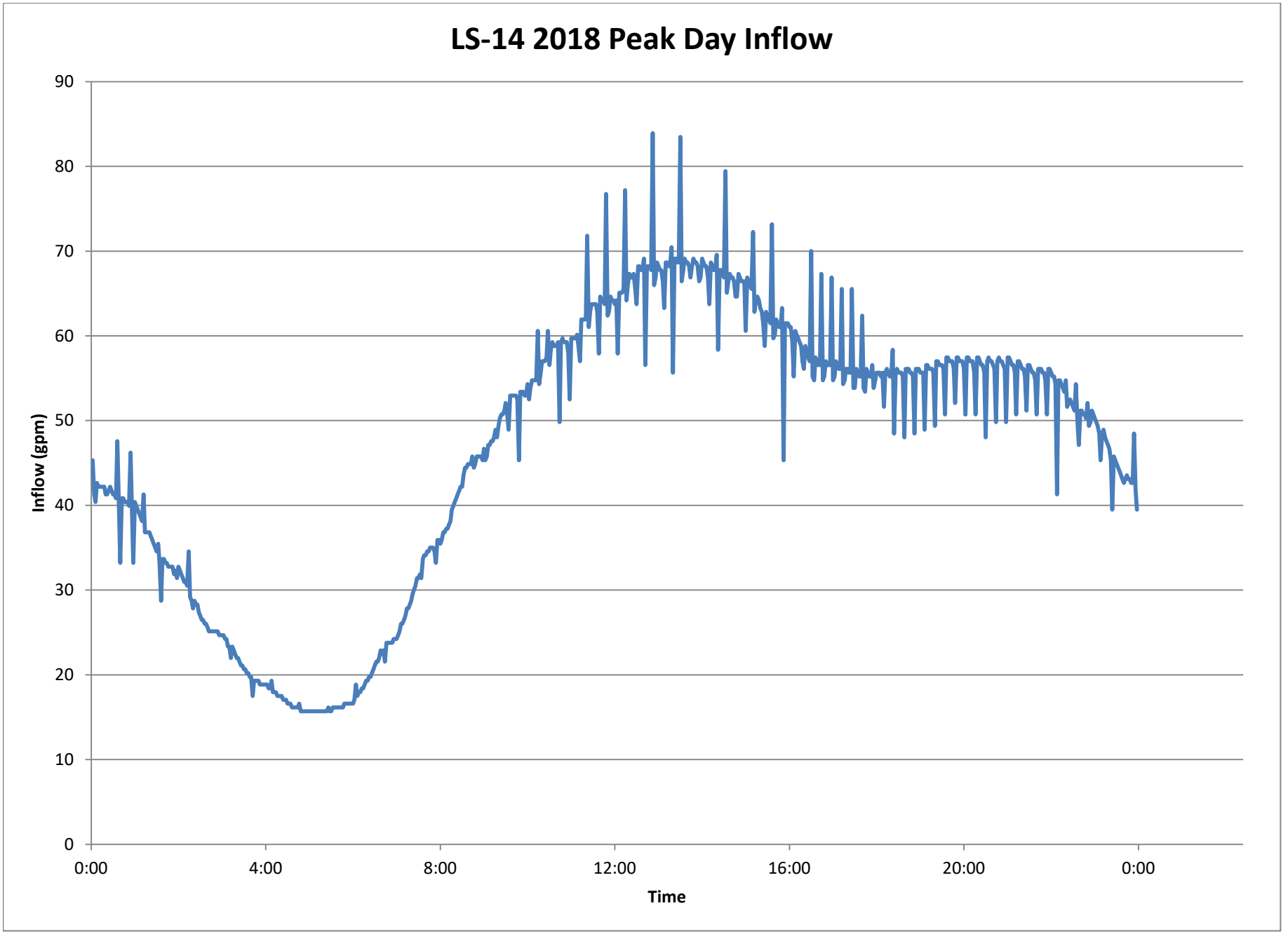
STEP_JCJ0892_TRAP
AR_WA301
CDT-99
2425
WA302
2424
WA204
2076
WX603
2059
4410
XFC01
4409
XFB01
4411
AR_XGB01
2092
XG003
2420
XH001
2298
YEM01
2072
AR_YET01
2290
YE102
2418
YF501
2288
YL001
2419
2287
YL101
2218
YKN01
2085
YKP04
2220
YKP01
2267
AR_YKQ01
2217
YKQ05
2270
YKR01
2057
YJK02

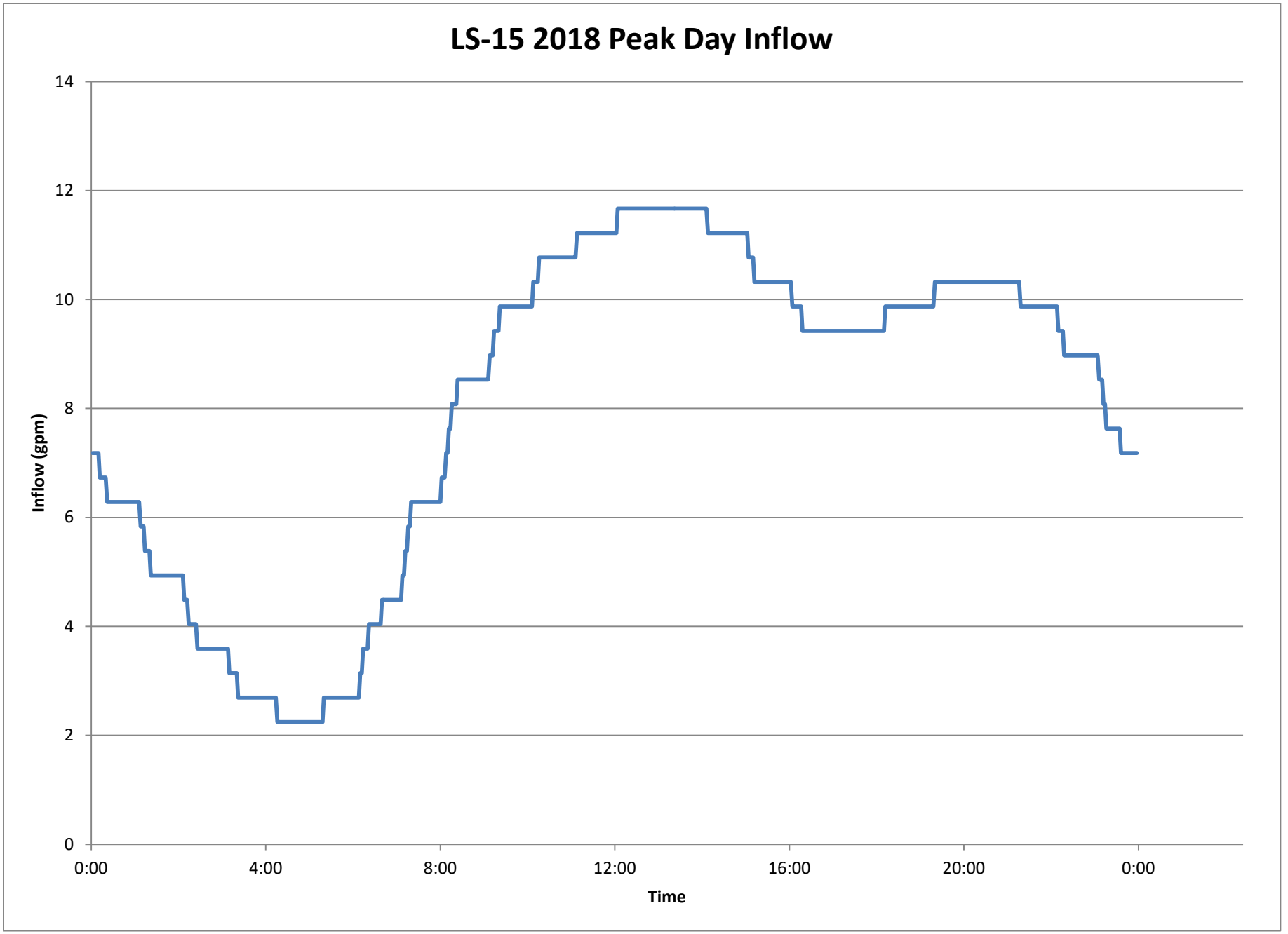

LS-4 2018 Peak Day Inflow
40
35
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

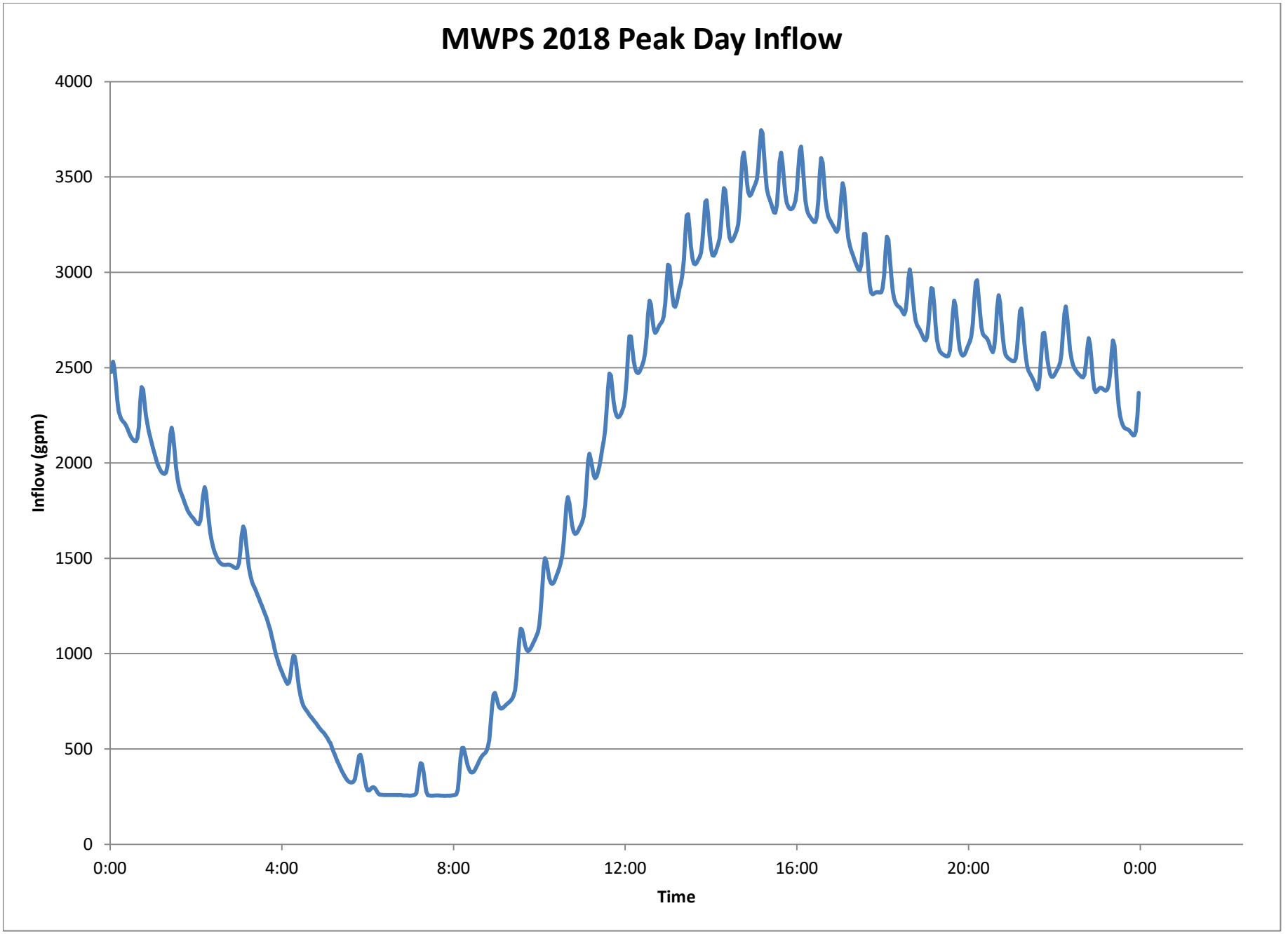

LS-5 2018 Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

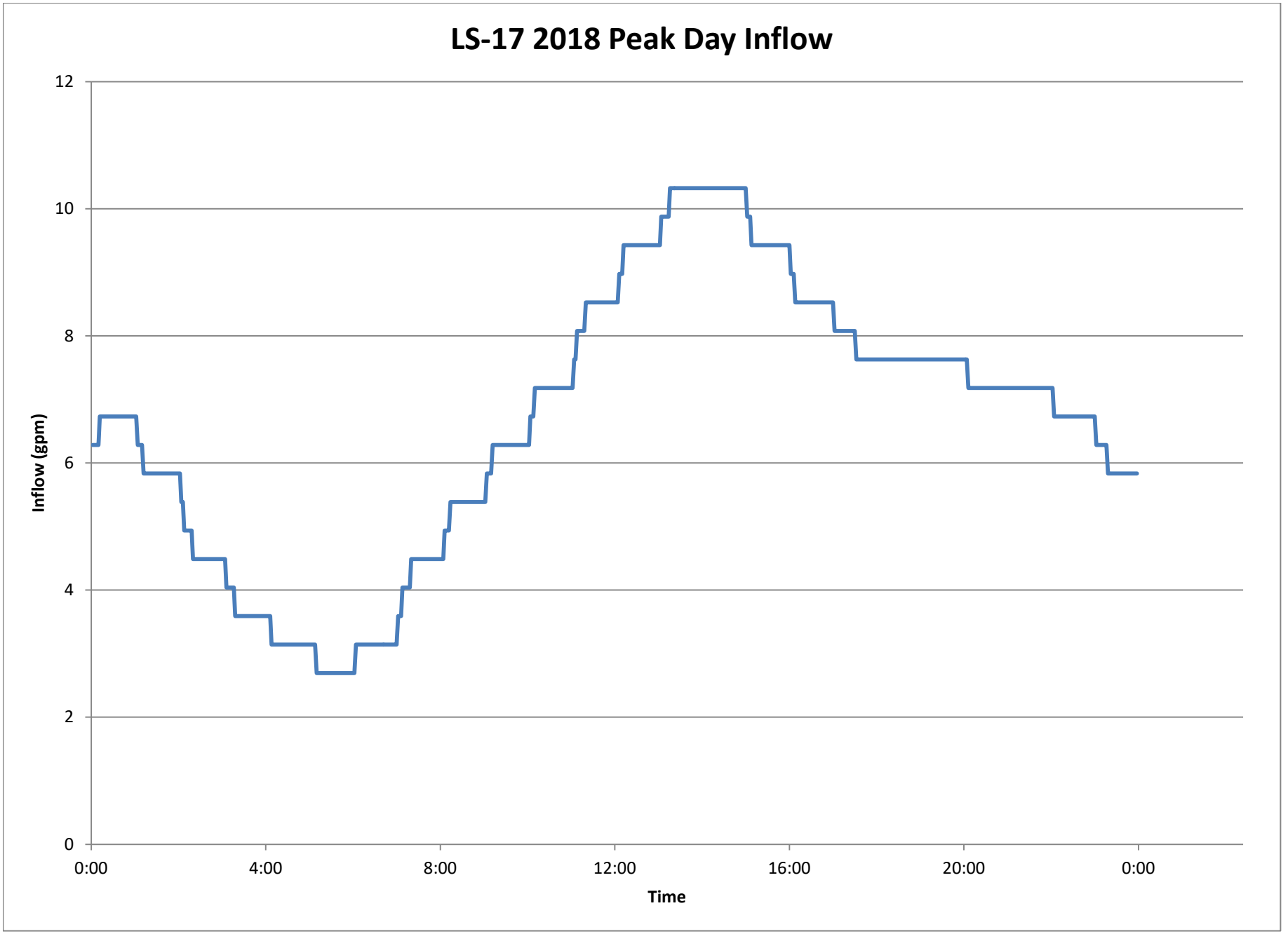

LS-6 2018 Peak Day Inflow
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

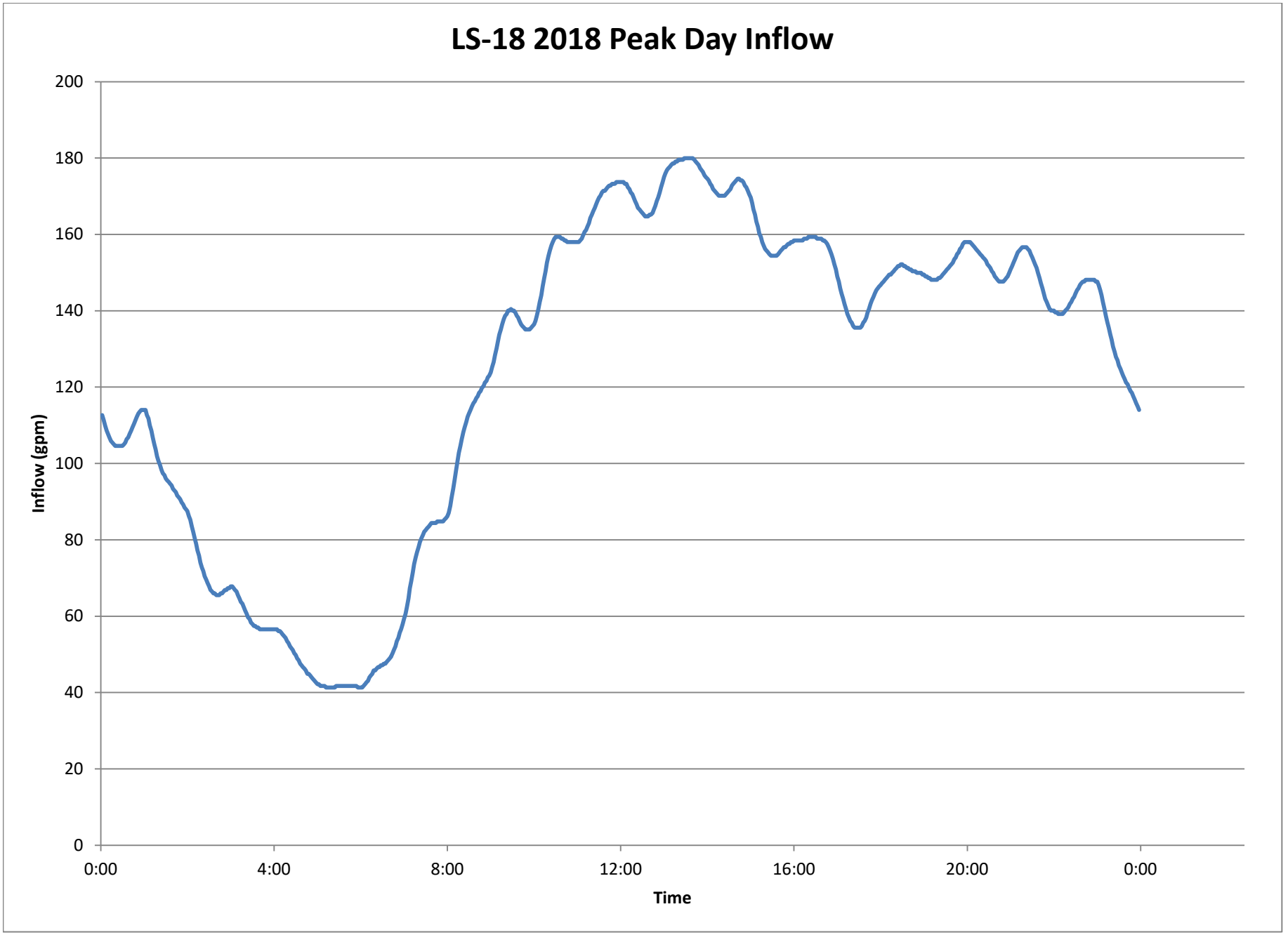

LS-9 2018 Peak Day Inflow
1400
1200
1000
800
600
400
200
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

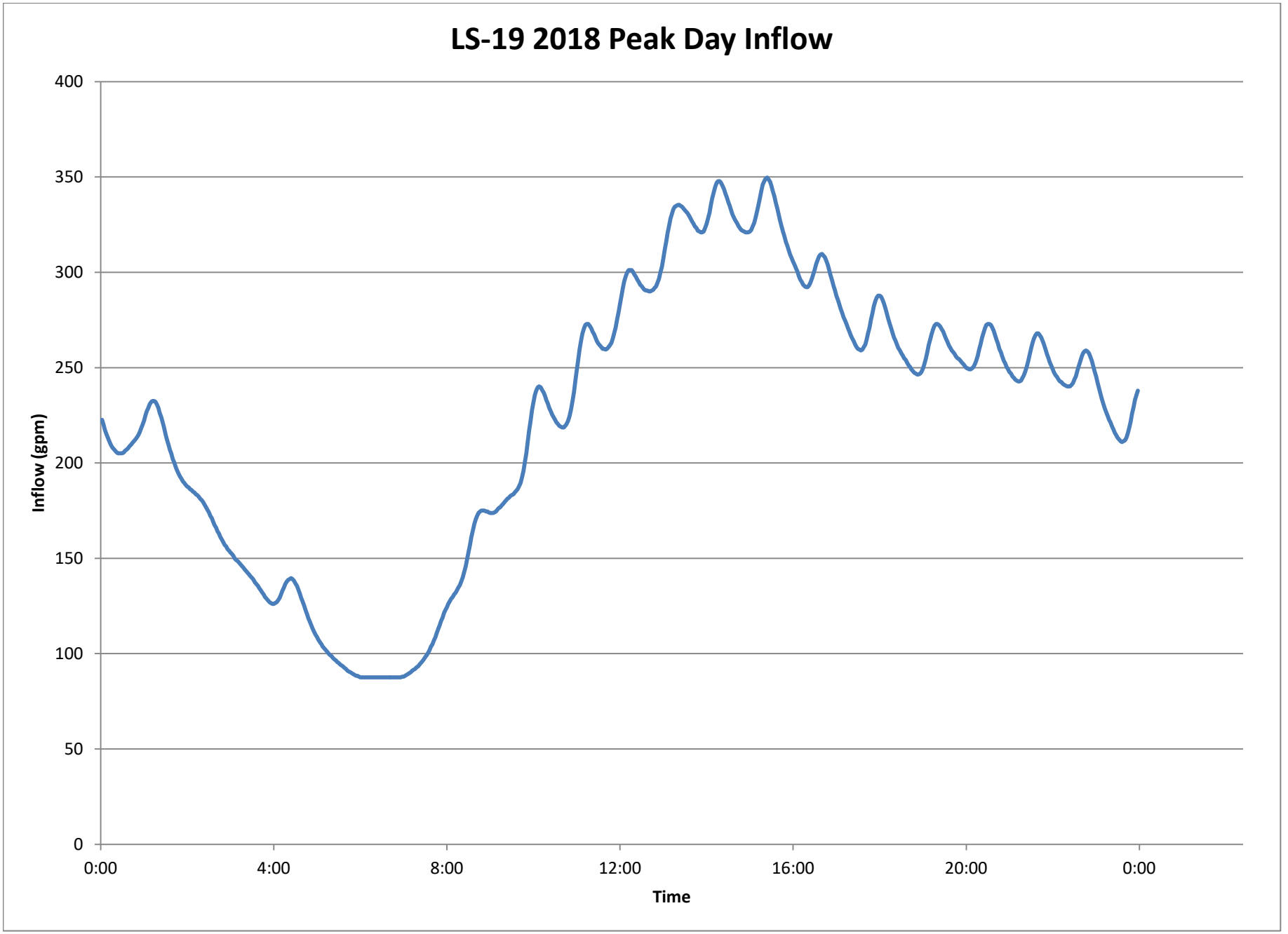

LS-14 2018 Peak Day Inflow
Inflow (gpm)
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

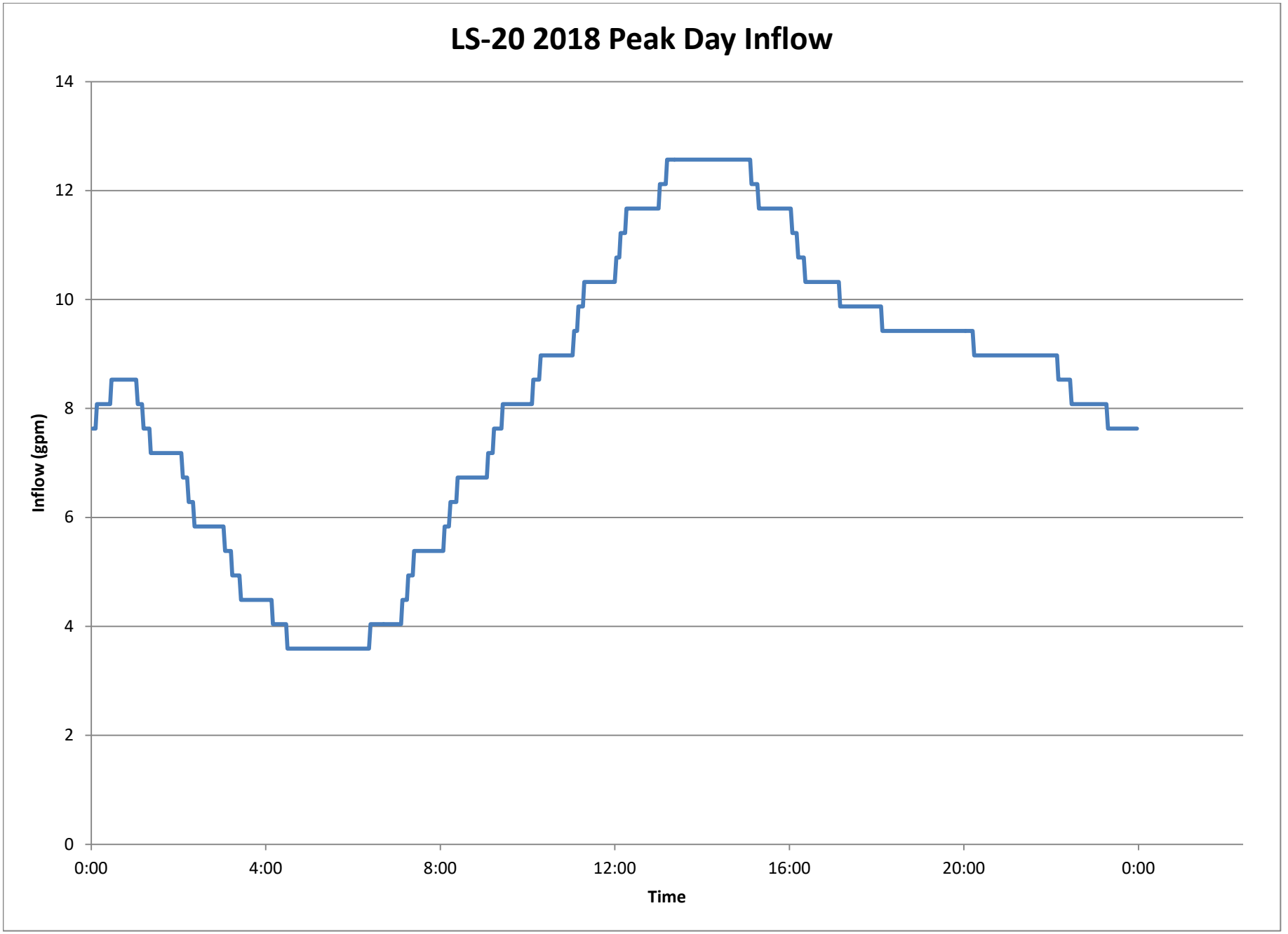

LS-15 2018 Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

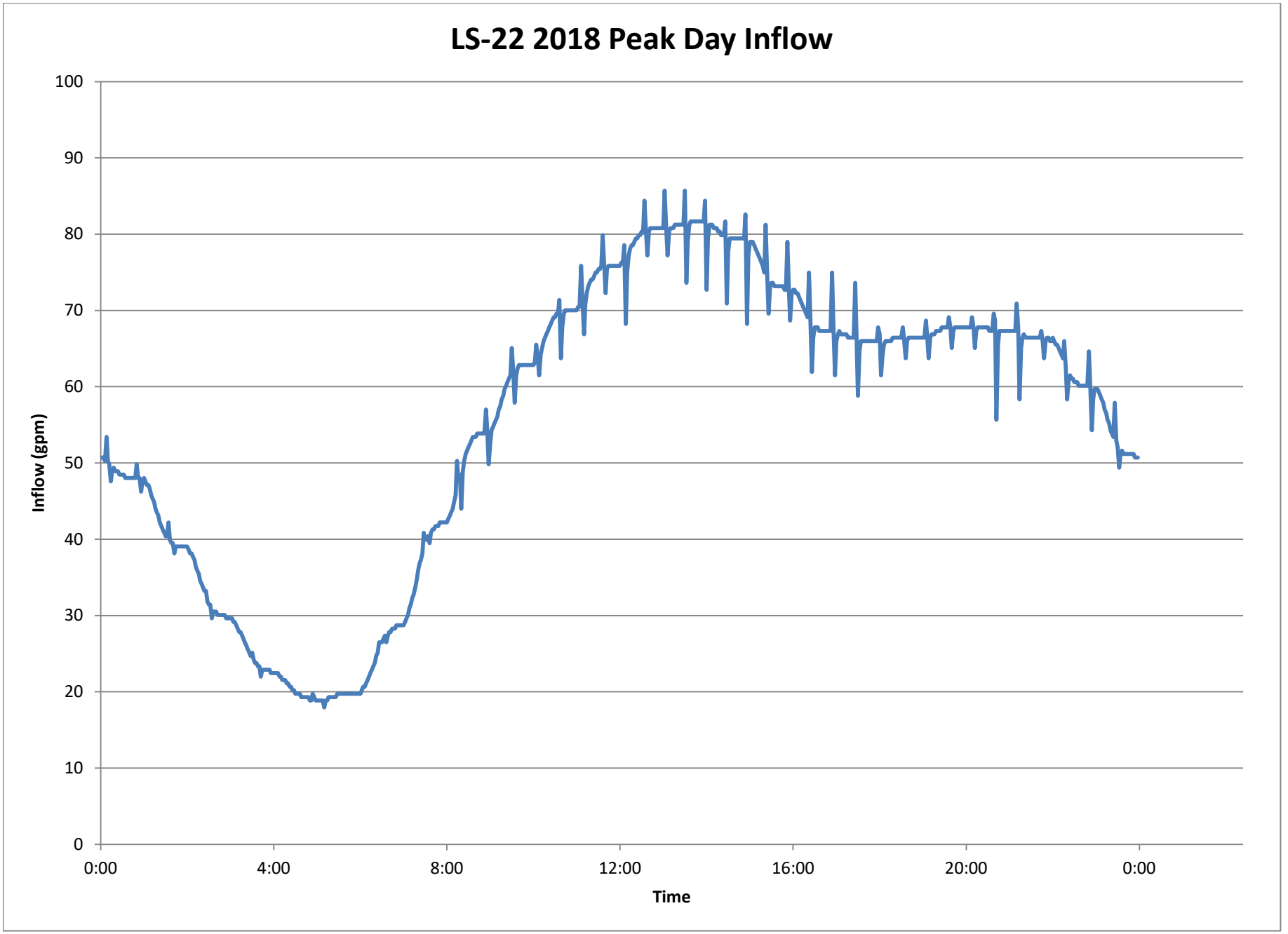

MWPS 2018 Peak Day Inflow
4000
3500
3000
2500
2000
1500
1000
500
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

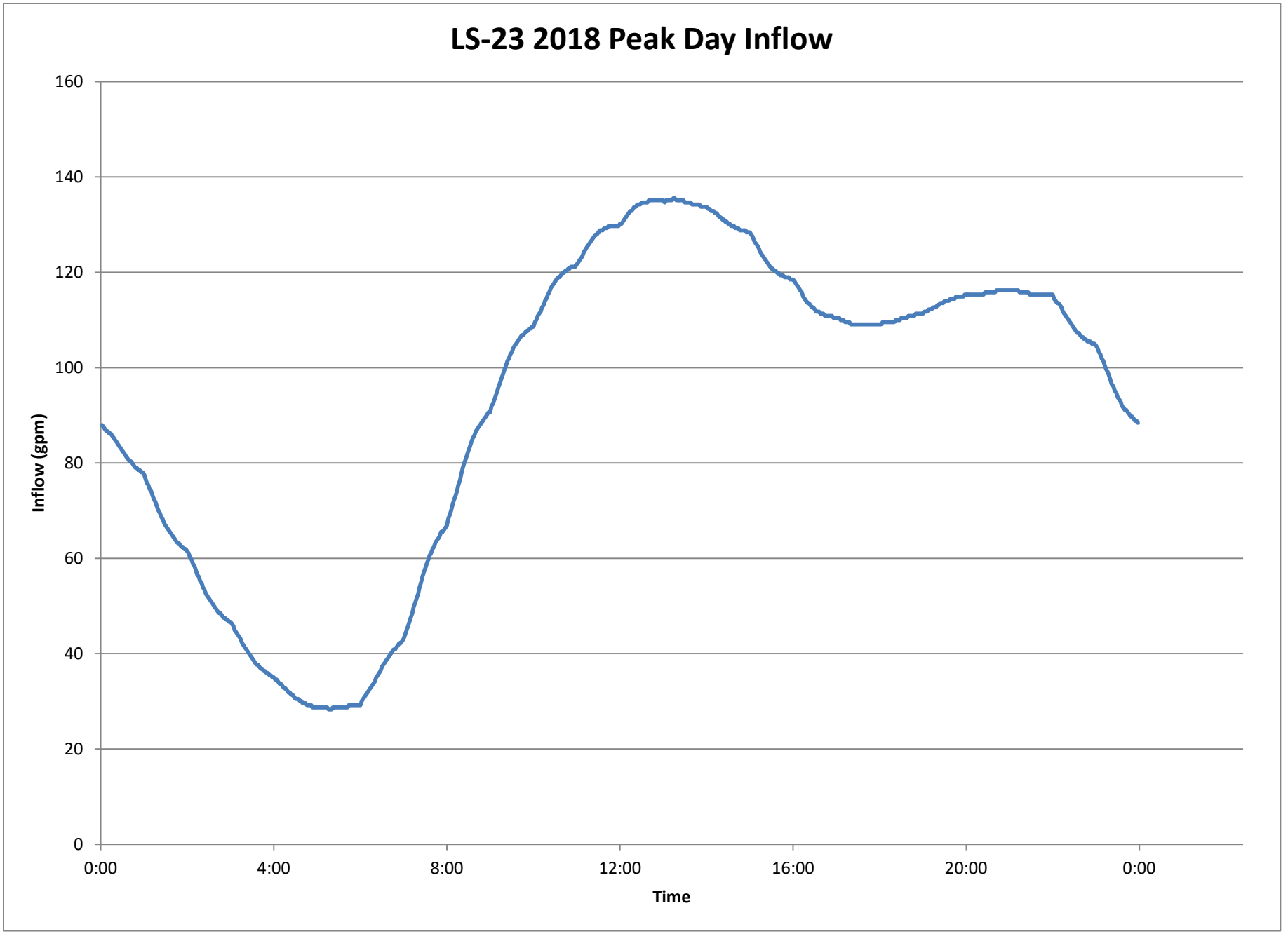

LS-17 2018 Peak Day Inflow
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

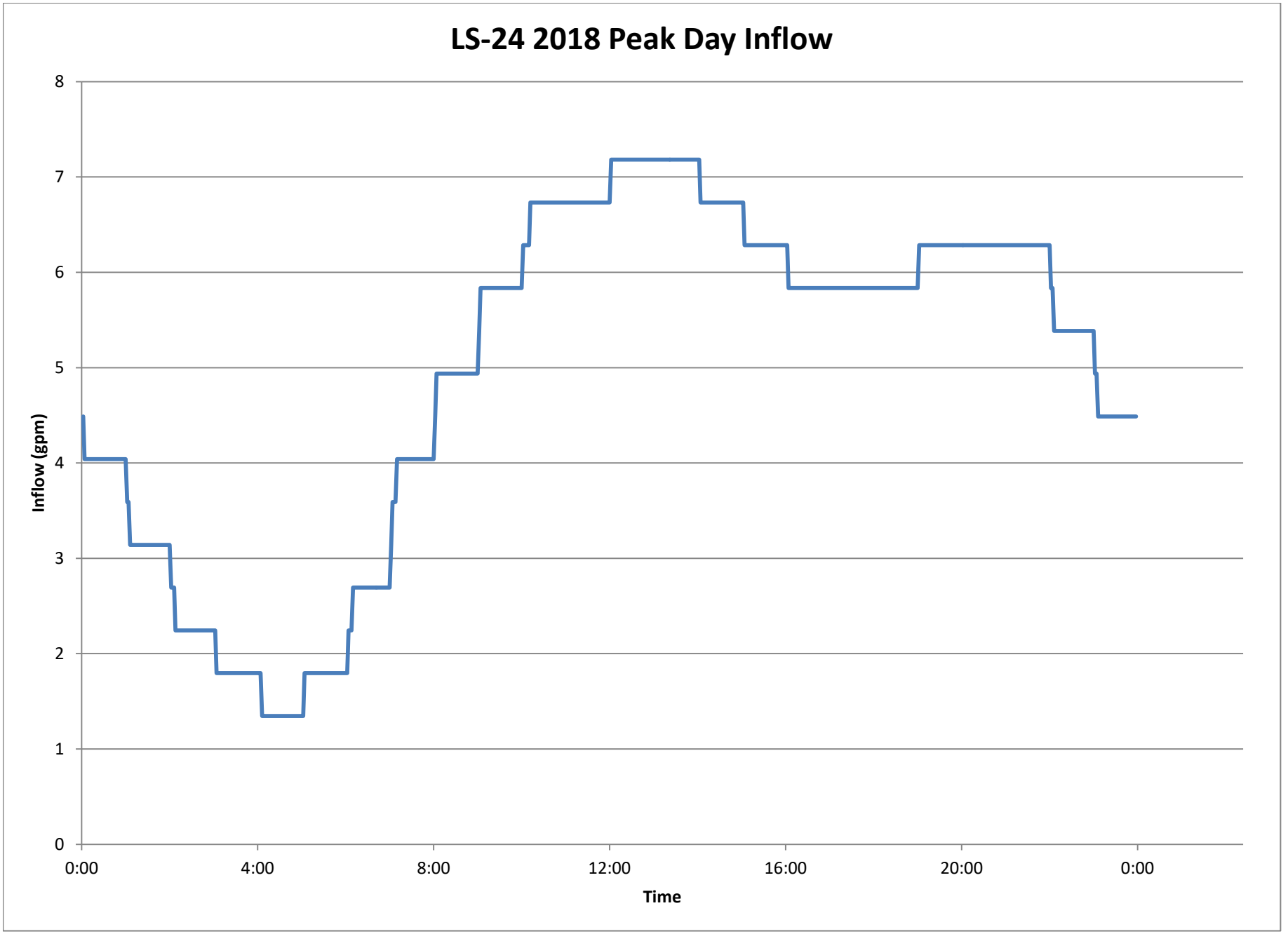

LS-18 2018 Peak Day Inflow
Inflow (gpm)
200
180
160
140
120
100
80
60
40
20
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

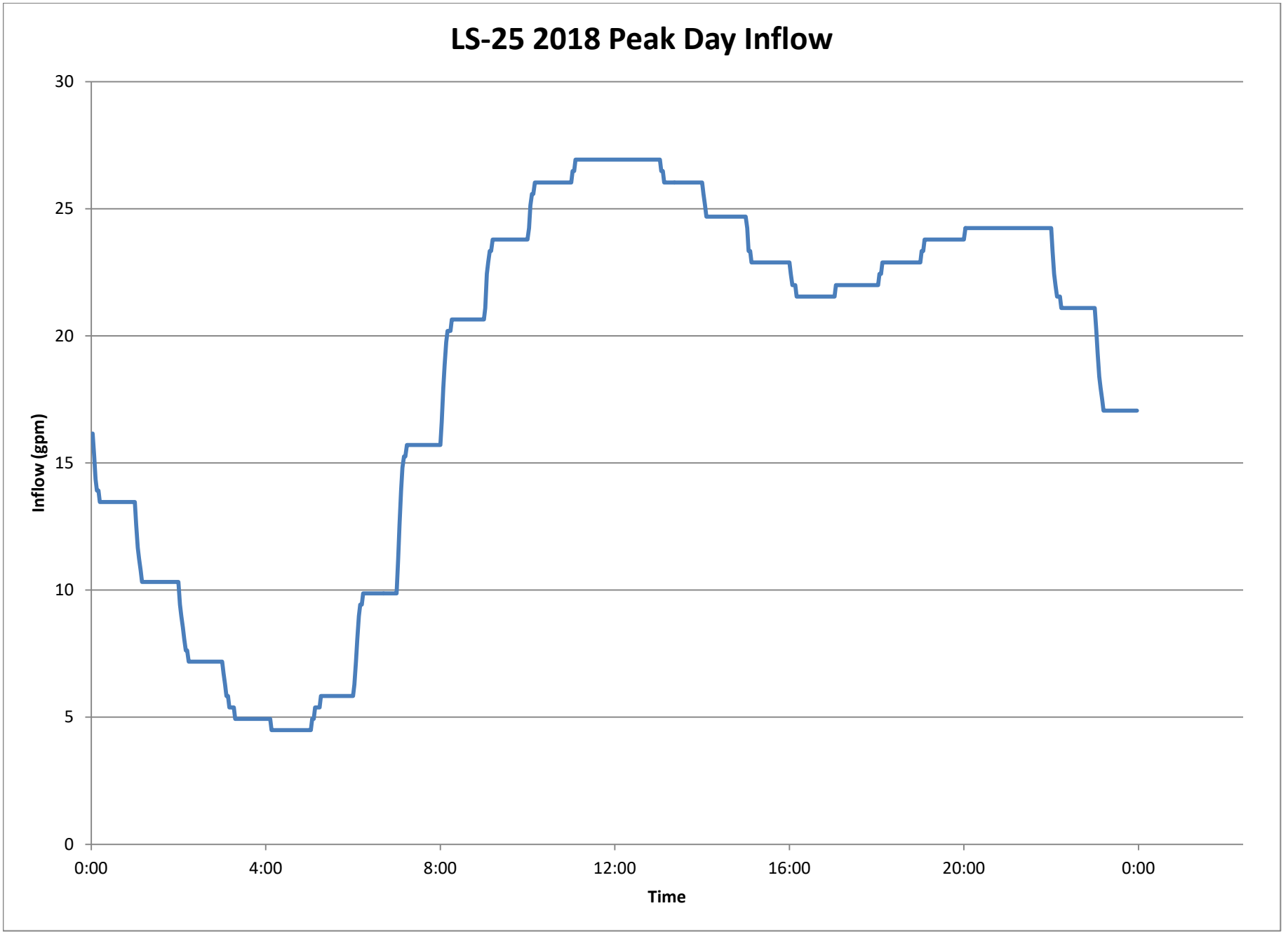

LS-19 2018 Peak Day Inflow
Inflow (gpm)
400
350
300
250
200
150
100
50
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

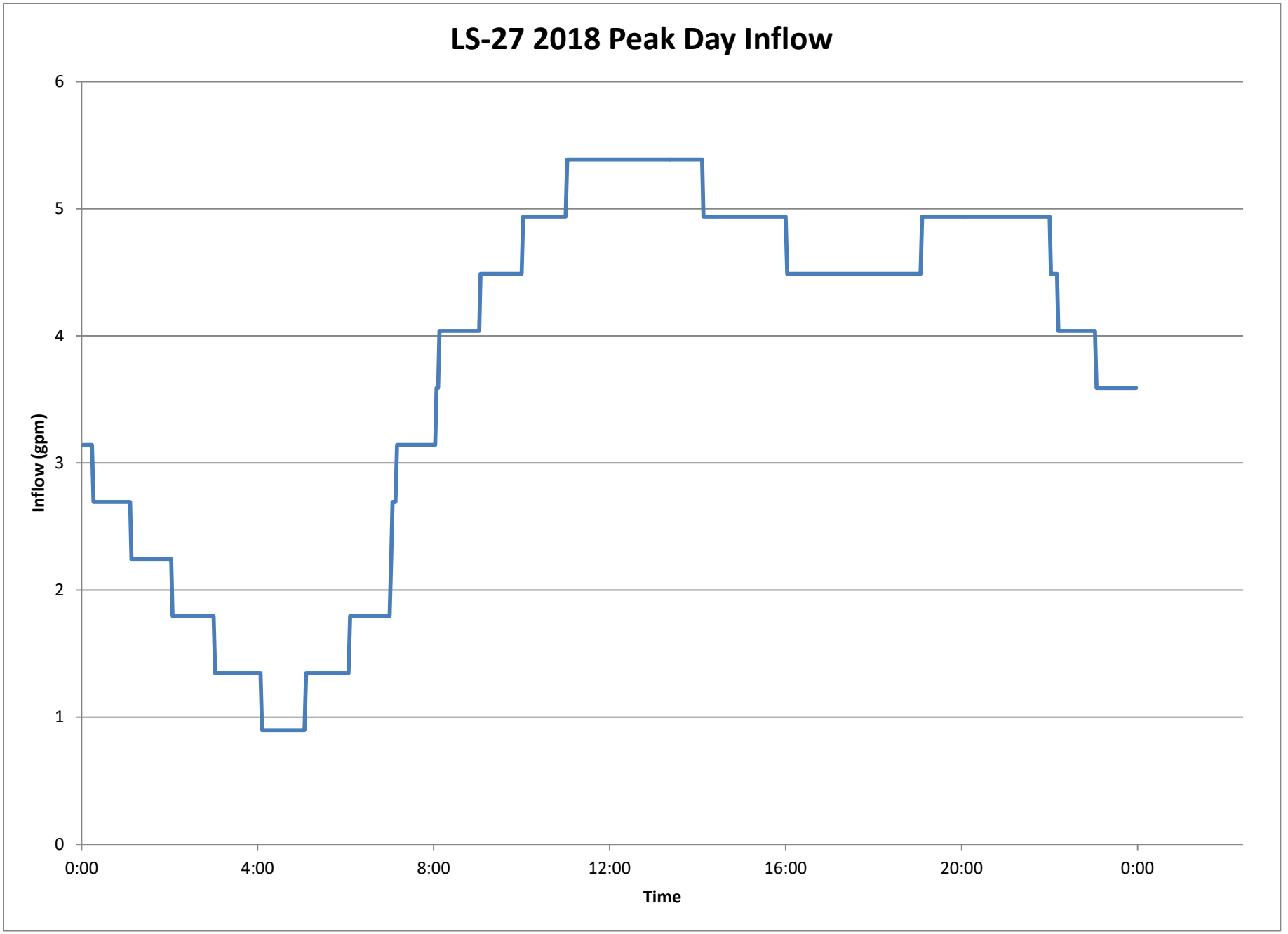

LS-20 2018 Peak Day Inflow
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

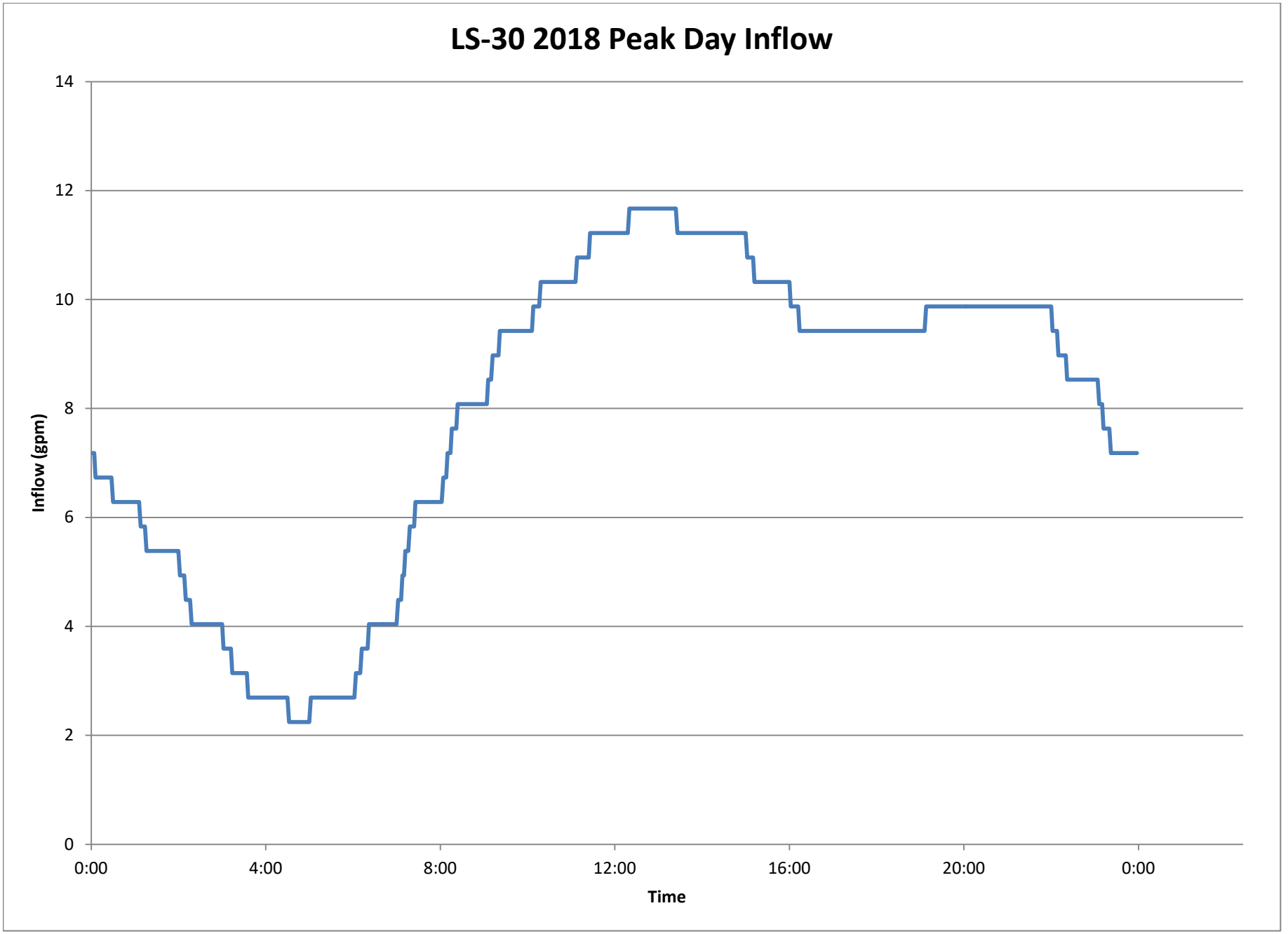

LS-22 2018 Peak Day Inflow
Inflow (gpm)
100
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

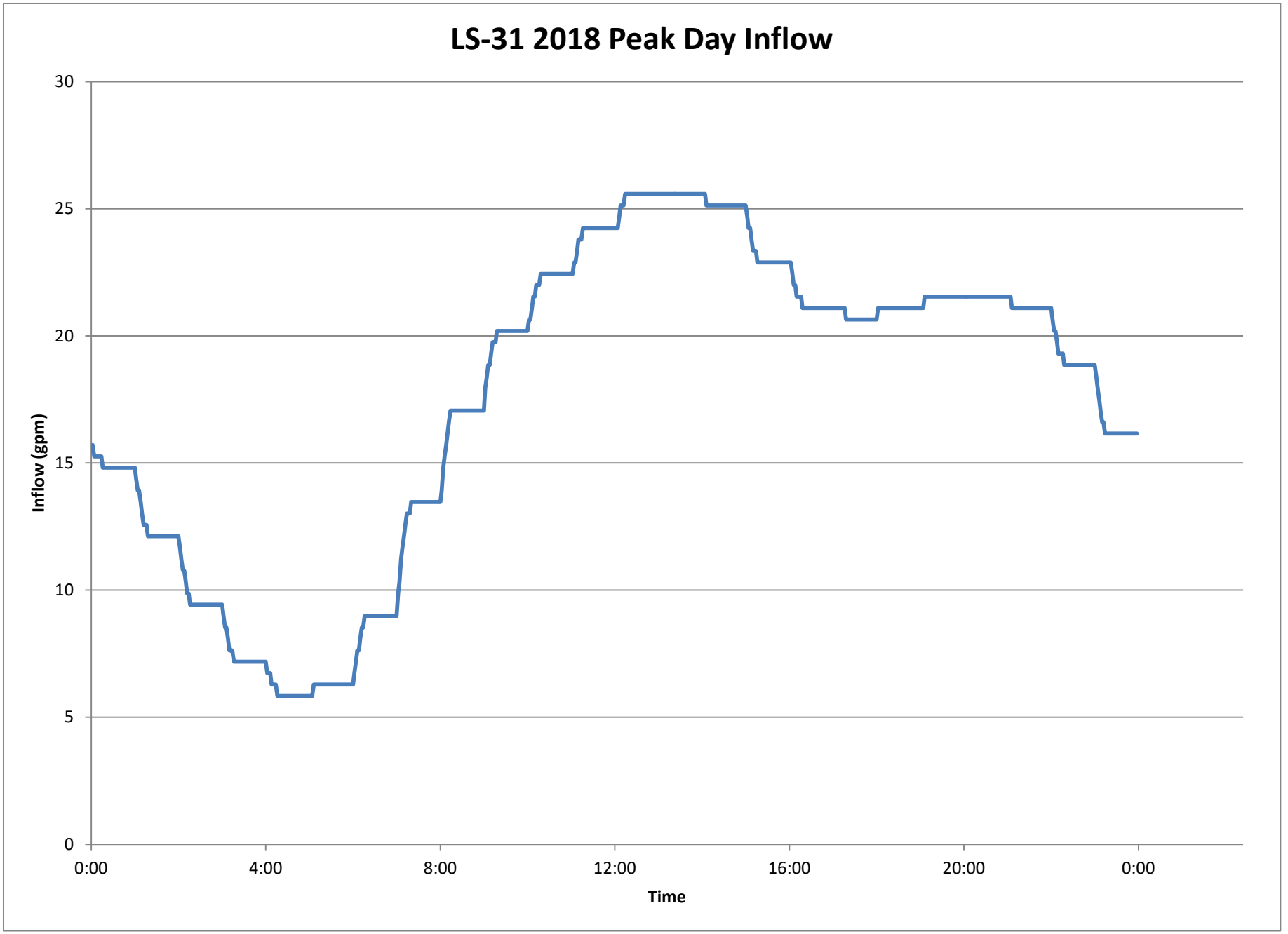

LS-23 2018 Peak Day Inflow
160
140
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

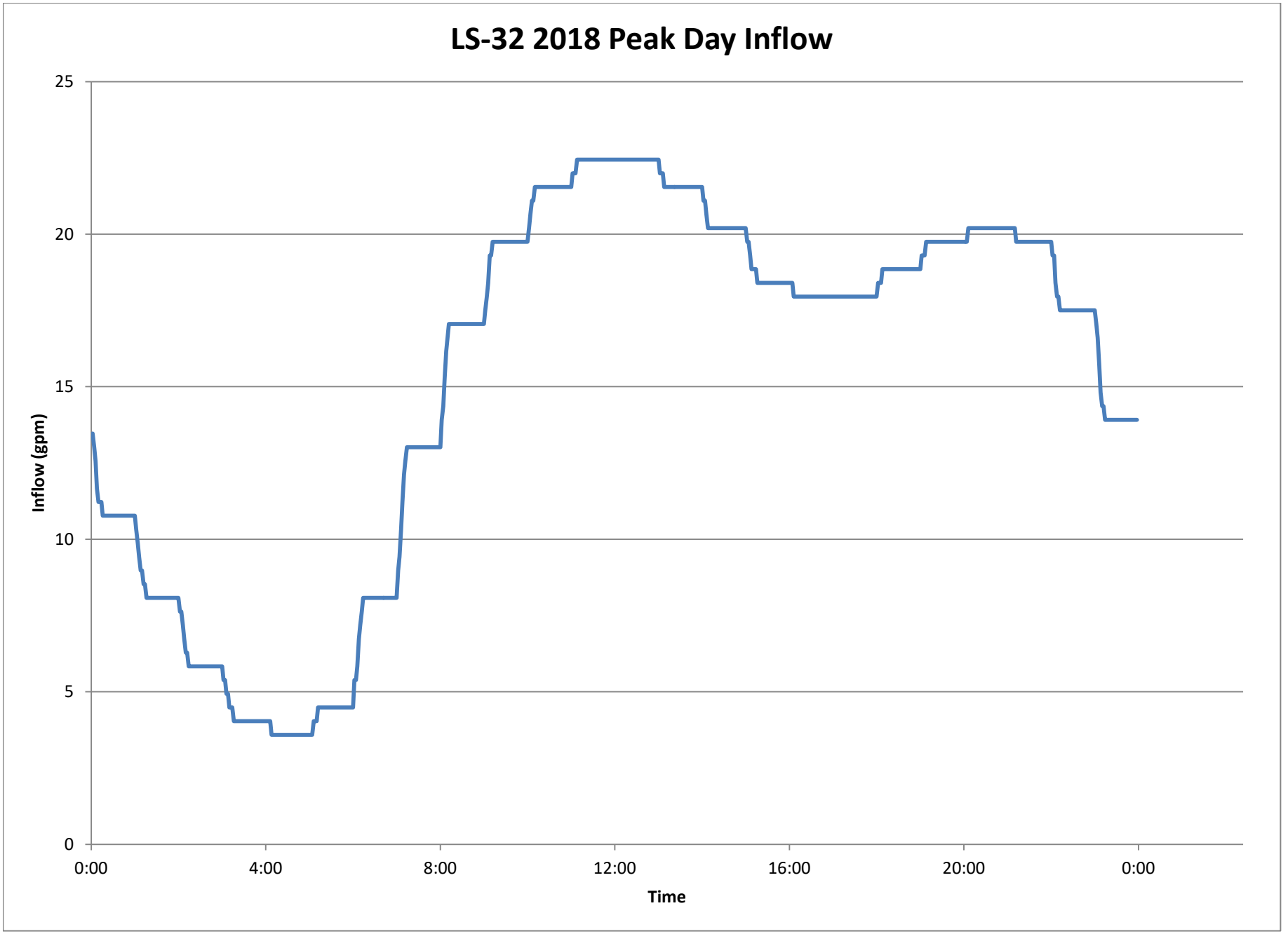

LS-24 2018 Peak Day Inflow
Inflow (gpm)
8
7
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

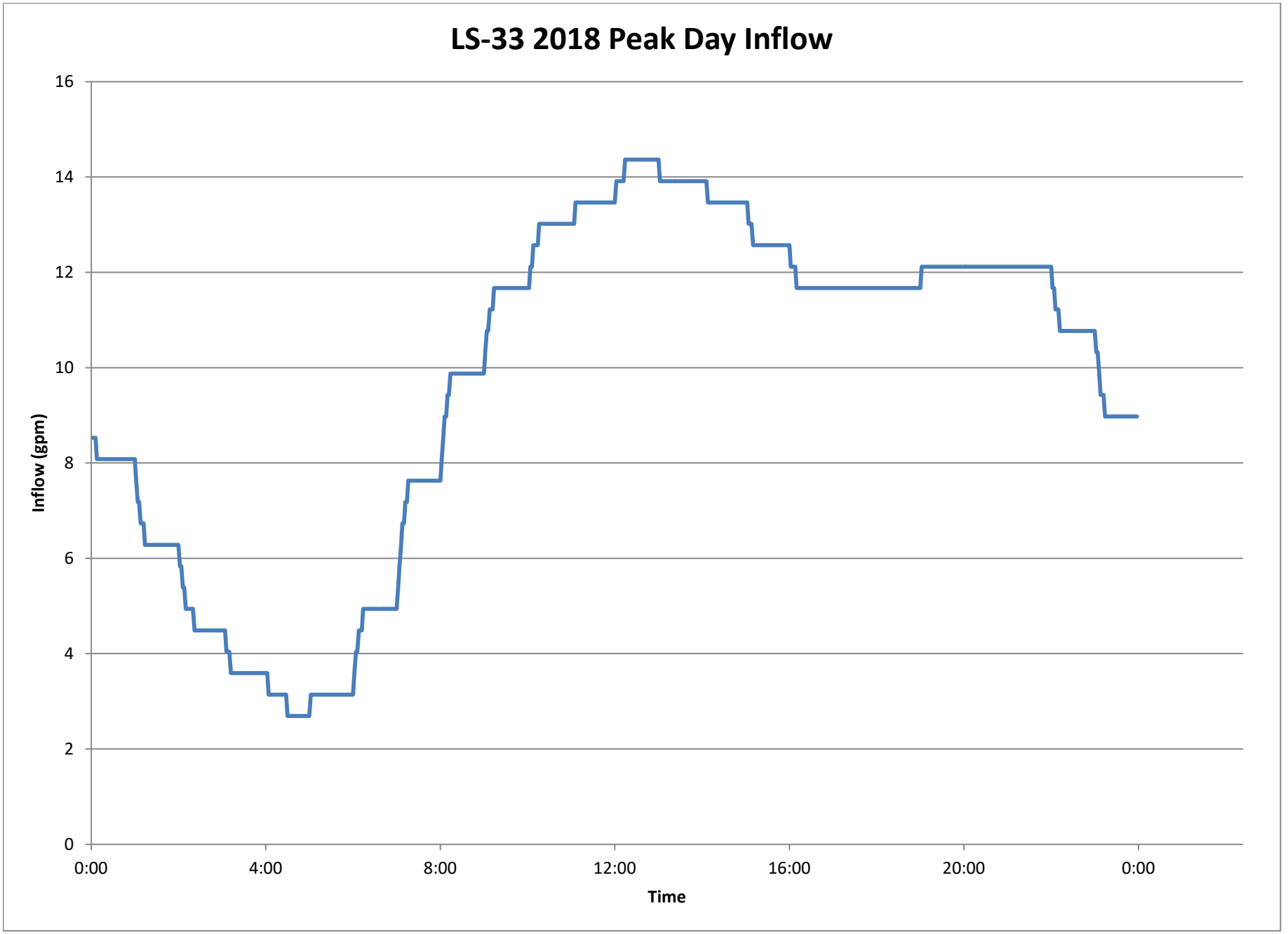

LS-25 2018 Peak Day Inflow
Inflow (gpm)
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

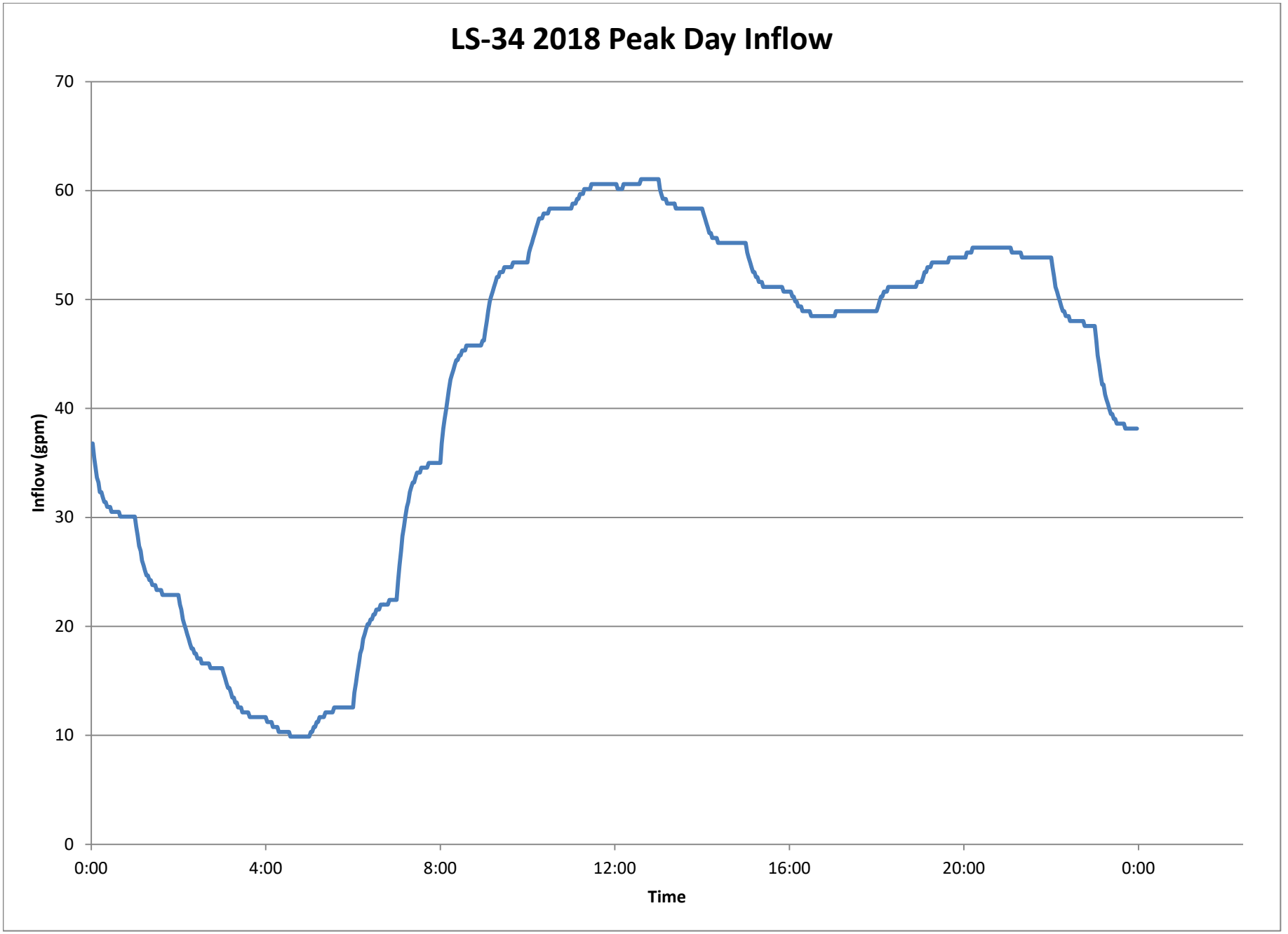

LS-27 2018 Peak Day Inflow
Inflow (gpm)
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

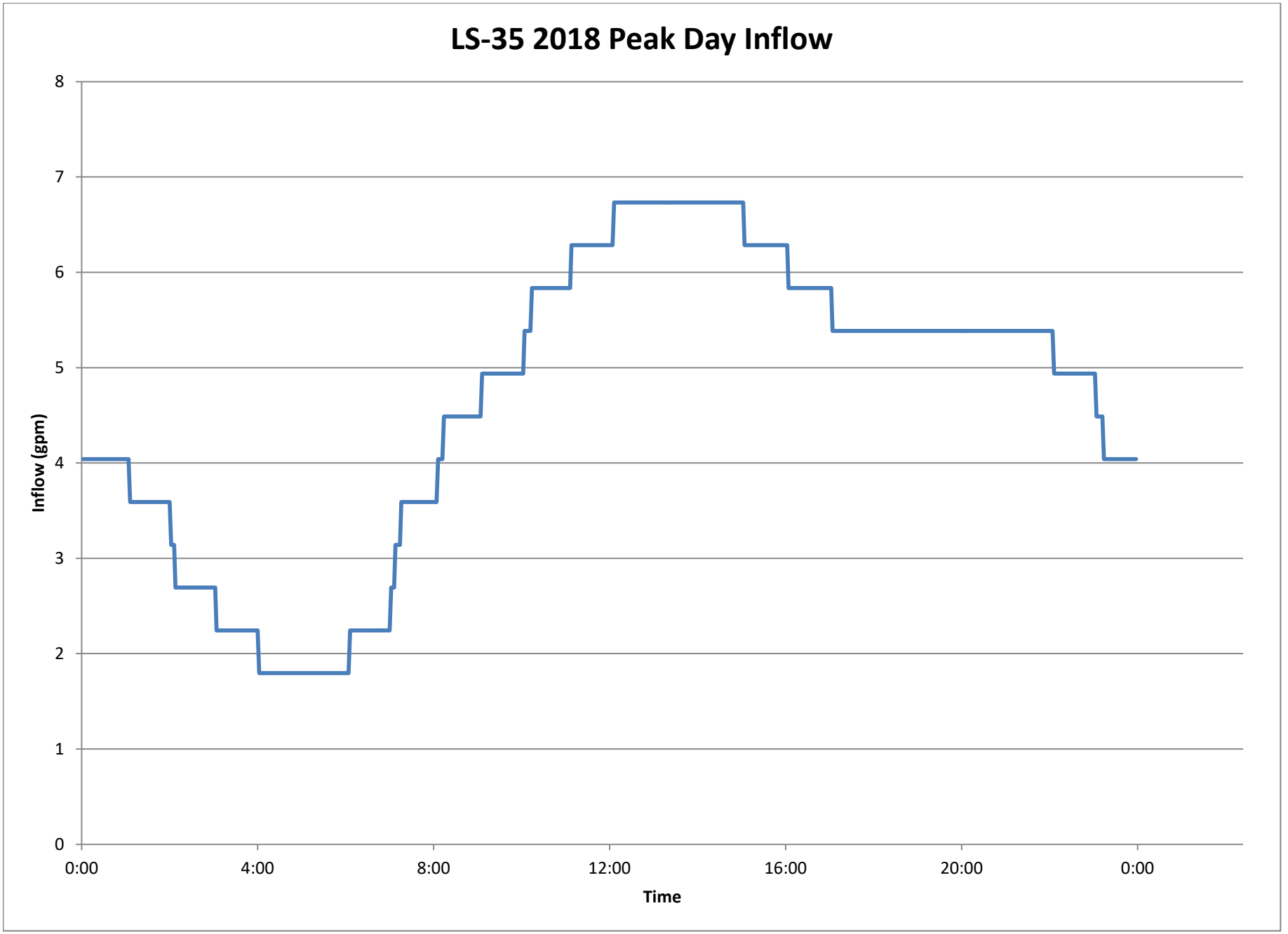

LS-30 2018 Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

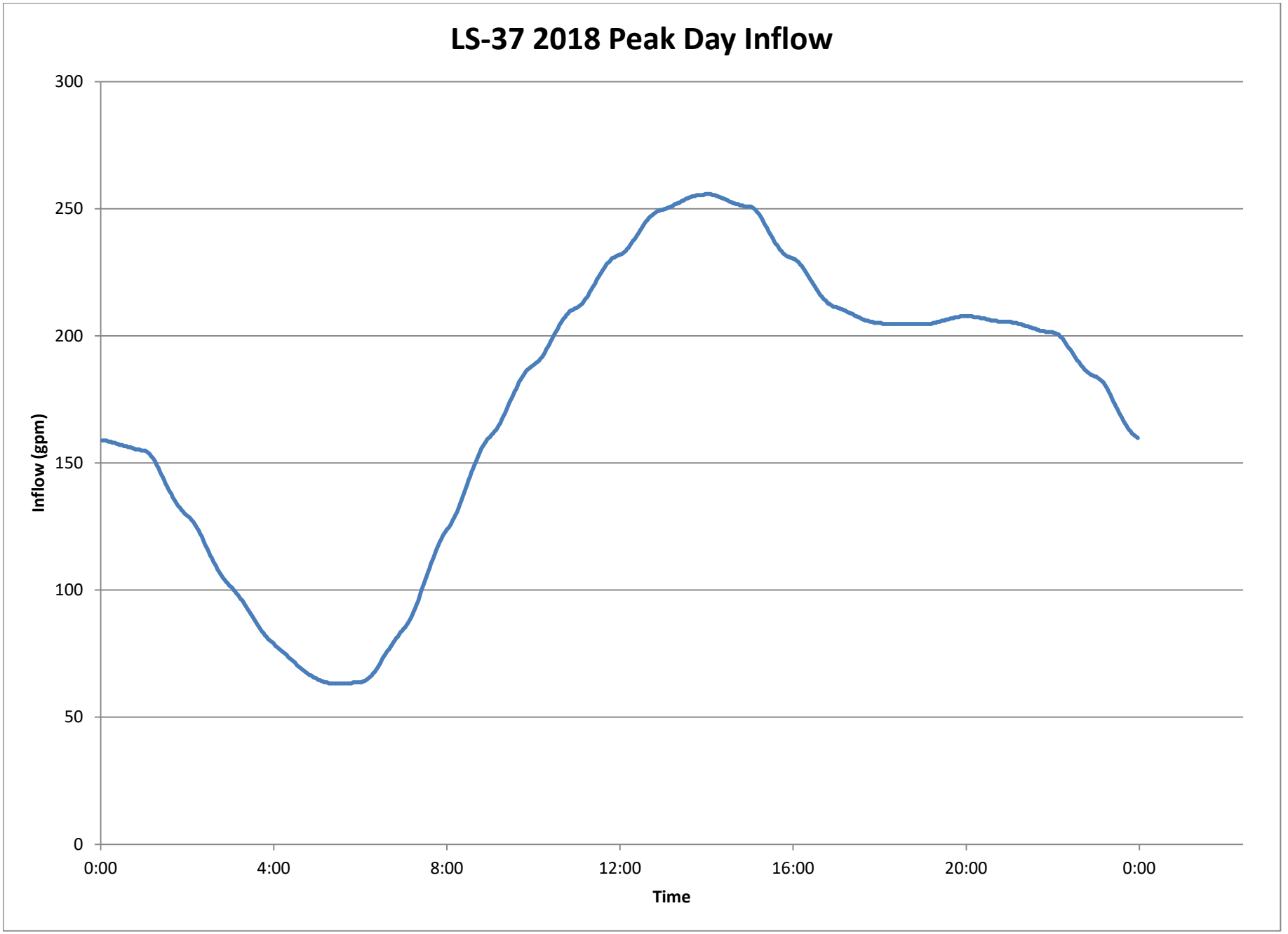

LS-31 2018 Peak Day Inflow
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

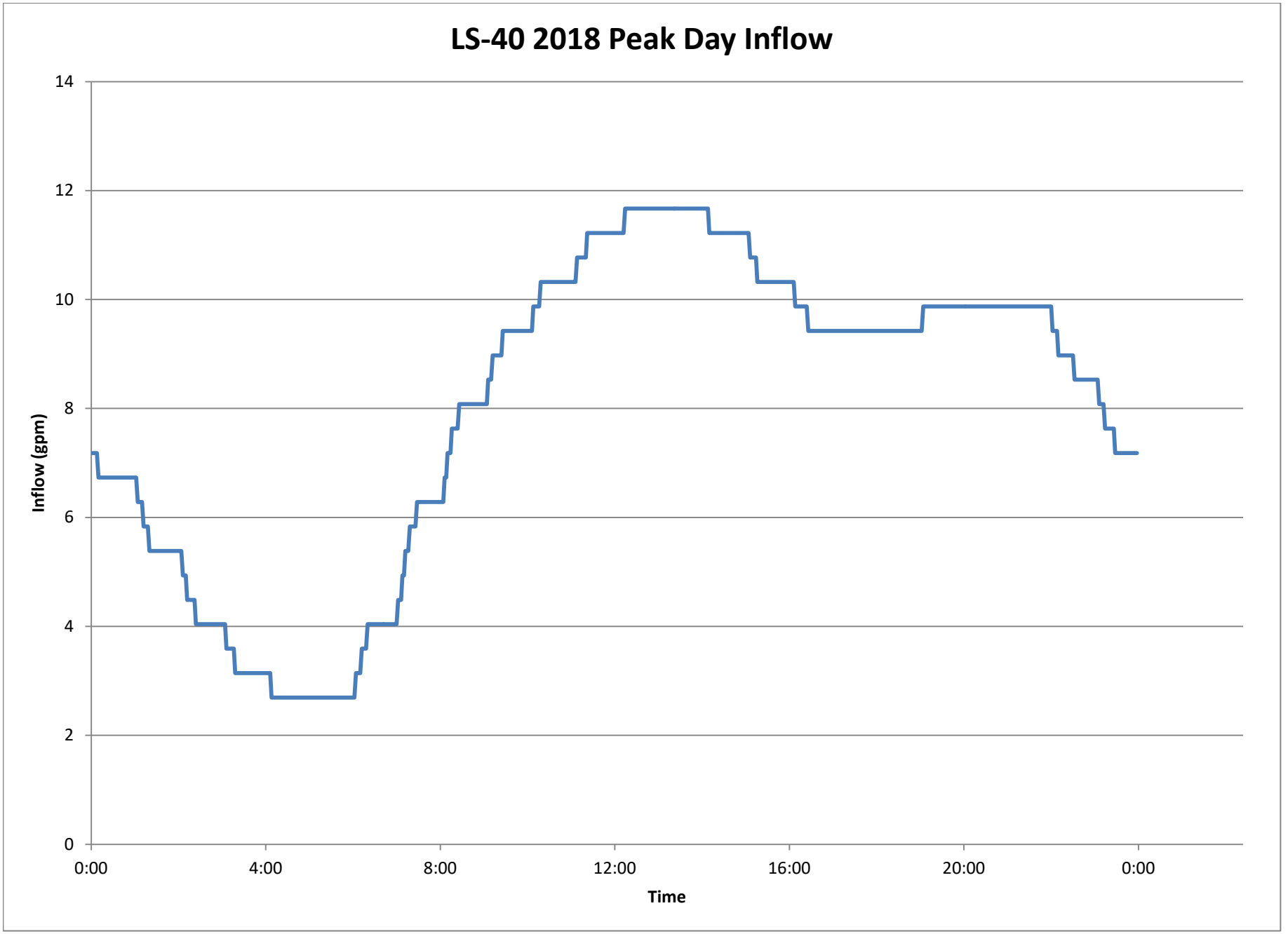

LS-32 2018 Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

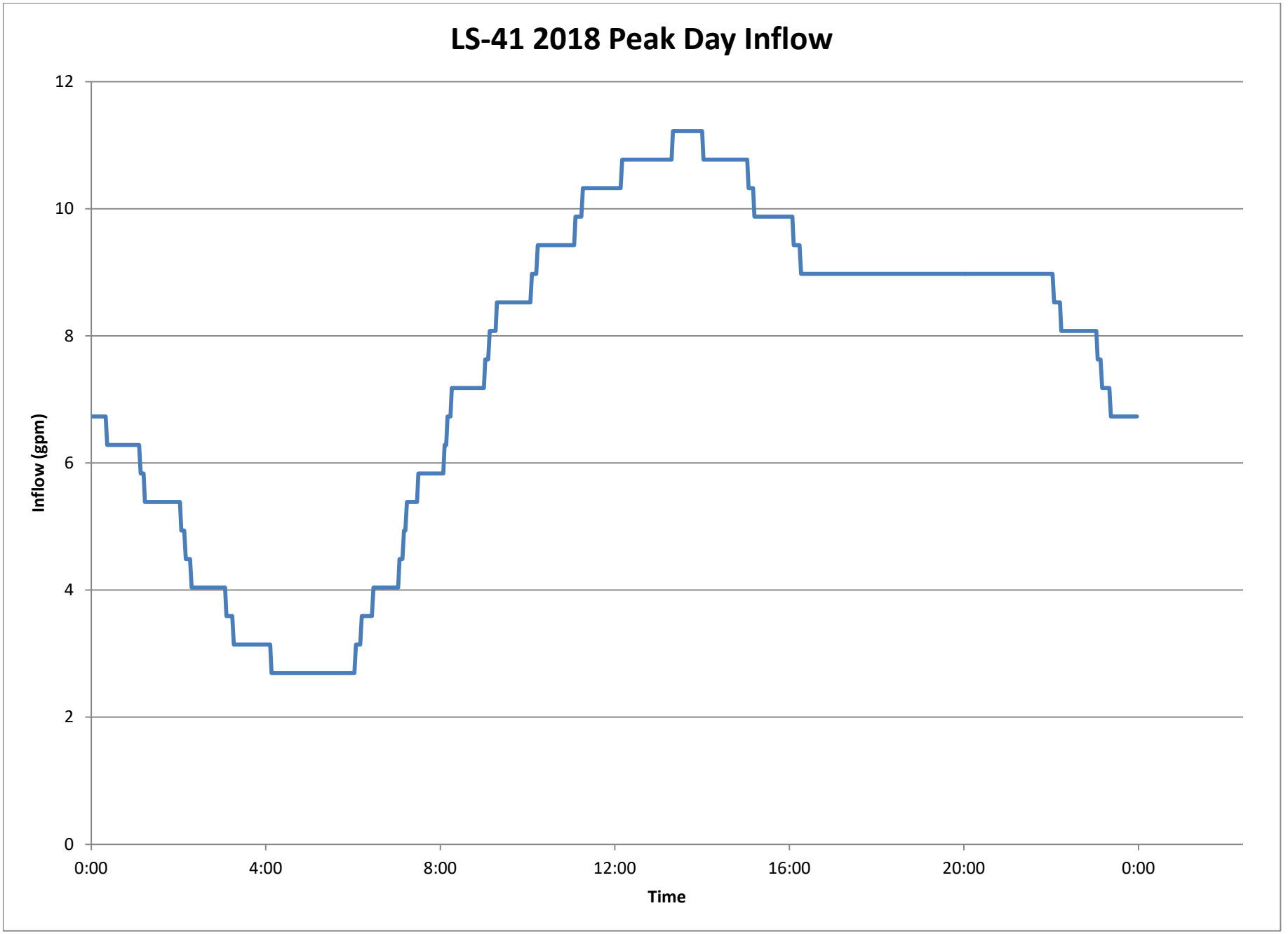

LS-33 2018 Peak Day Inflow
16
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

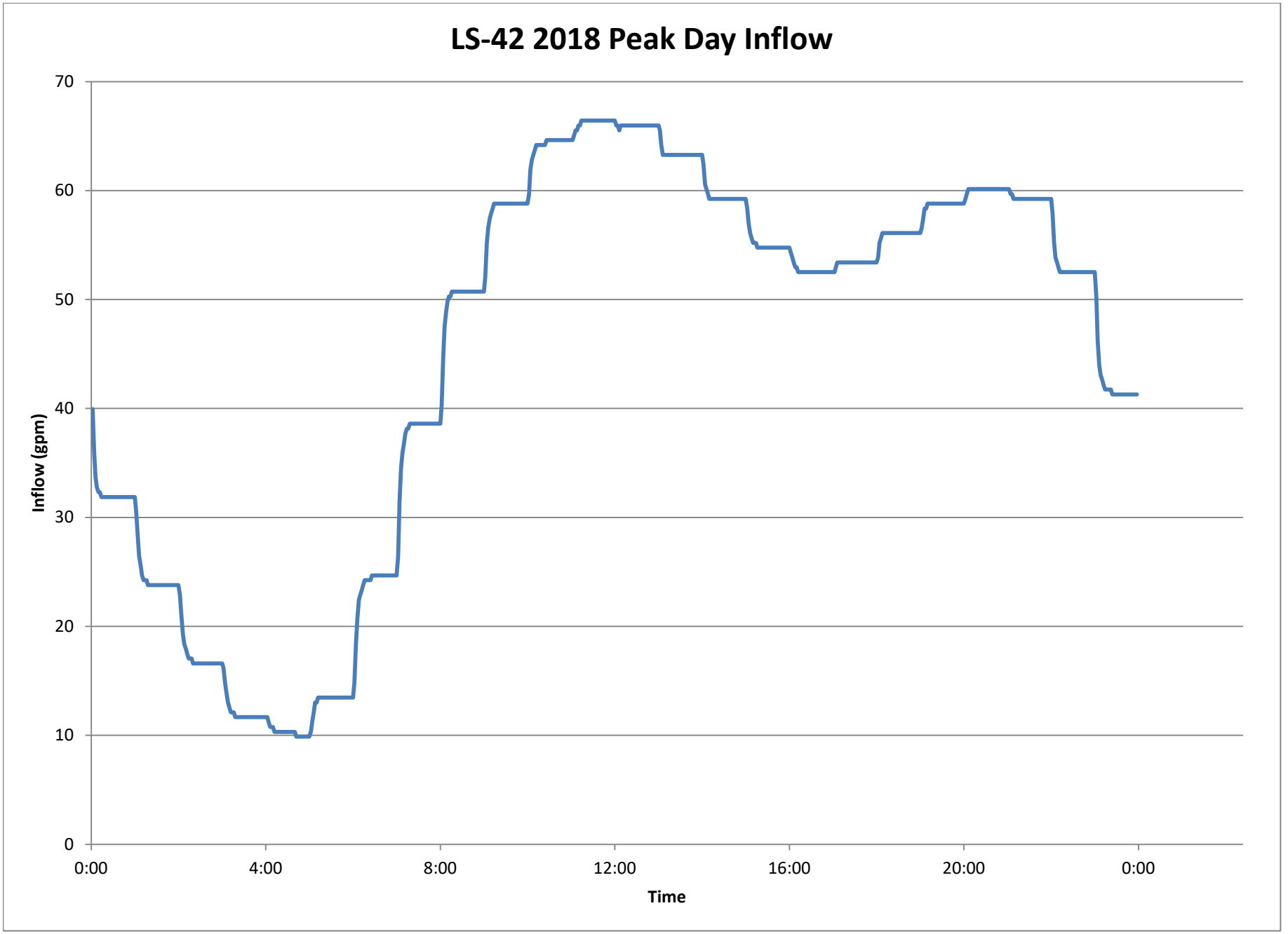

LS-34 2018 Peak Day Inflow
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

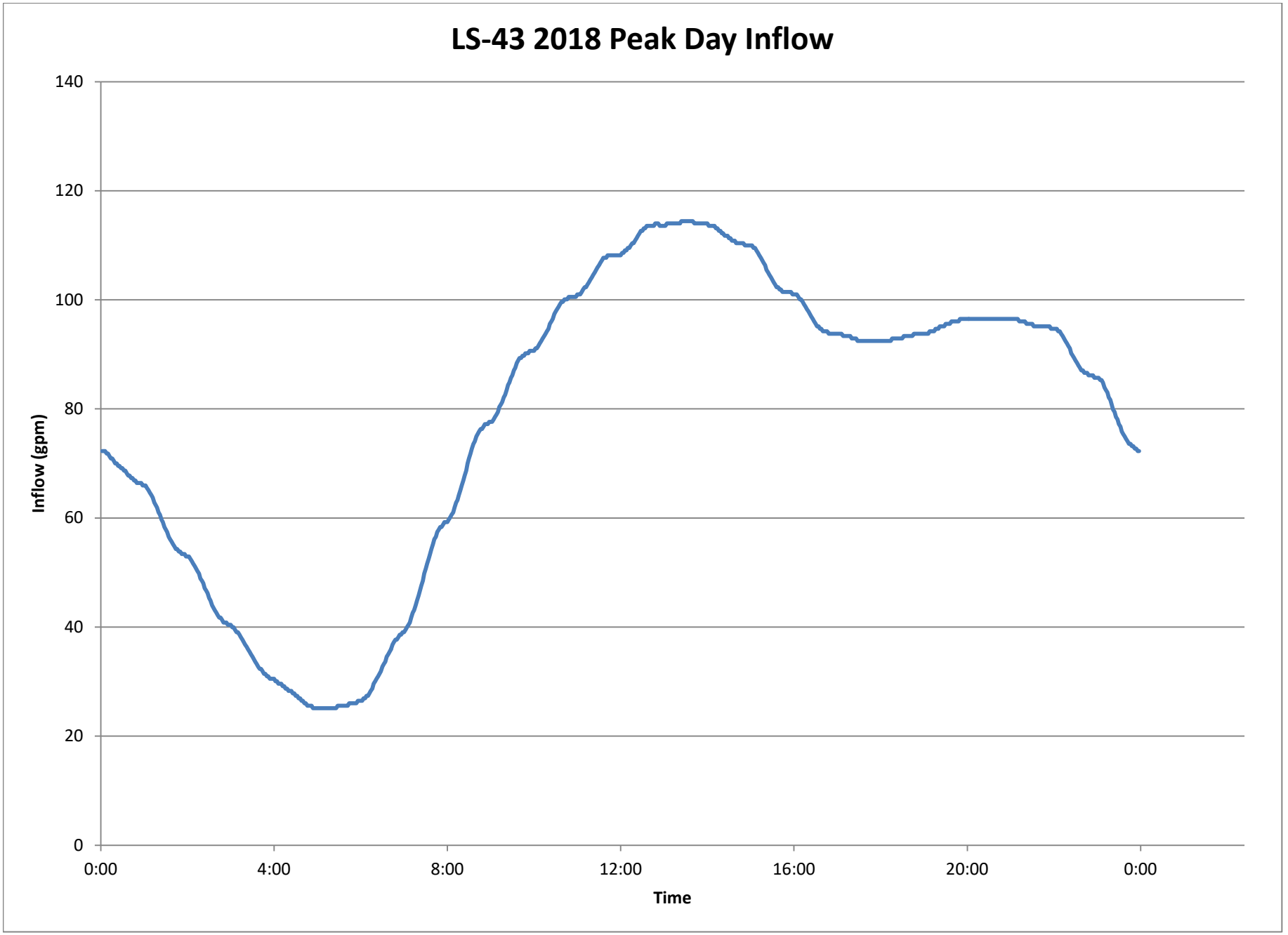

LS-35 2018 Peak Day Inflow
Inflow (gpm)
8
7
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

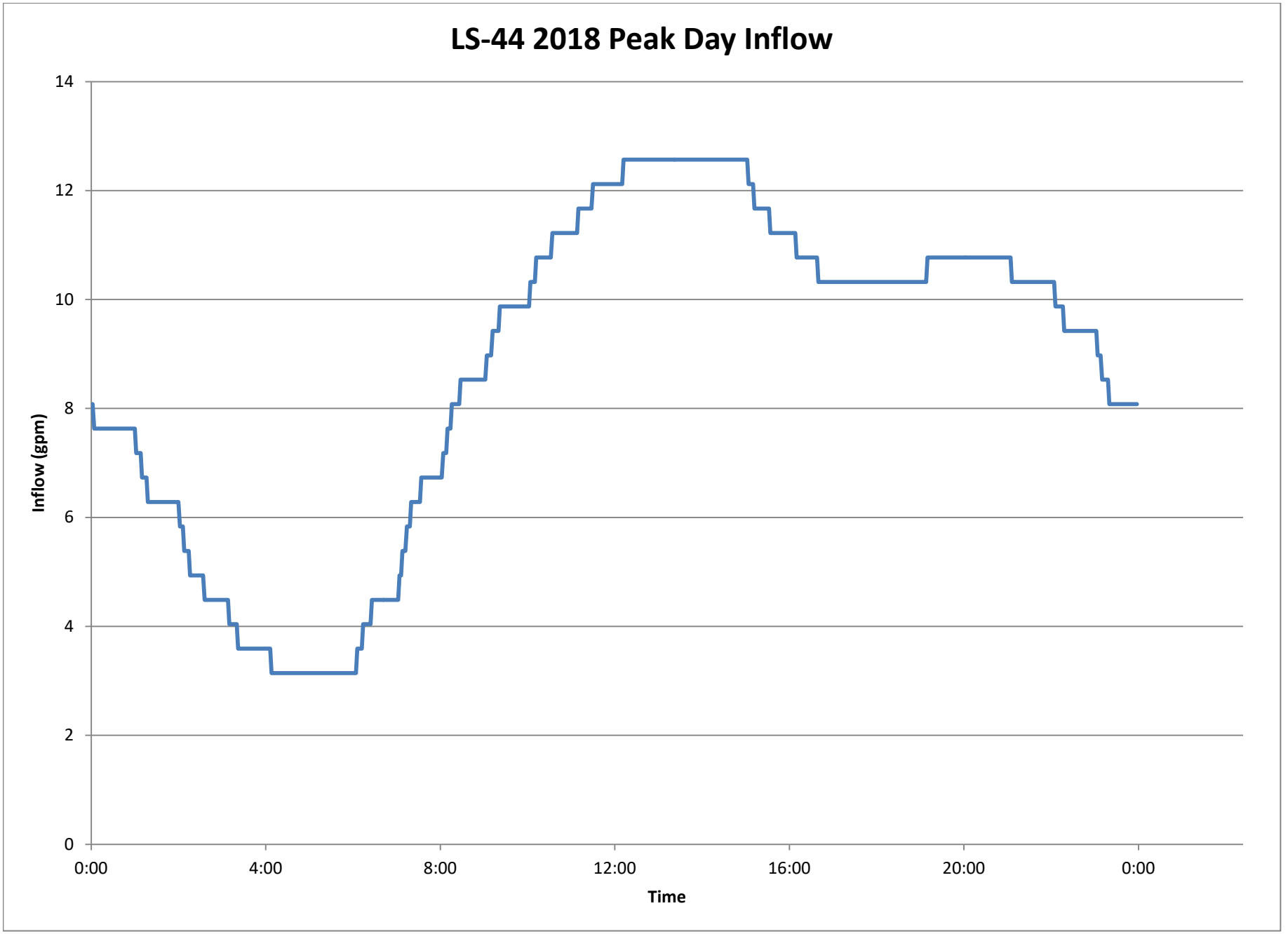

LS-37 2018 Peak Day Inflow
300
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

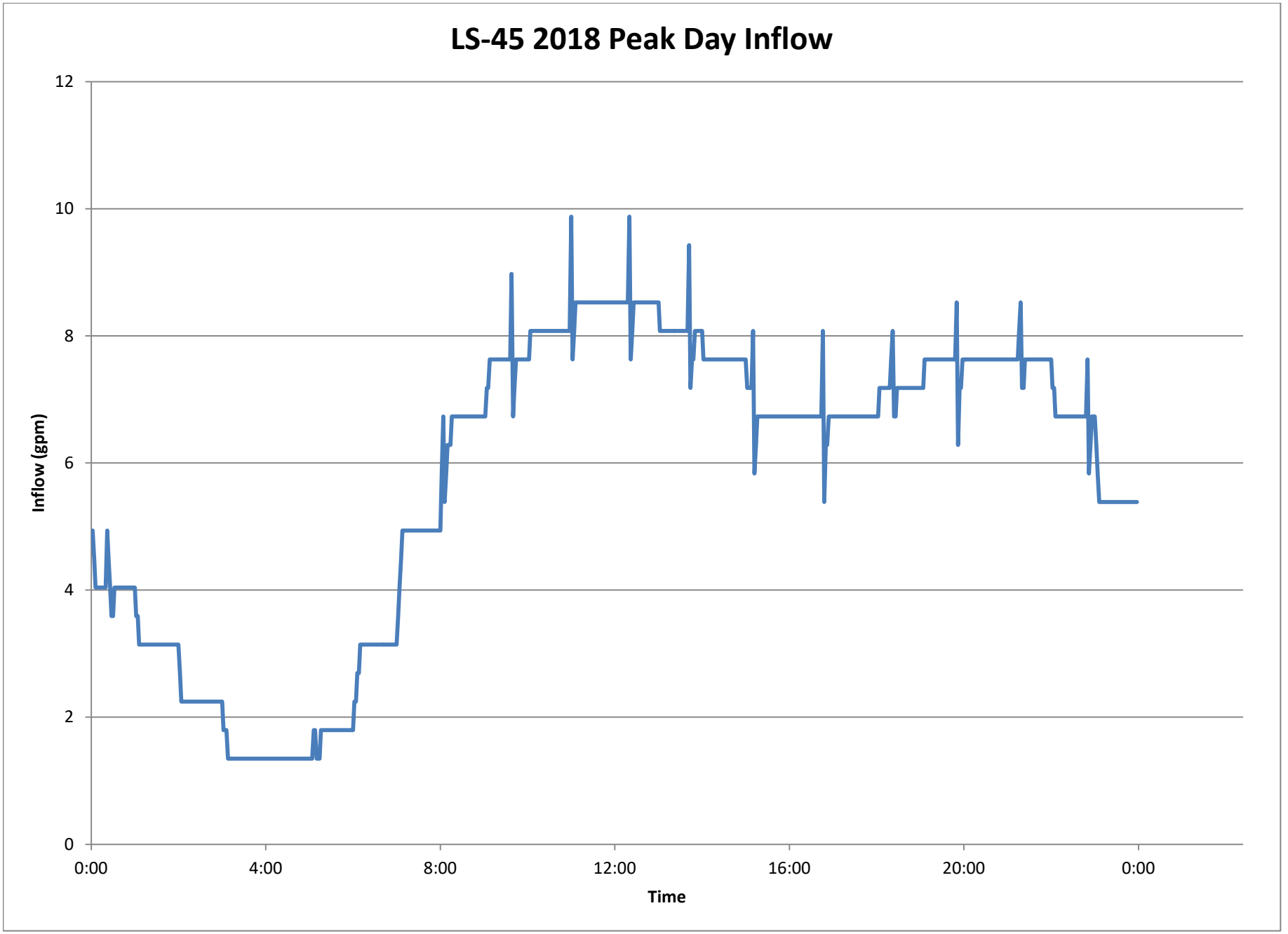

LS-40 2018 Peak Day Inflow
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

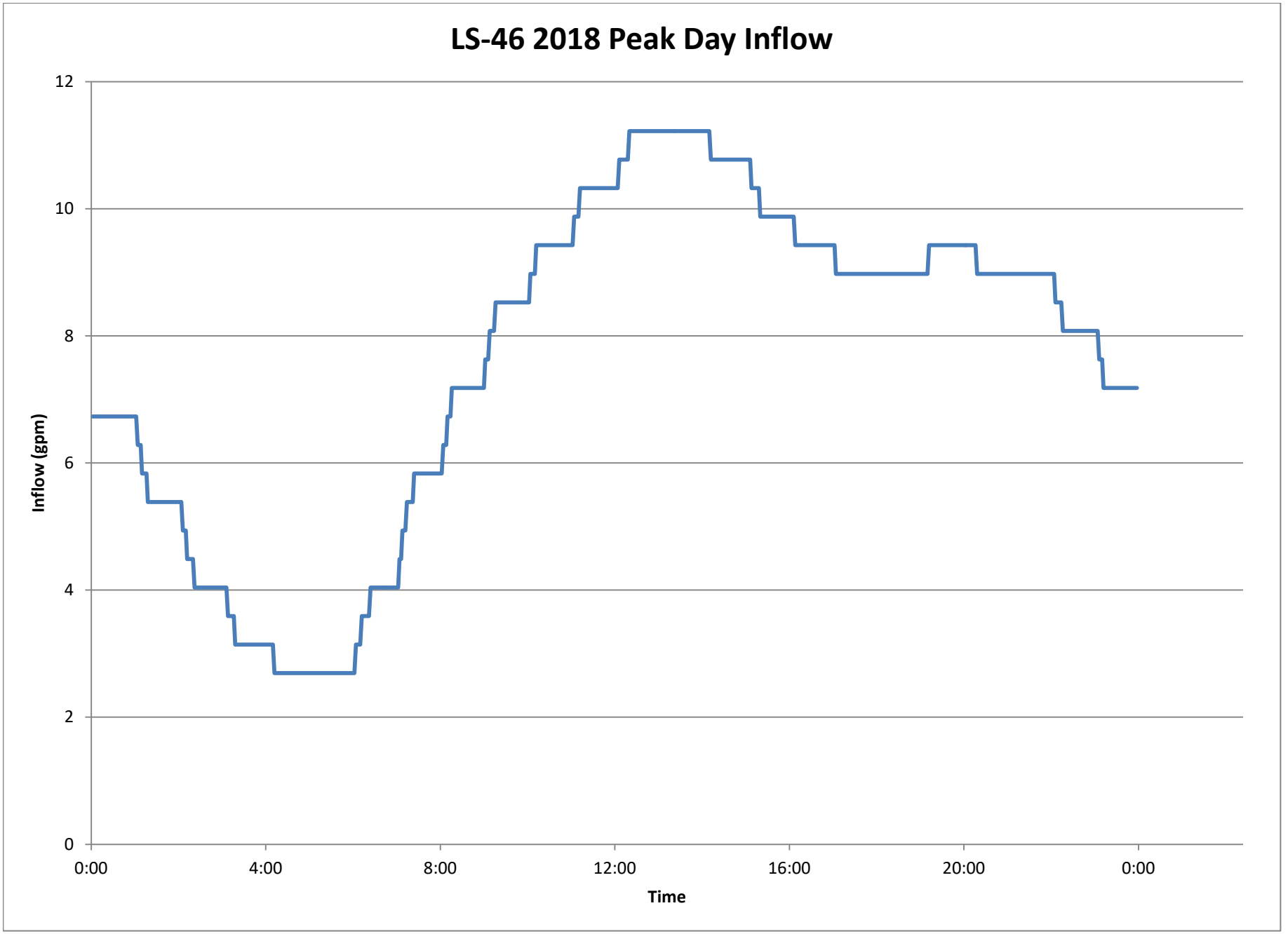

LS-41 2018 Peak Day Inflow
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

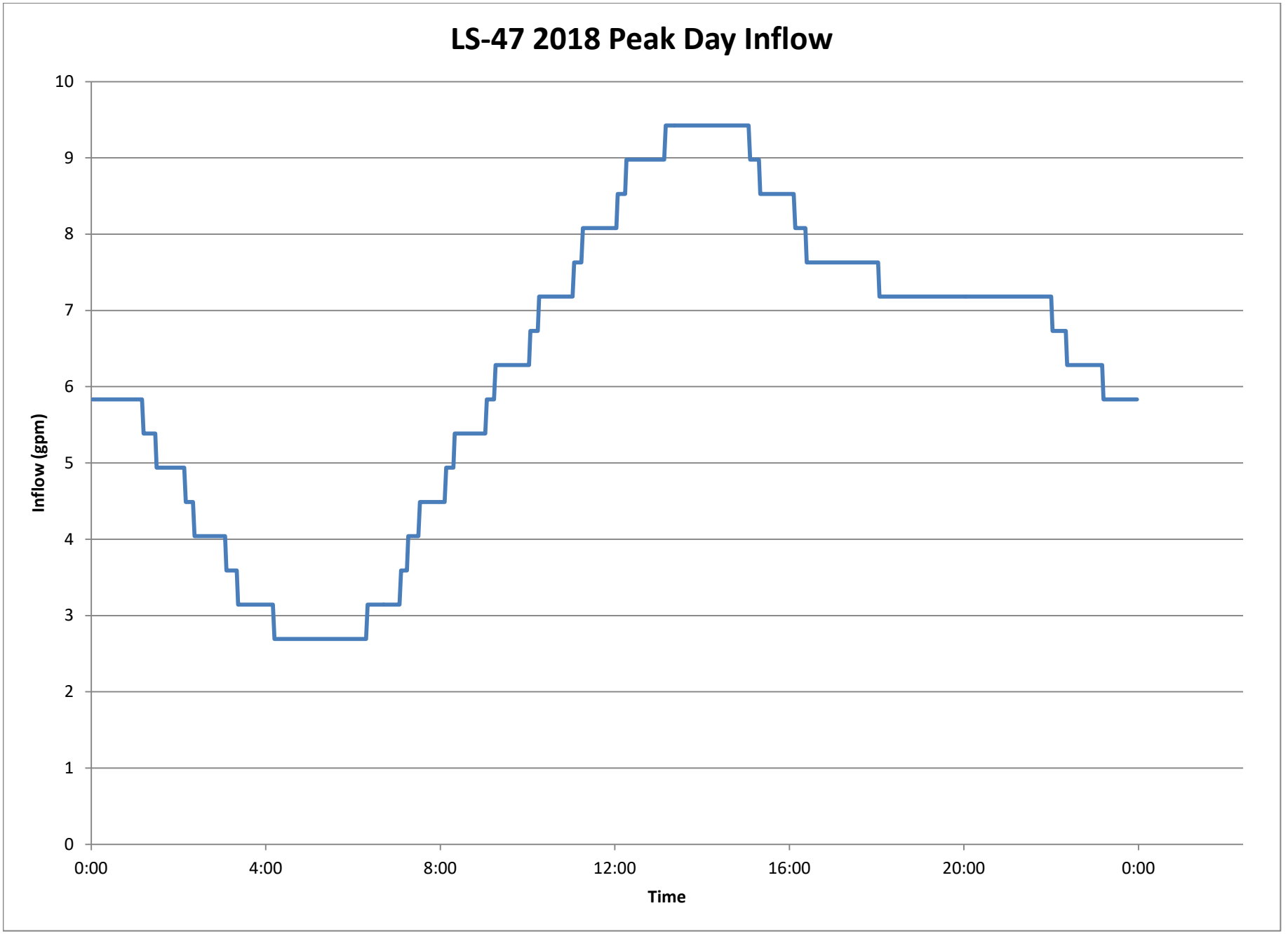

LS-42 2018 Peak Day Inflow
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

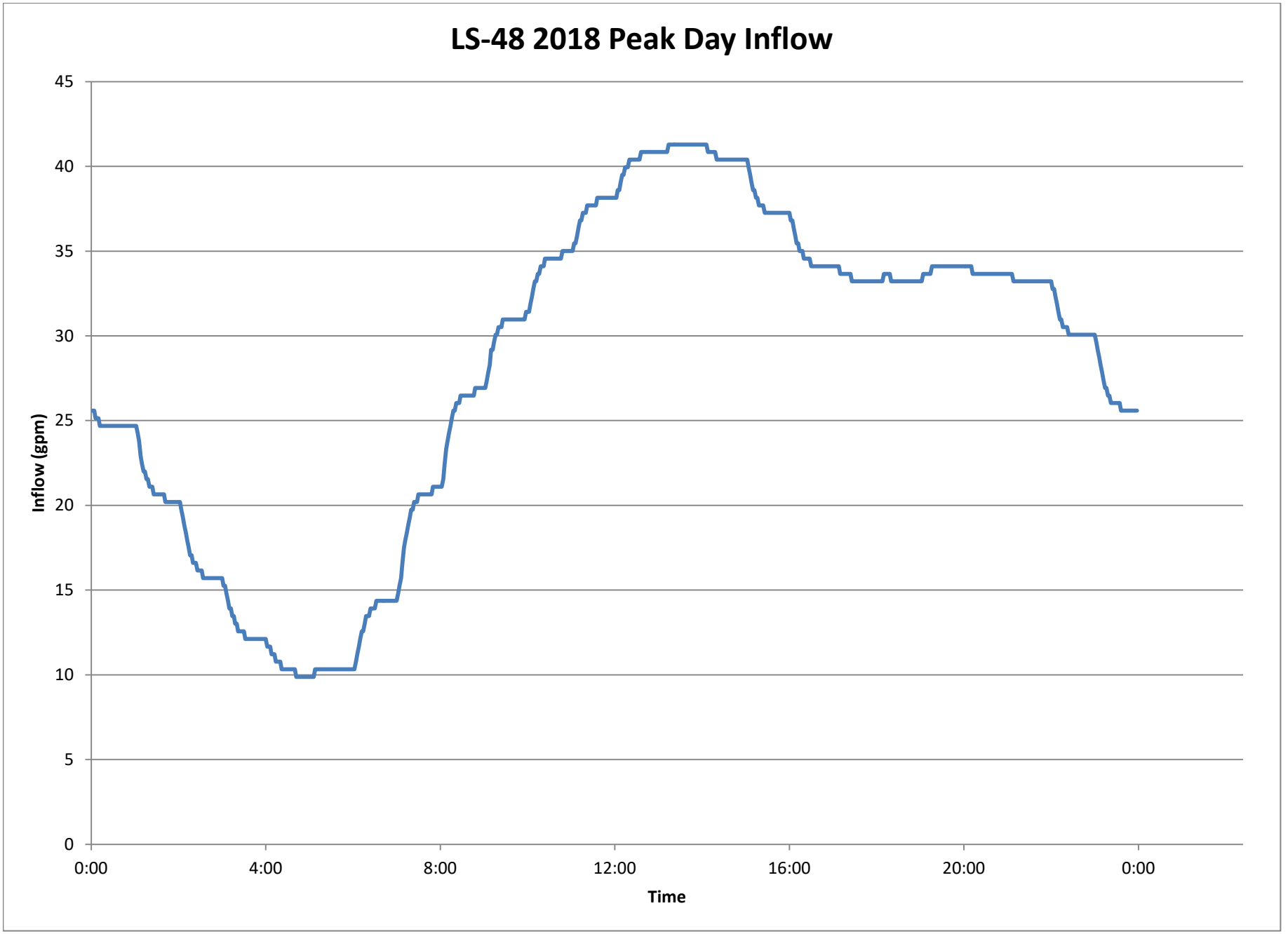

LS-43 2018 Peak Day Inflow
140
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

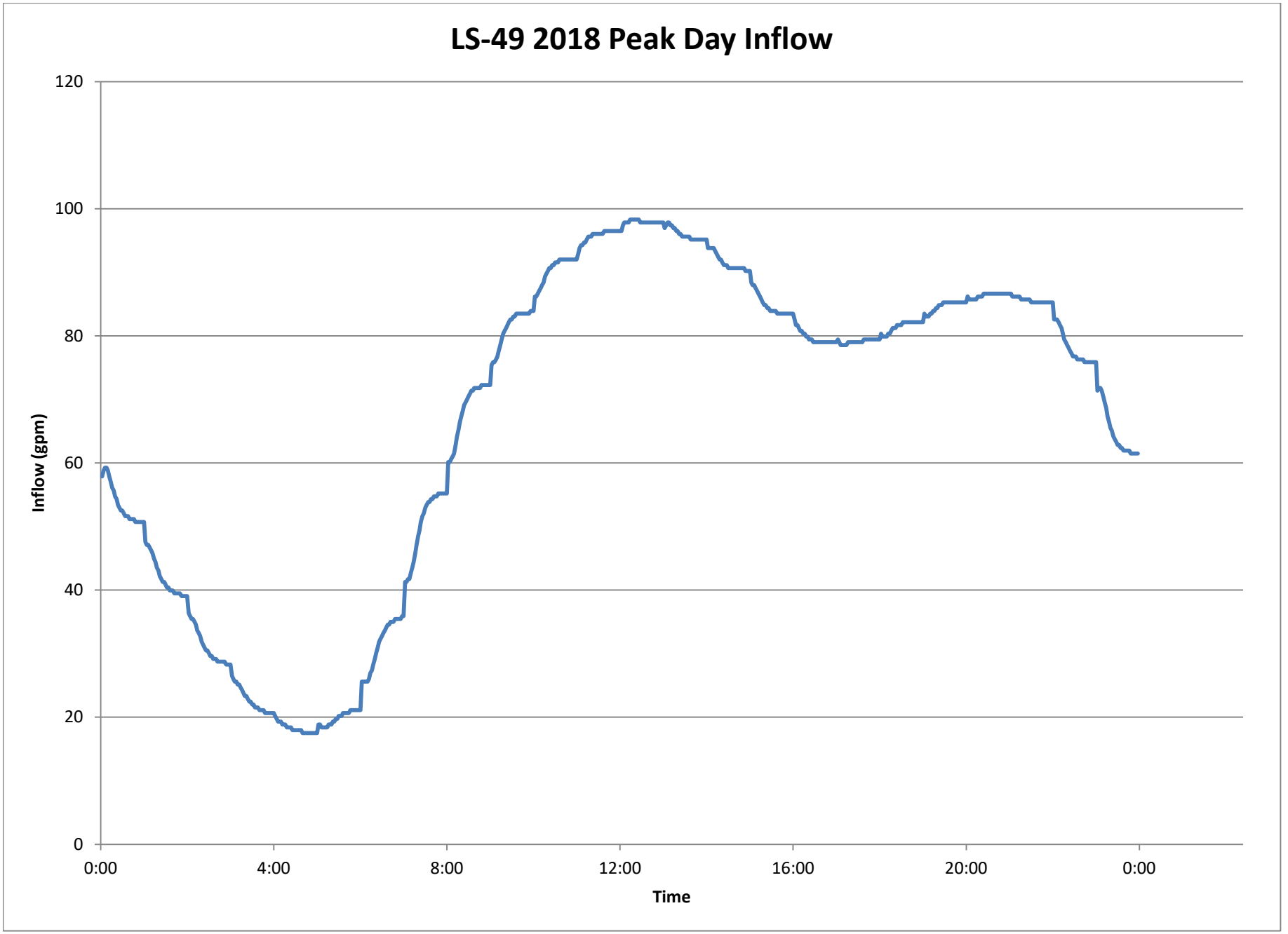

LS-44 2018 Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

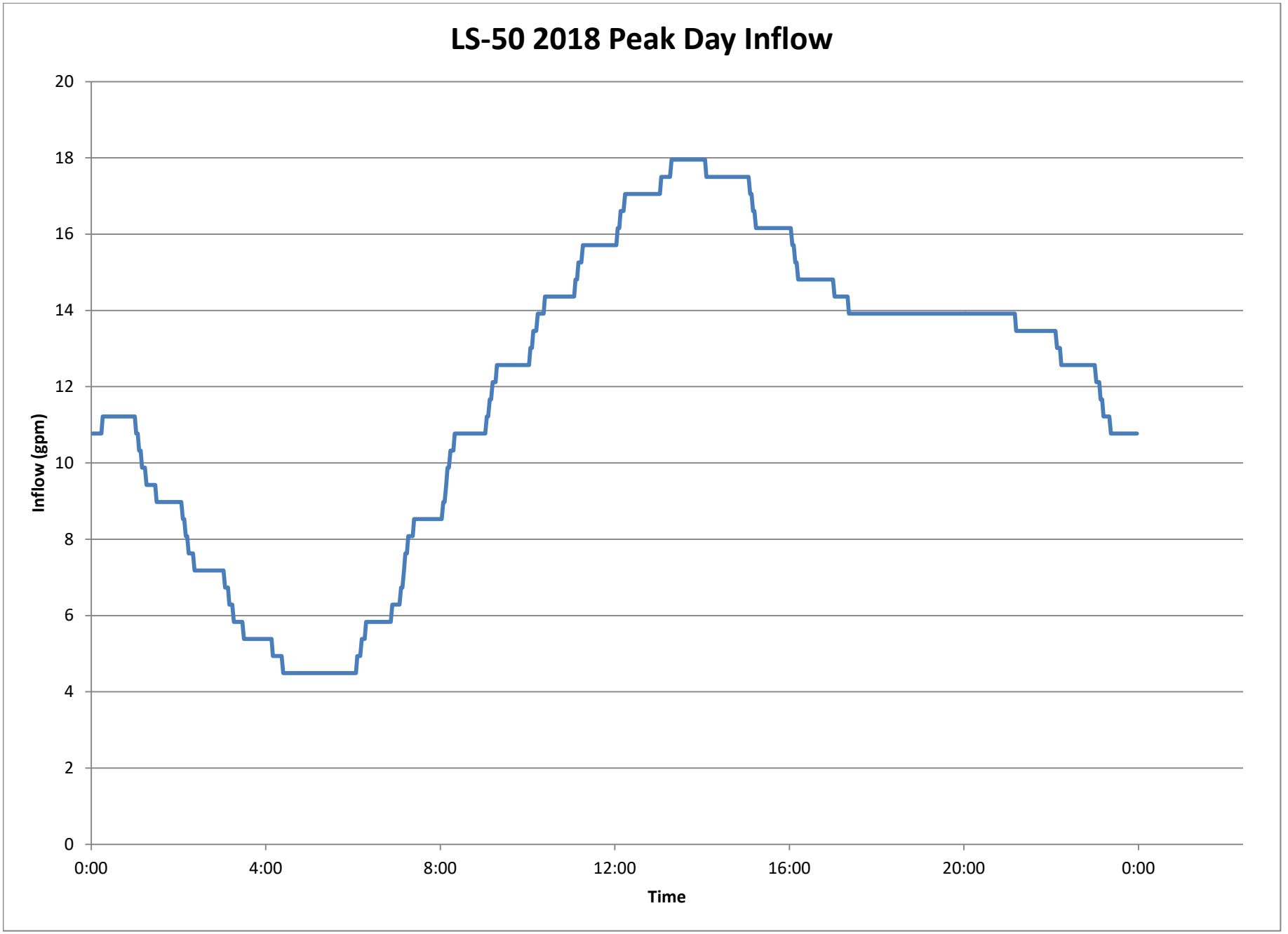

LS-45 2018 Peak Day Inflow
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

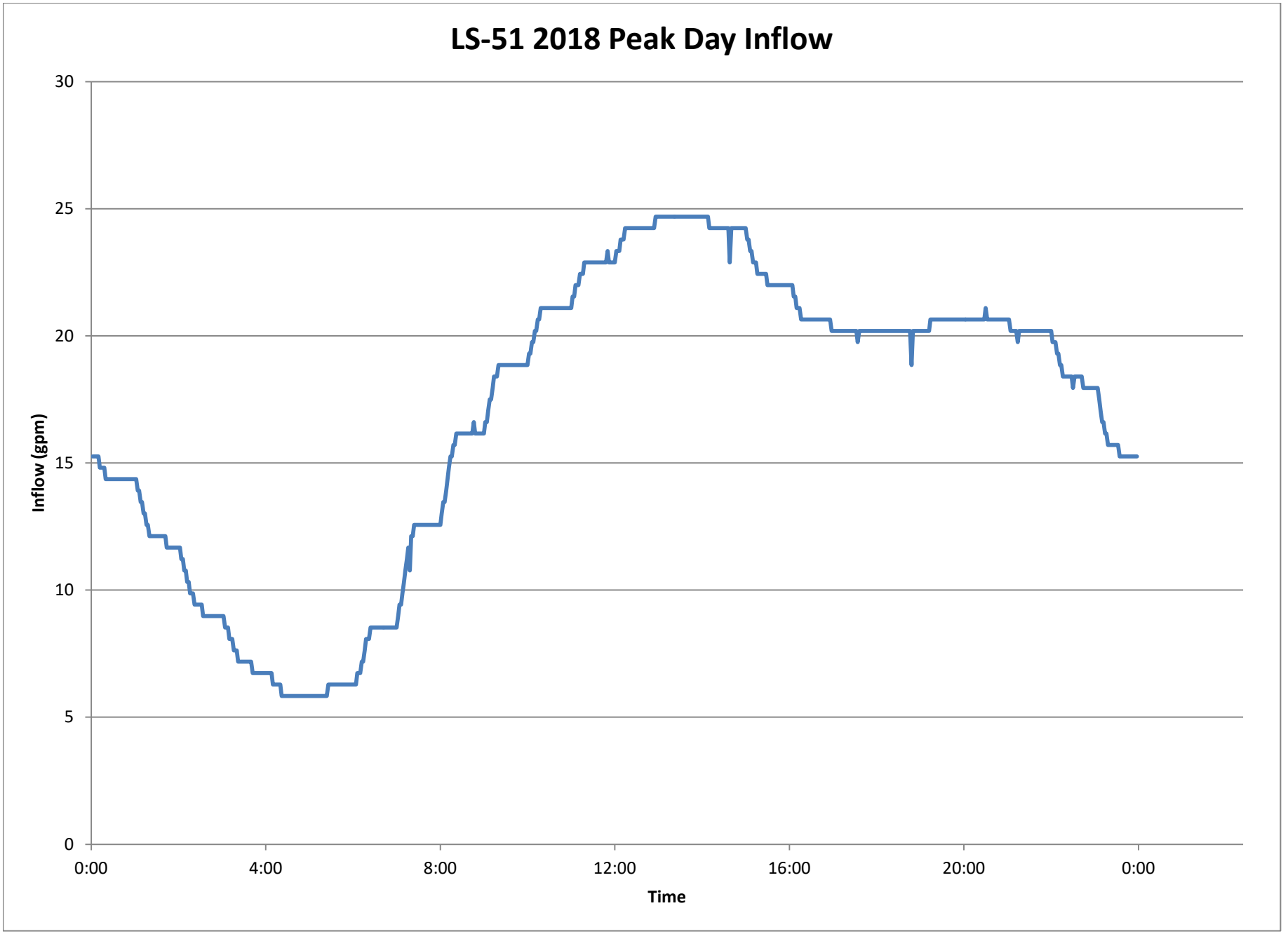

LS-46 2018 Peak Day Inflow
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

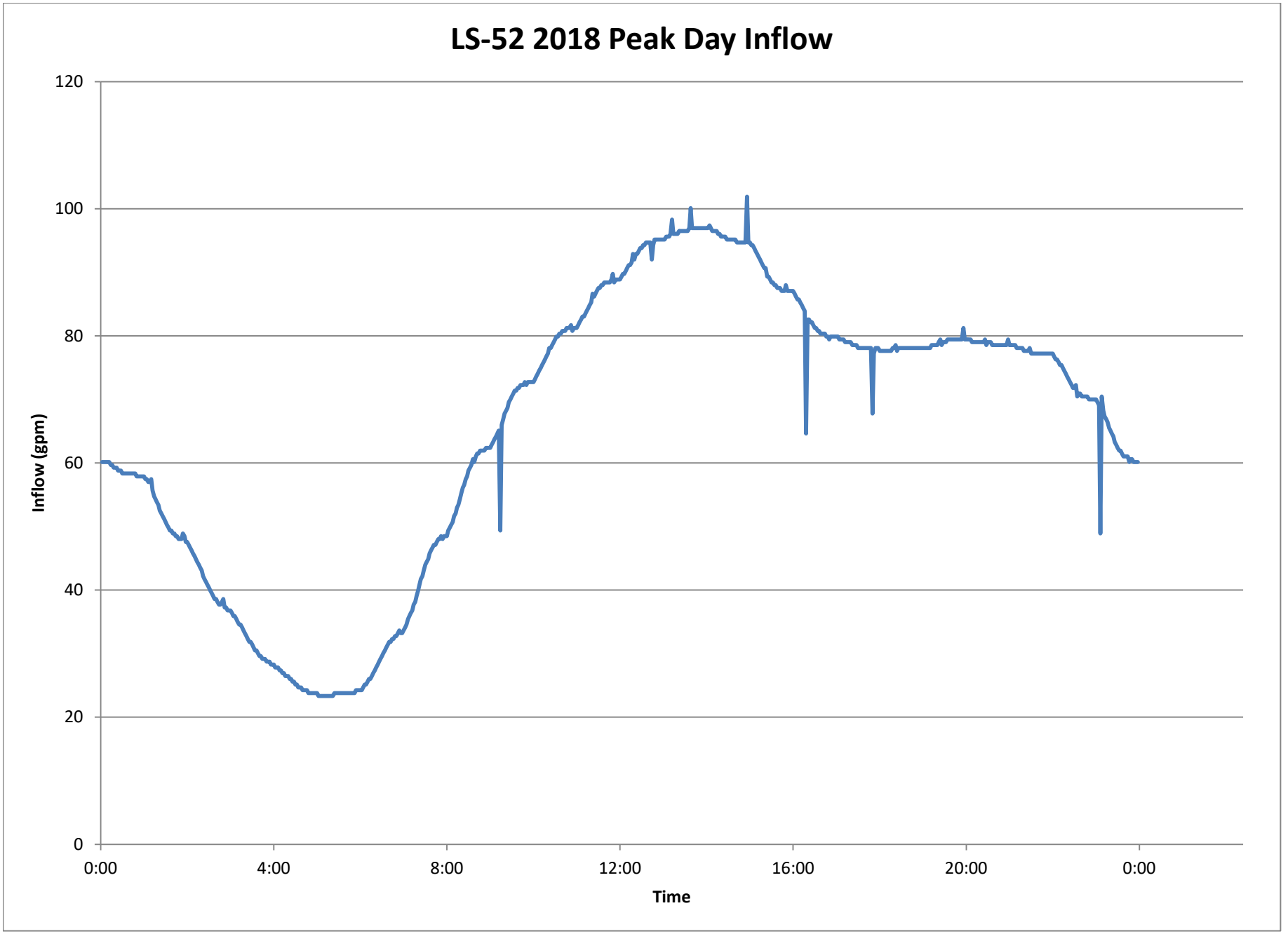

LS-47 2018 Peak Day Inflow
Inflow (gpm)
10
9
8
7
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

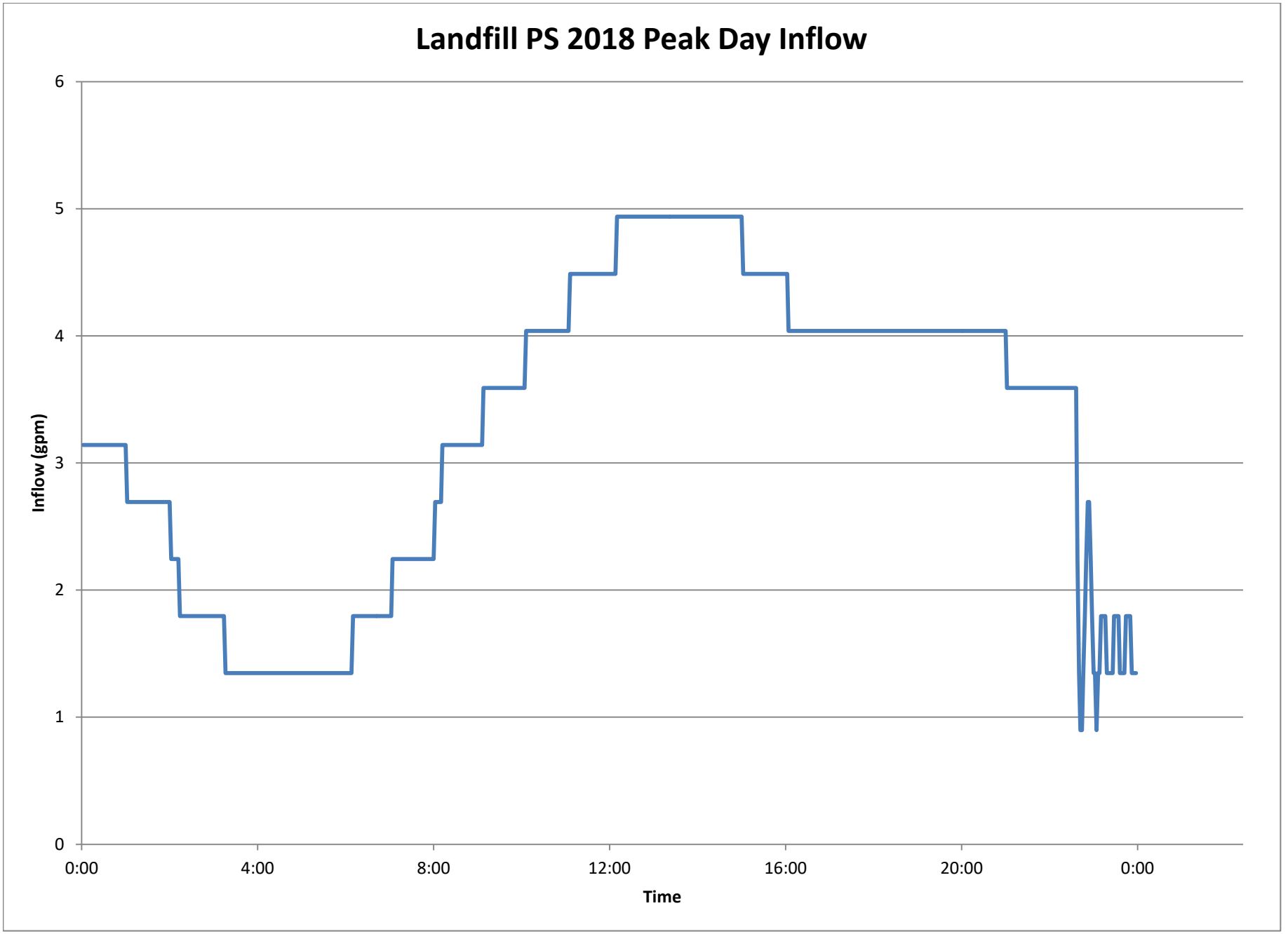

LS-48 2018 Peak Day Inflow
45
40
35
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

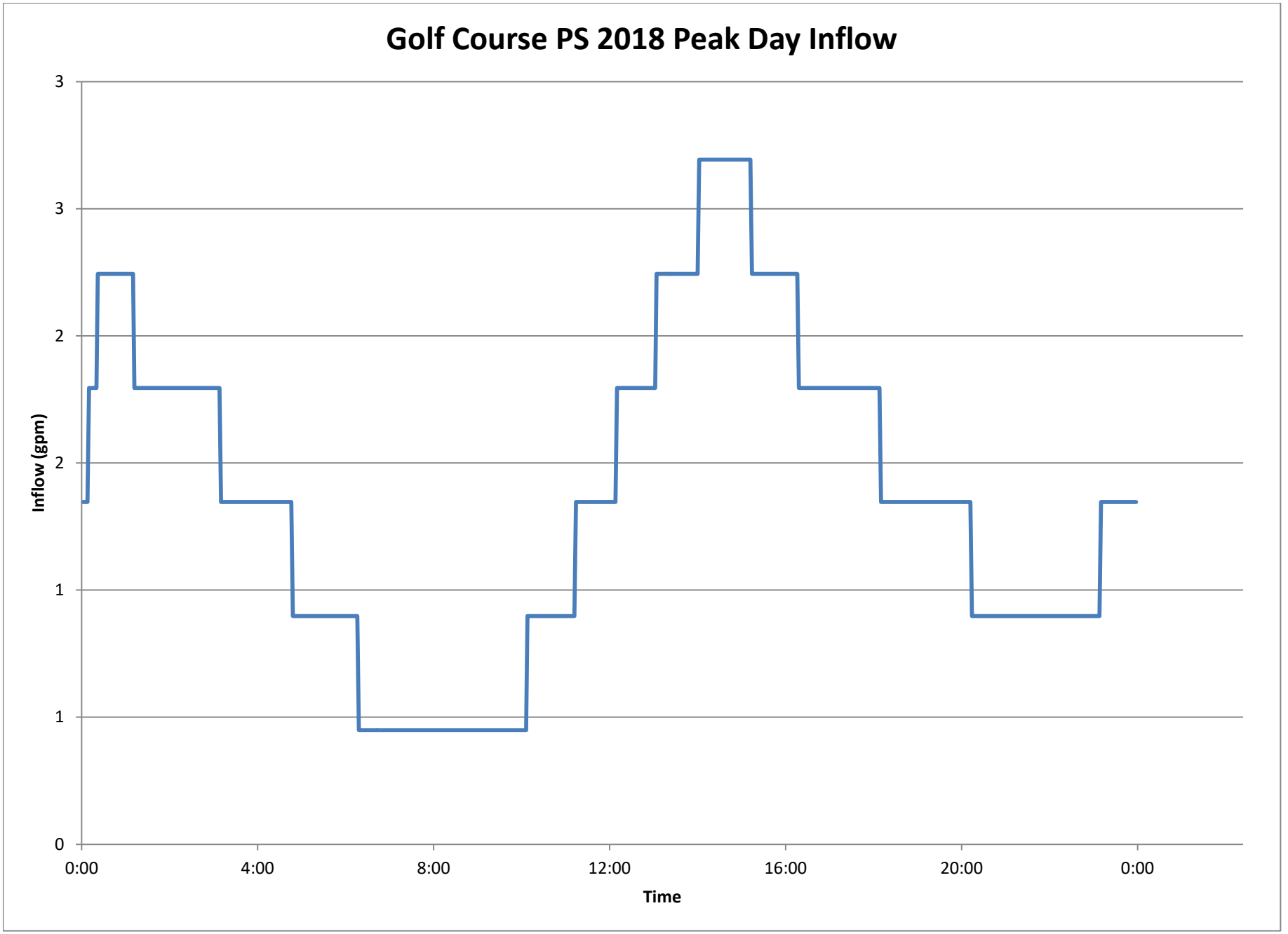

LS-49 2018 Peak Day Inflow
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

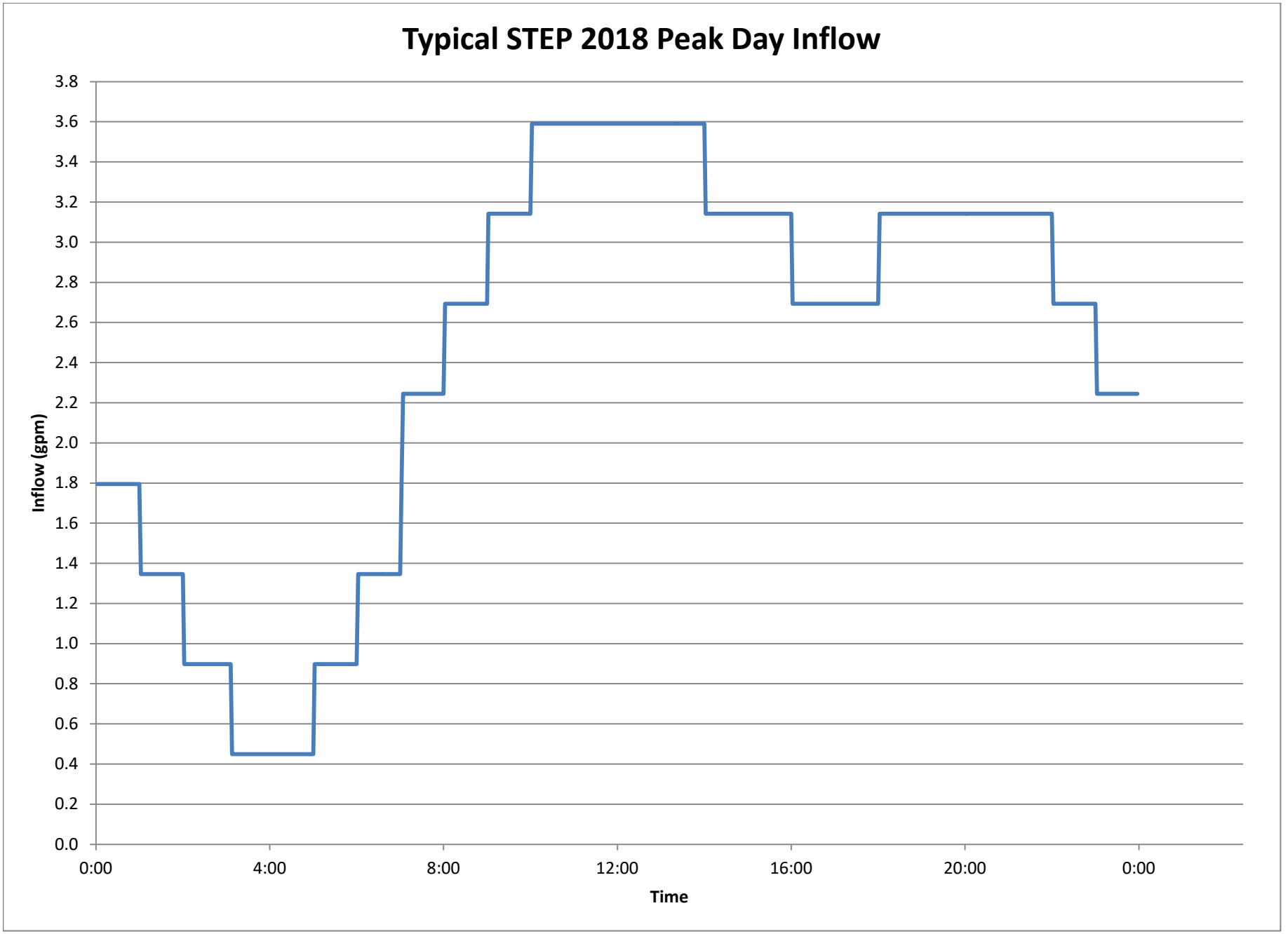

LS-50 2018 Peak Day Inflow
Inflow (gpm)
20
18
16
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

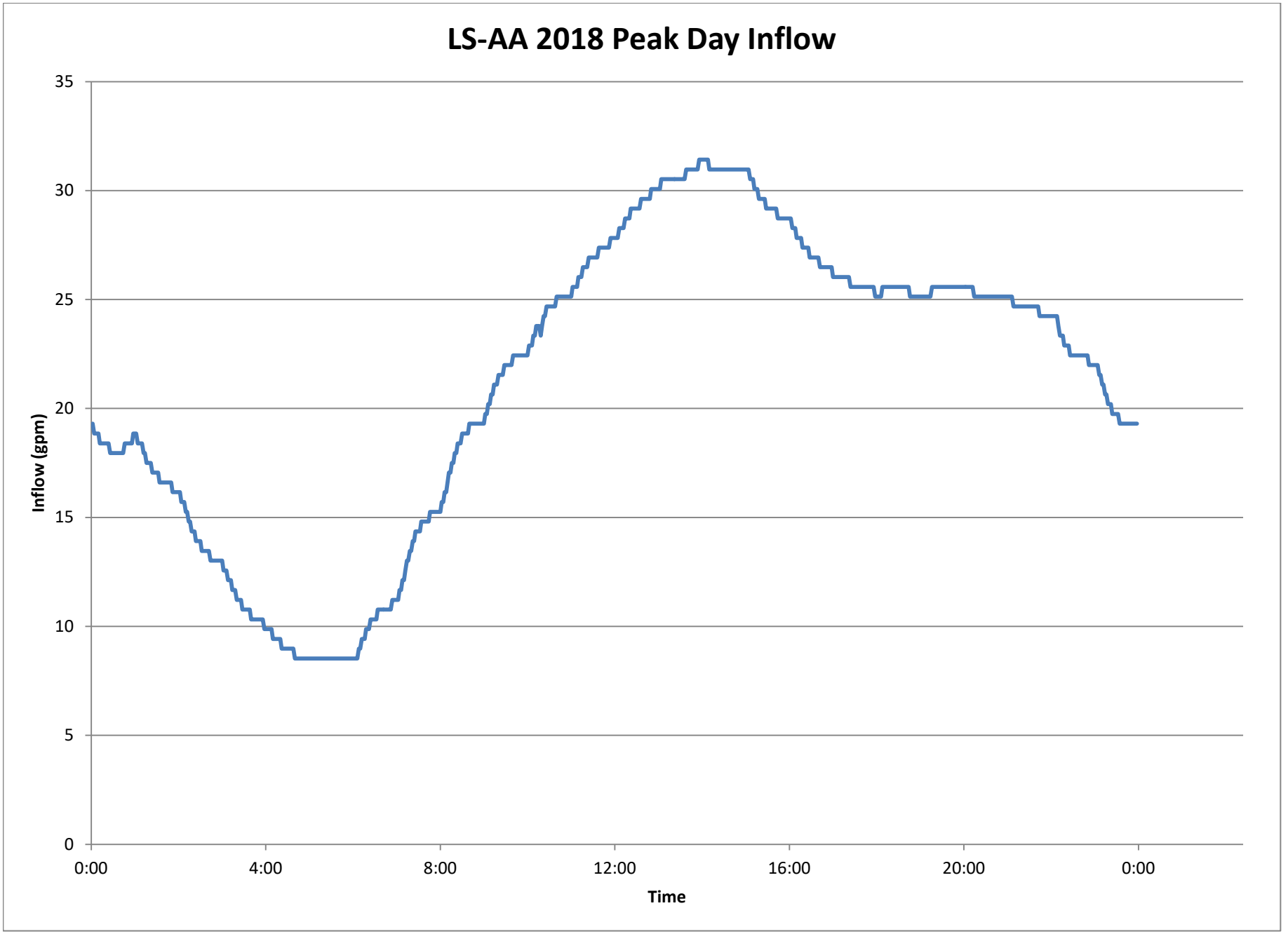

LS-51 2018 Peak Day Inflow
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

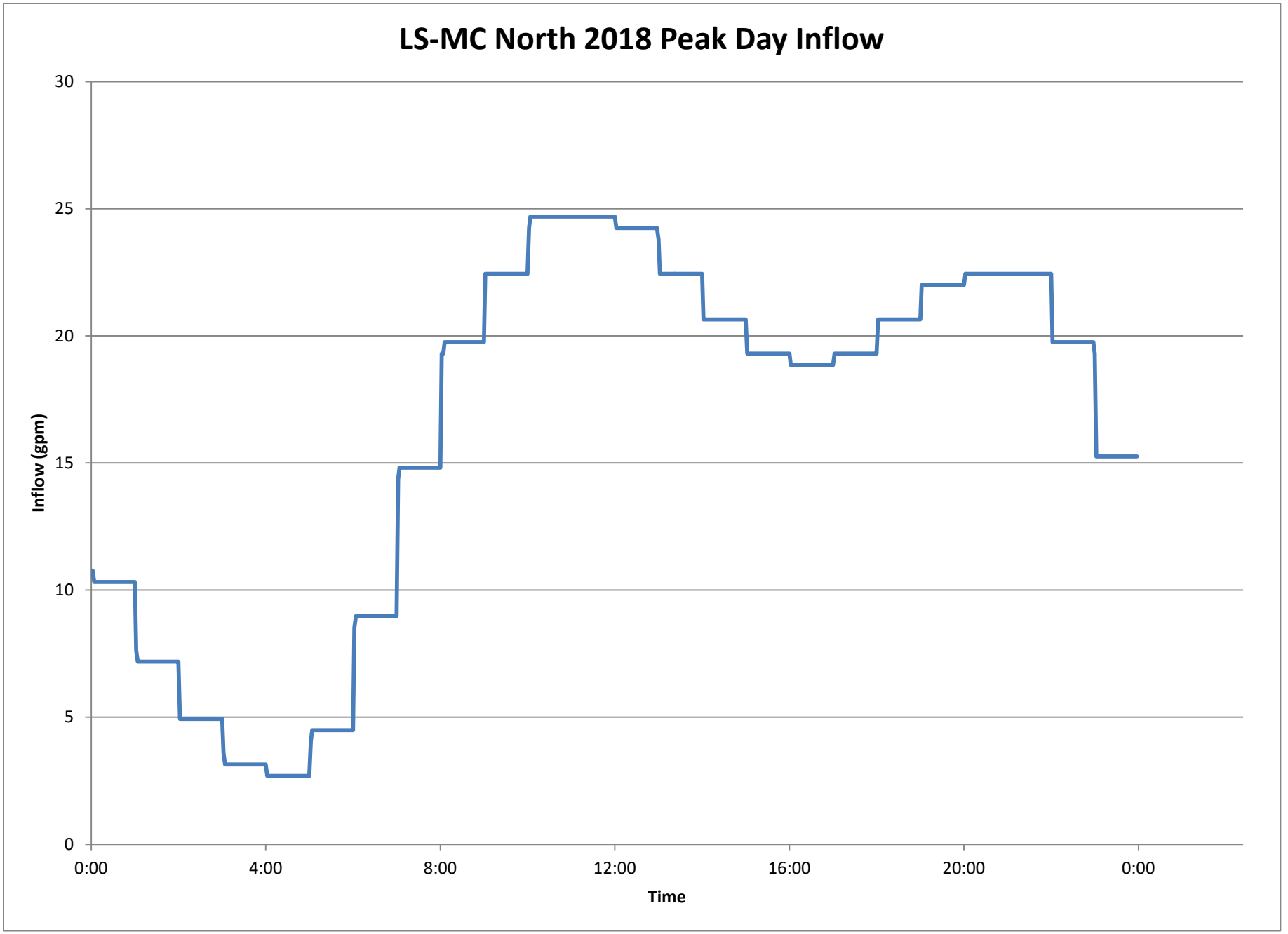

LS-52 2018 Peak Day Inflow
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Landfill PS 2018 Peak Day Inflow
Inflow (gpm)
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Golf Course PS 2018 Peak Day Inflow
Inflow (gpm)
3
3
2
2
1
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Typical STEP 2018 Peak Day Inflow
Inflow (gpm)
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

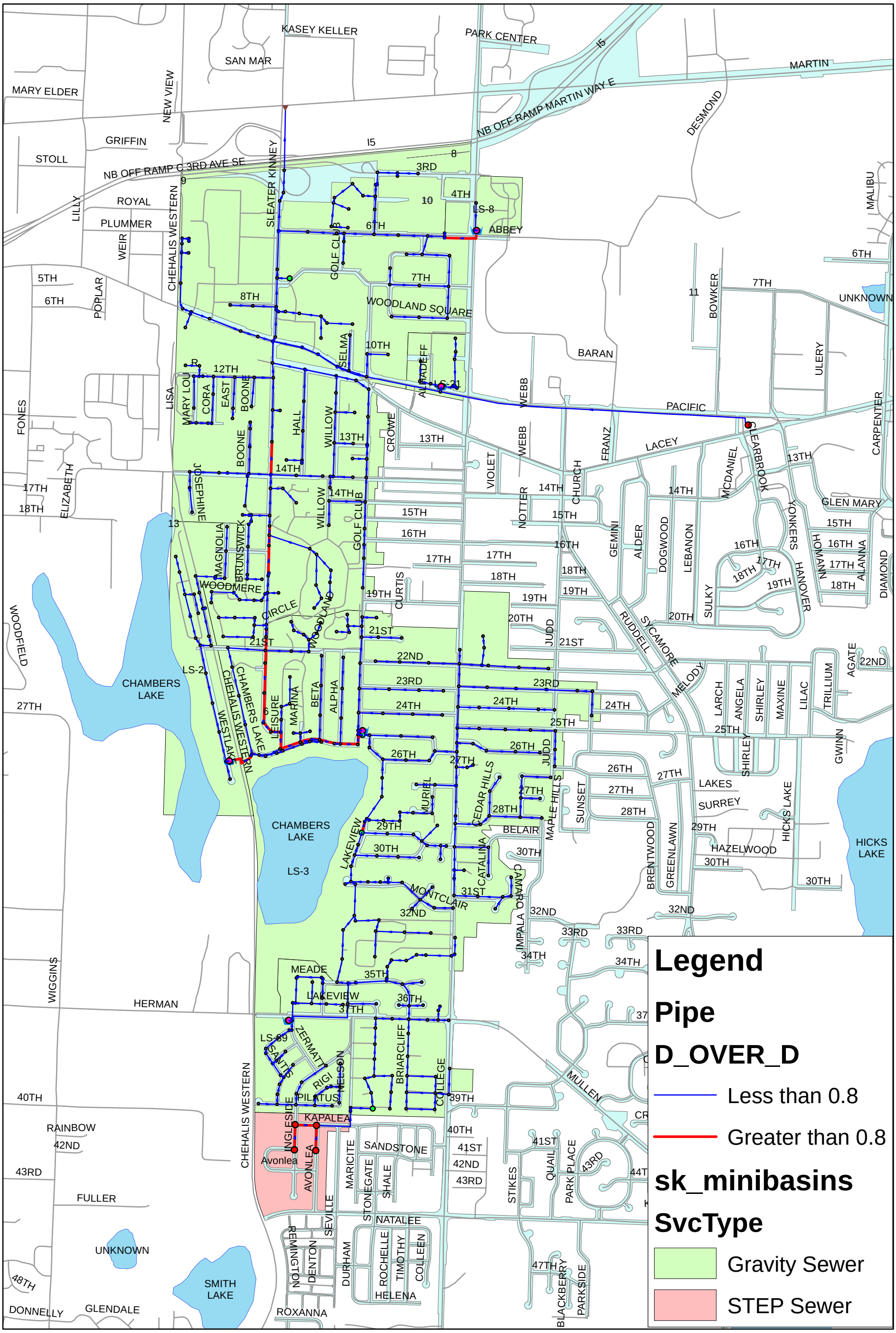

LS-AA 2018 Peak Day Inflow
35
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-MC North 2018 Peak Day Inflow
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

2018 MODEL RESULTS

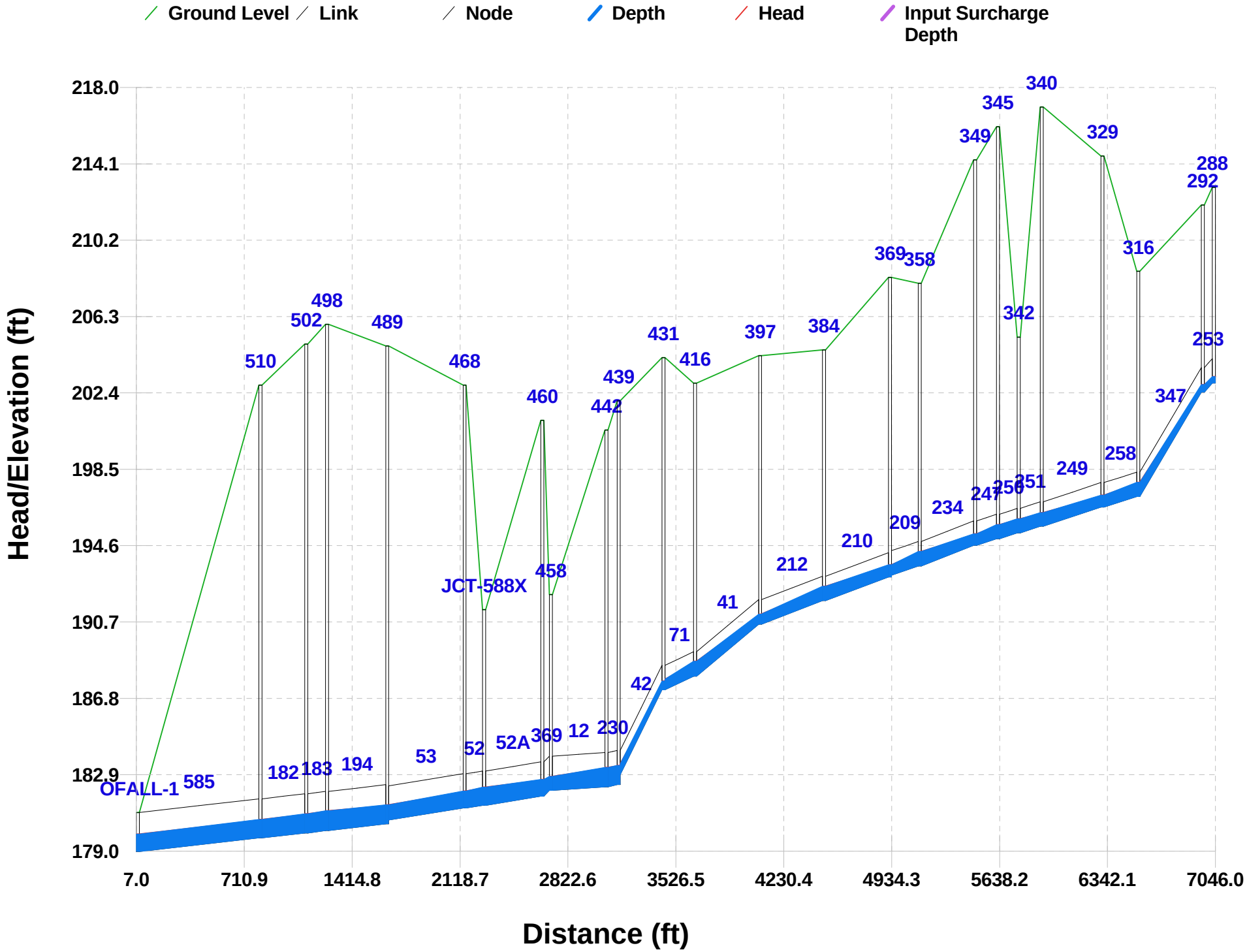
SLEATER KINNEY BASIN

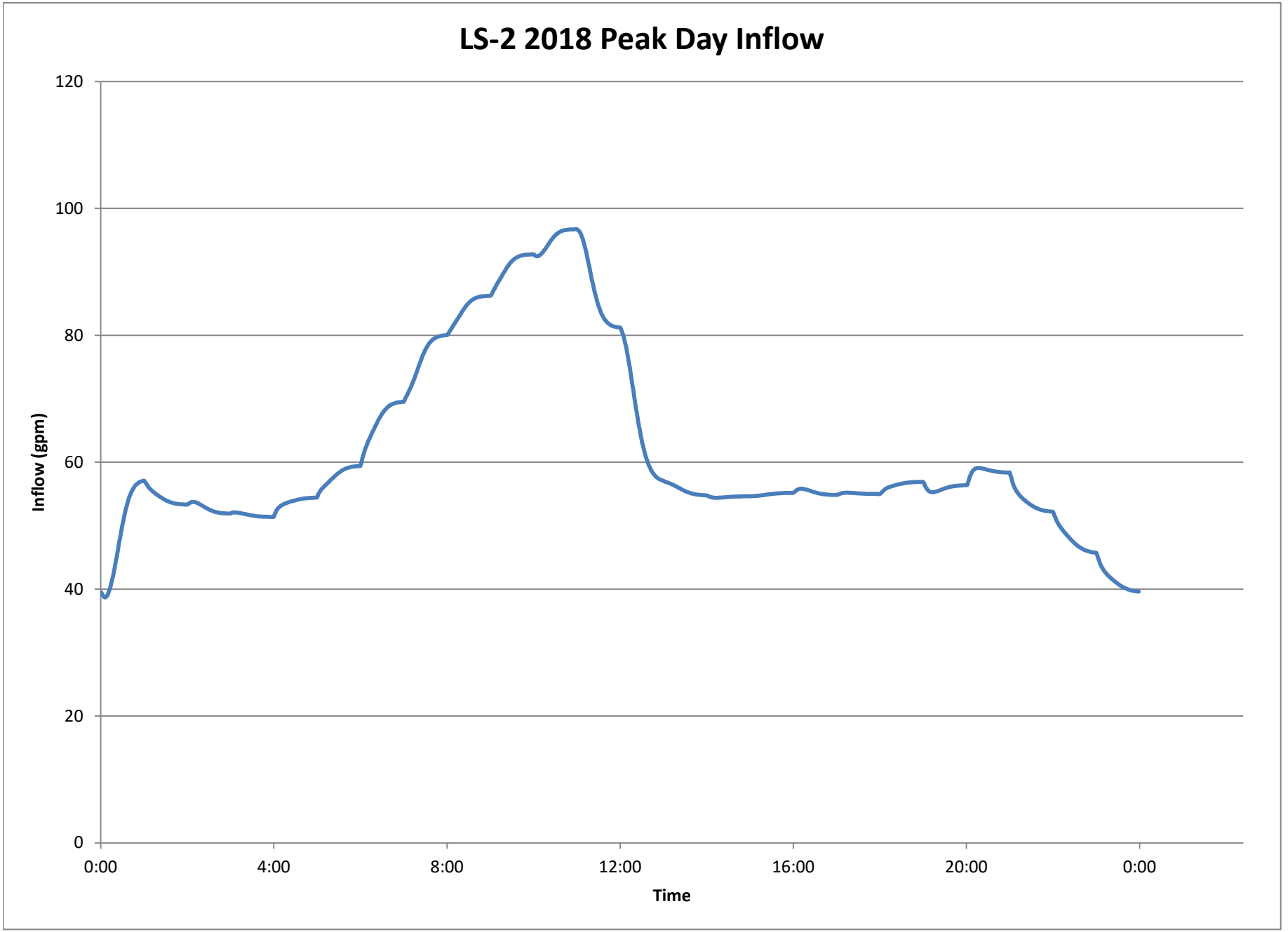
Lacey - Sleater Kinney Collection System Model
2018 Peak Day Surcharging
d/D Criteria = 0.80

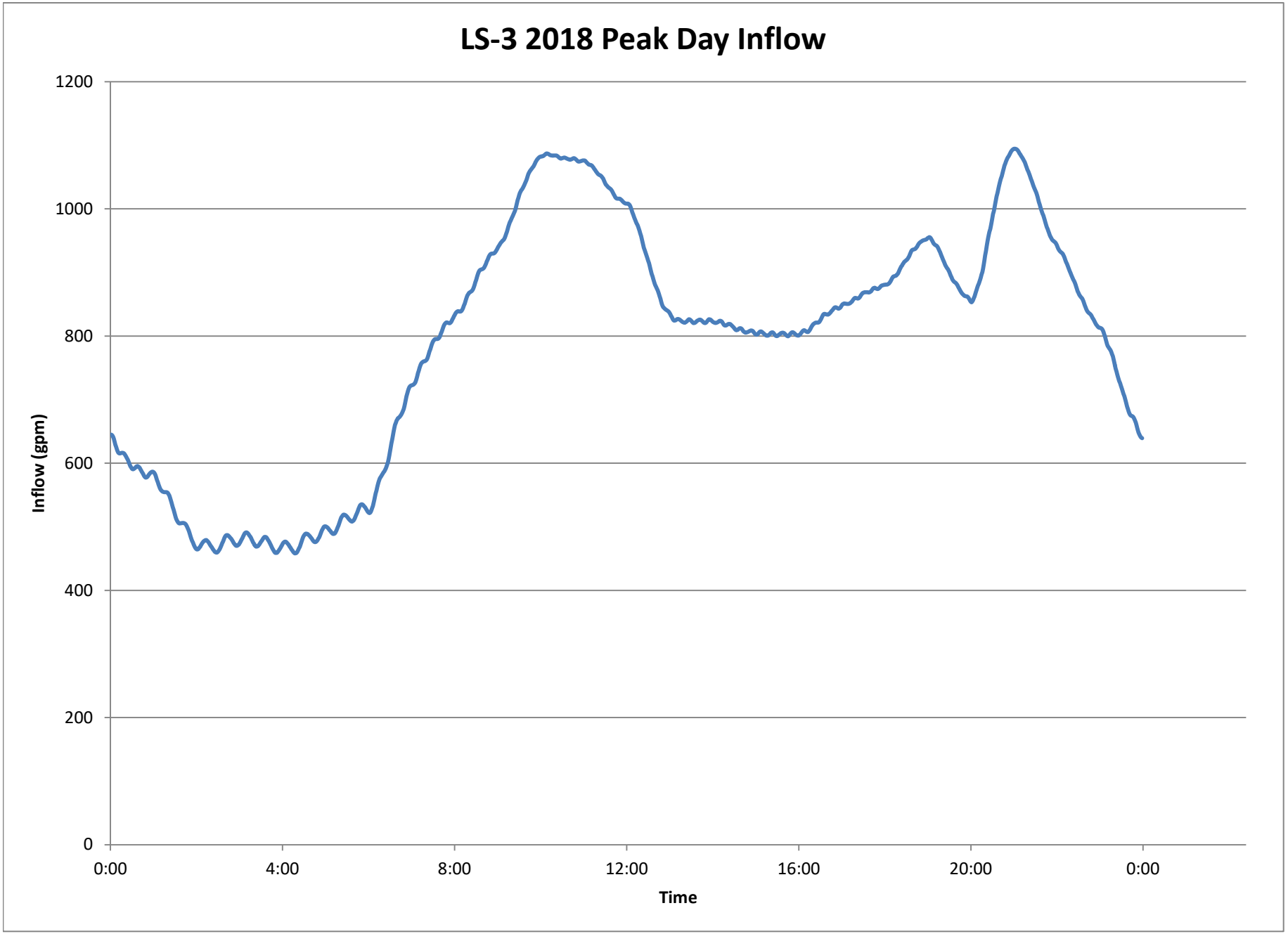


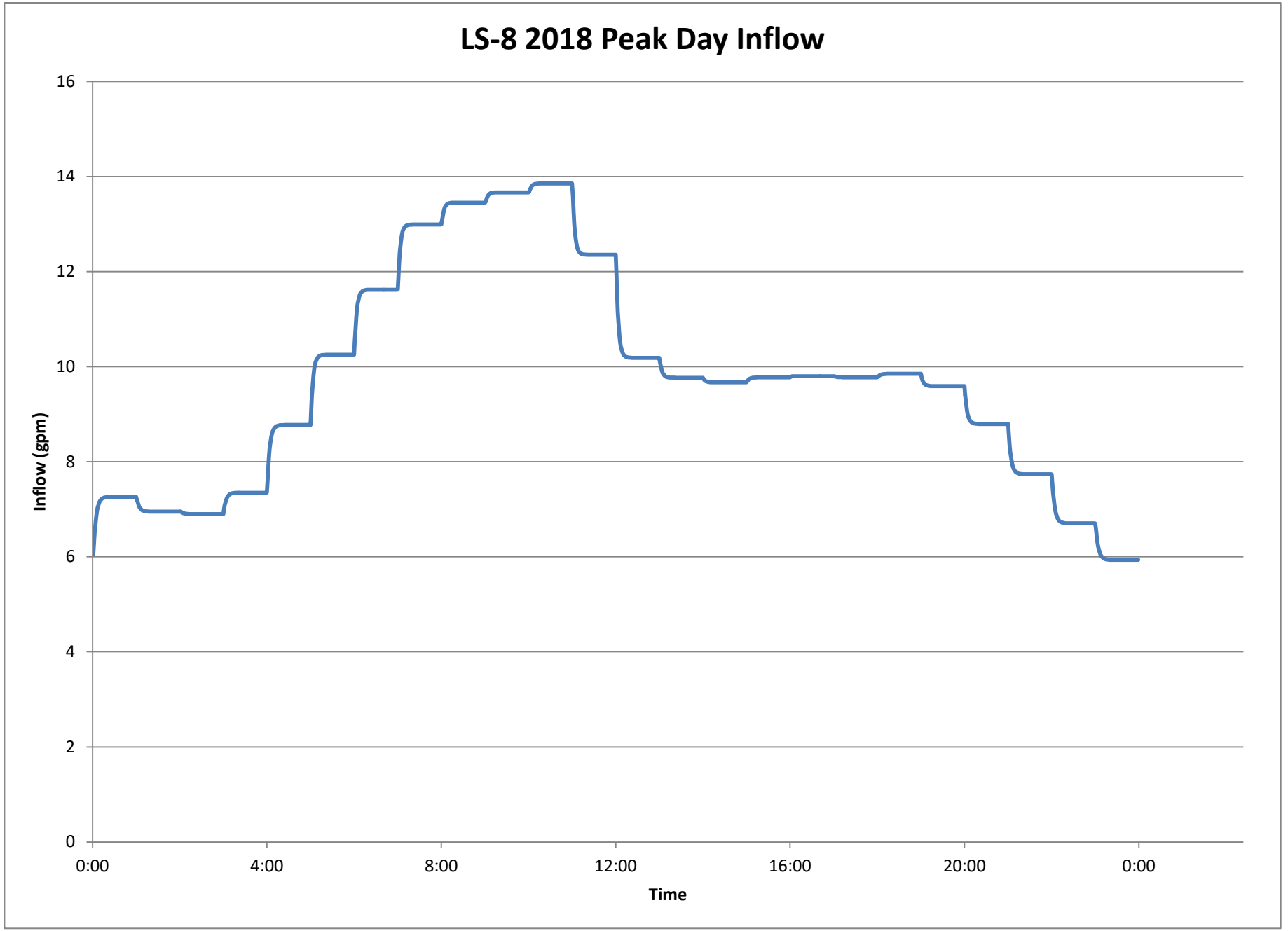
Note: Force mains and STEP mains are always full and are shown as always surcharging.

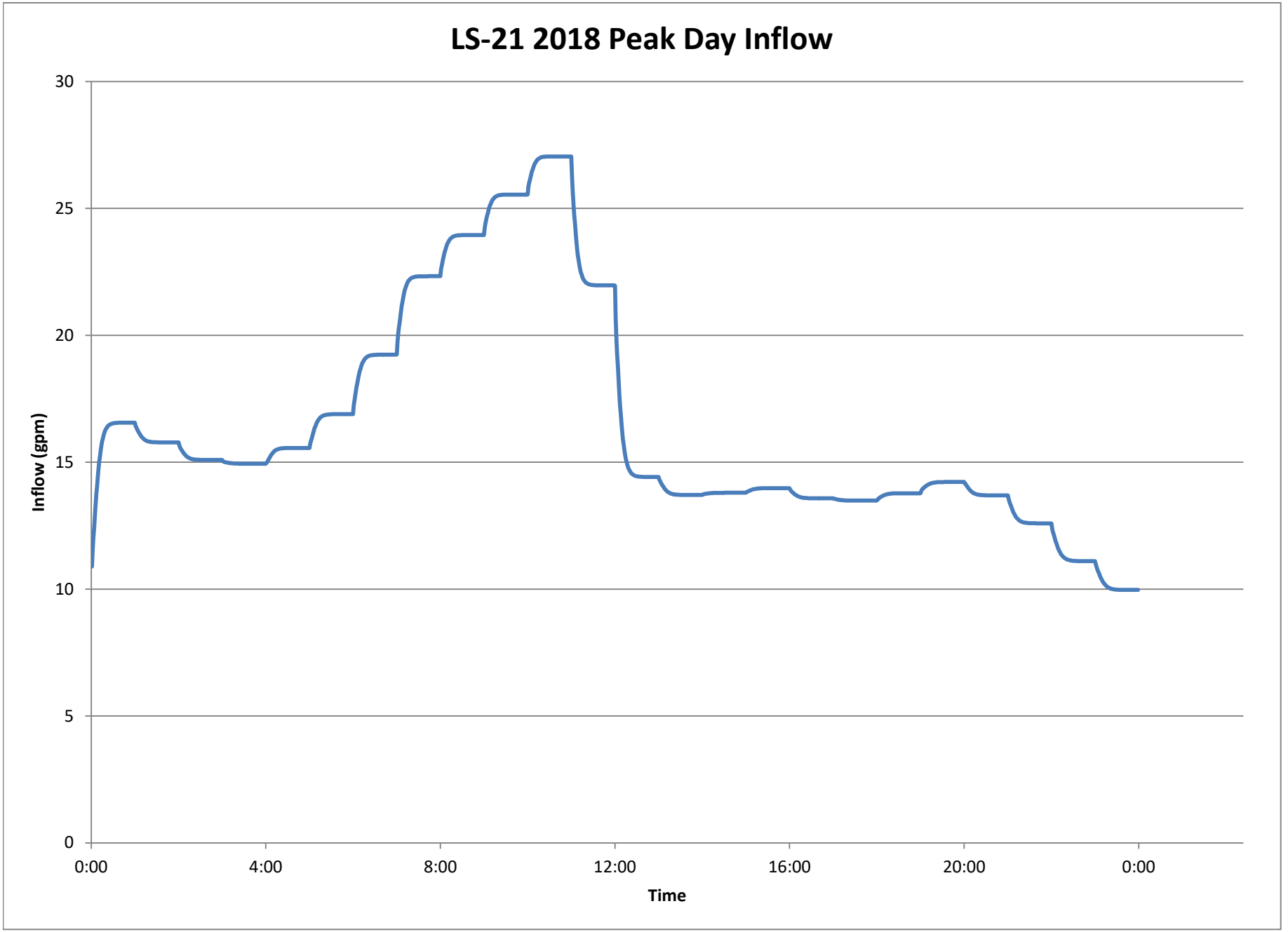
Sleater Kinney Alignment: 2018 Peak HGL

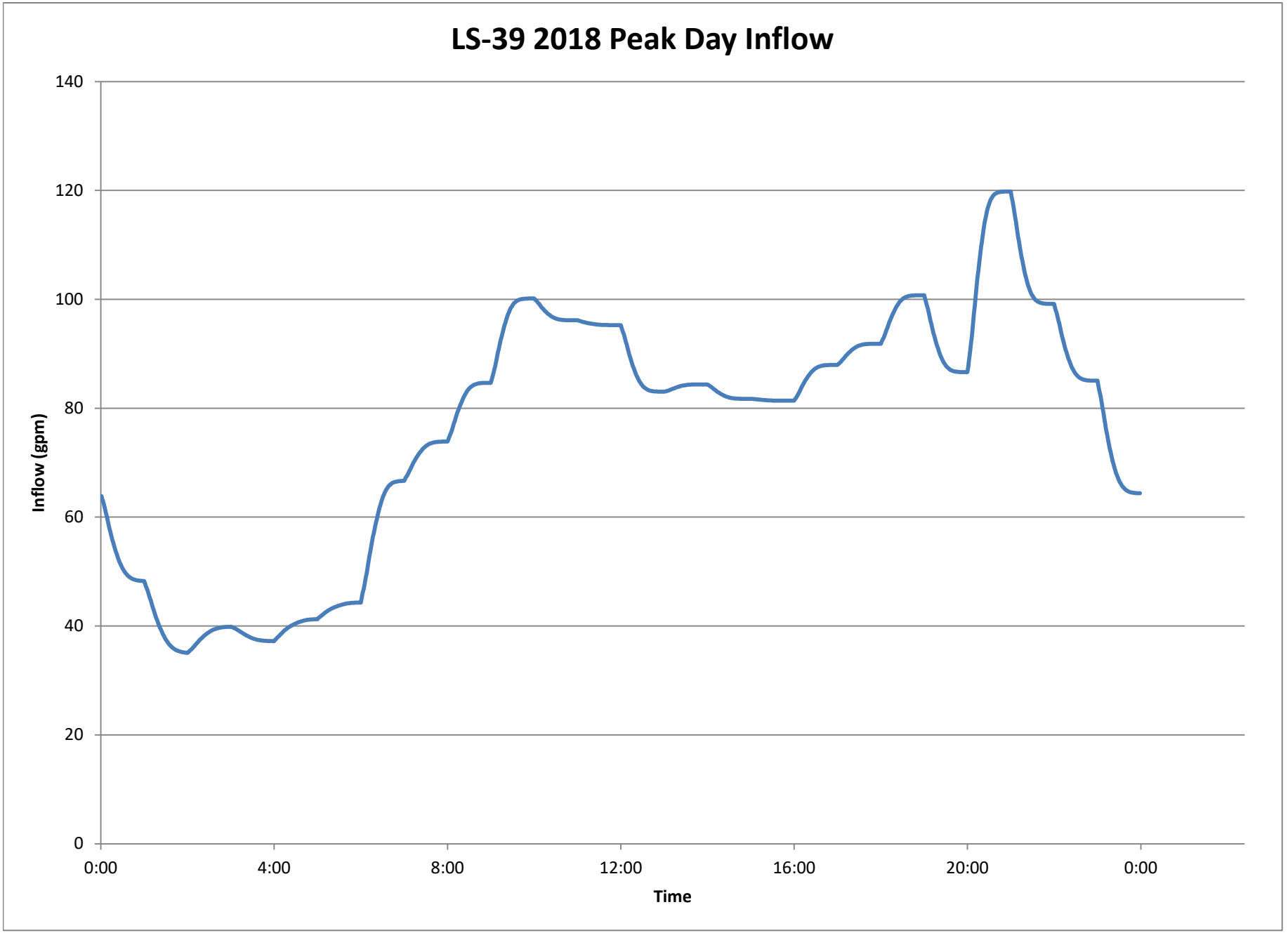



LS-2 2018 Peak Day Inflow
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-3 2018 Peak Day Inflow
1200
1000
800
600
400
200
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-8 2018 Peak Day Inflow
16
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-21 2018 Peak Day Inflow
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-39 2018 Peak Day Inflow
140
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

2032 MODEL RESULTS

MARTIN WAY BASIN

Lacey - Martin Way Collection System Model
2032 Peak Day Surcharging
d/D Criteria = 0.8

Conduit

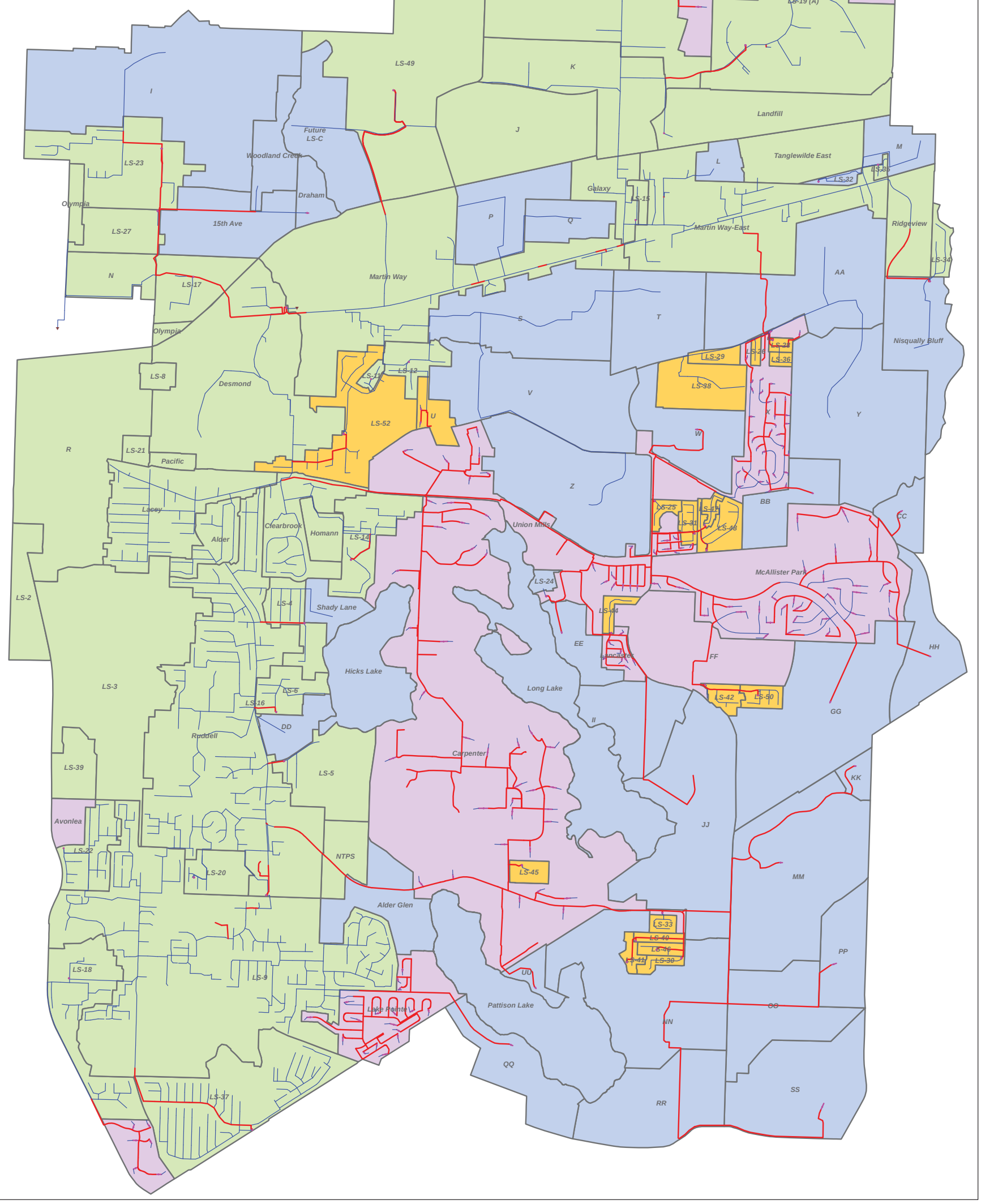
D_OVER_D

- Less than 0.8
- Greater than 0.8

Minibasins_72013

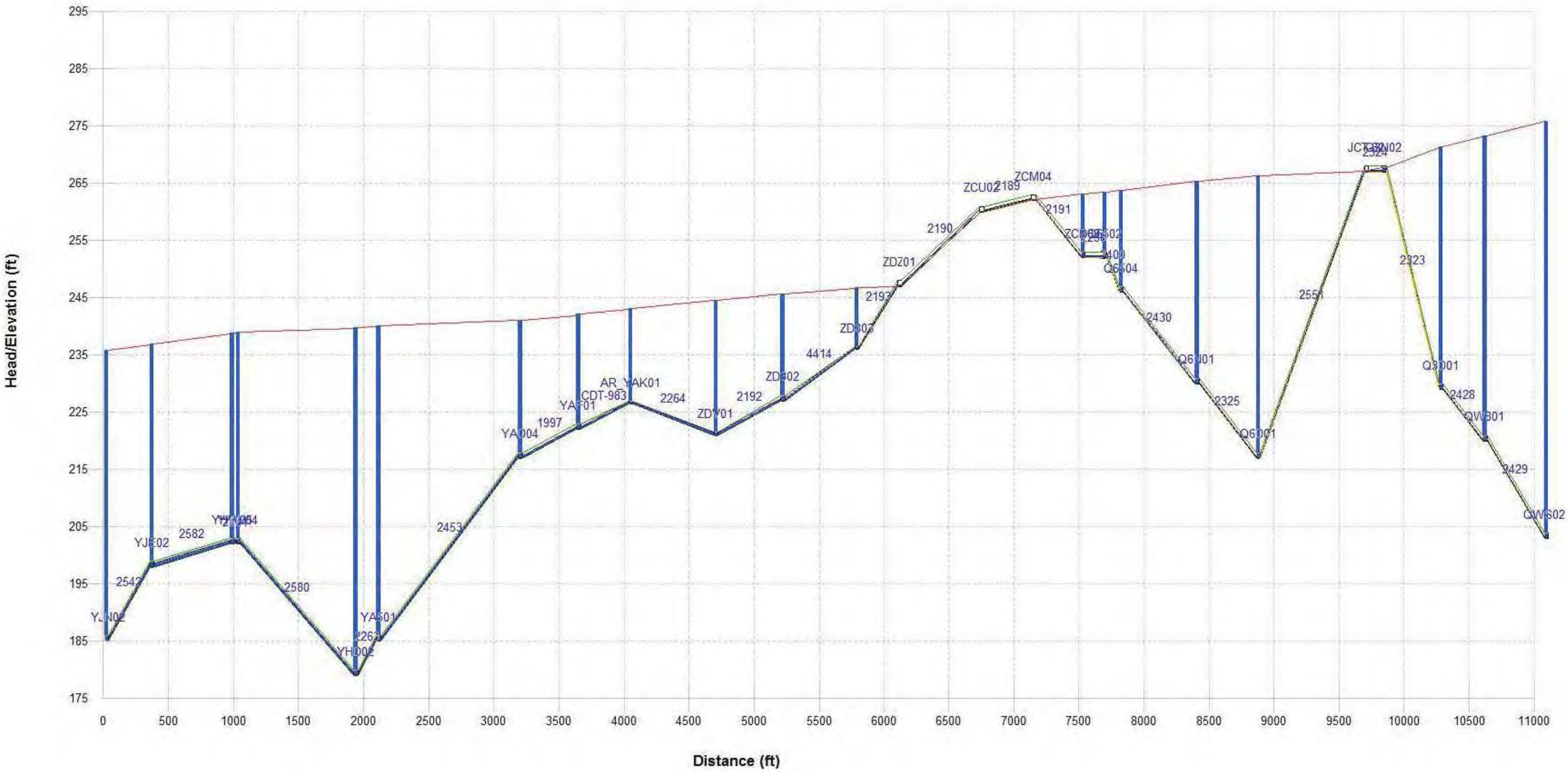
SvcType

- Gravity & STEP Sewer
- Gravity Sewer
- No Sewer
- STEP Sewer



Basin X Alignment: 2032 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



Carpenter Alignment: 2032 Peak HGL

Ground Level Link Node Depth Head Input Surcharge Depth

Head/Elevation (ft)

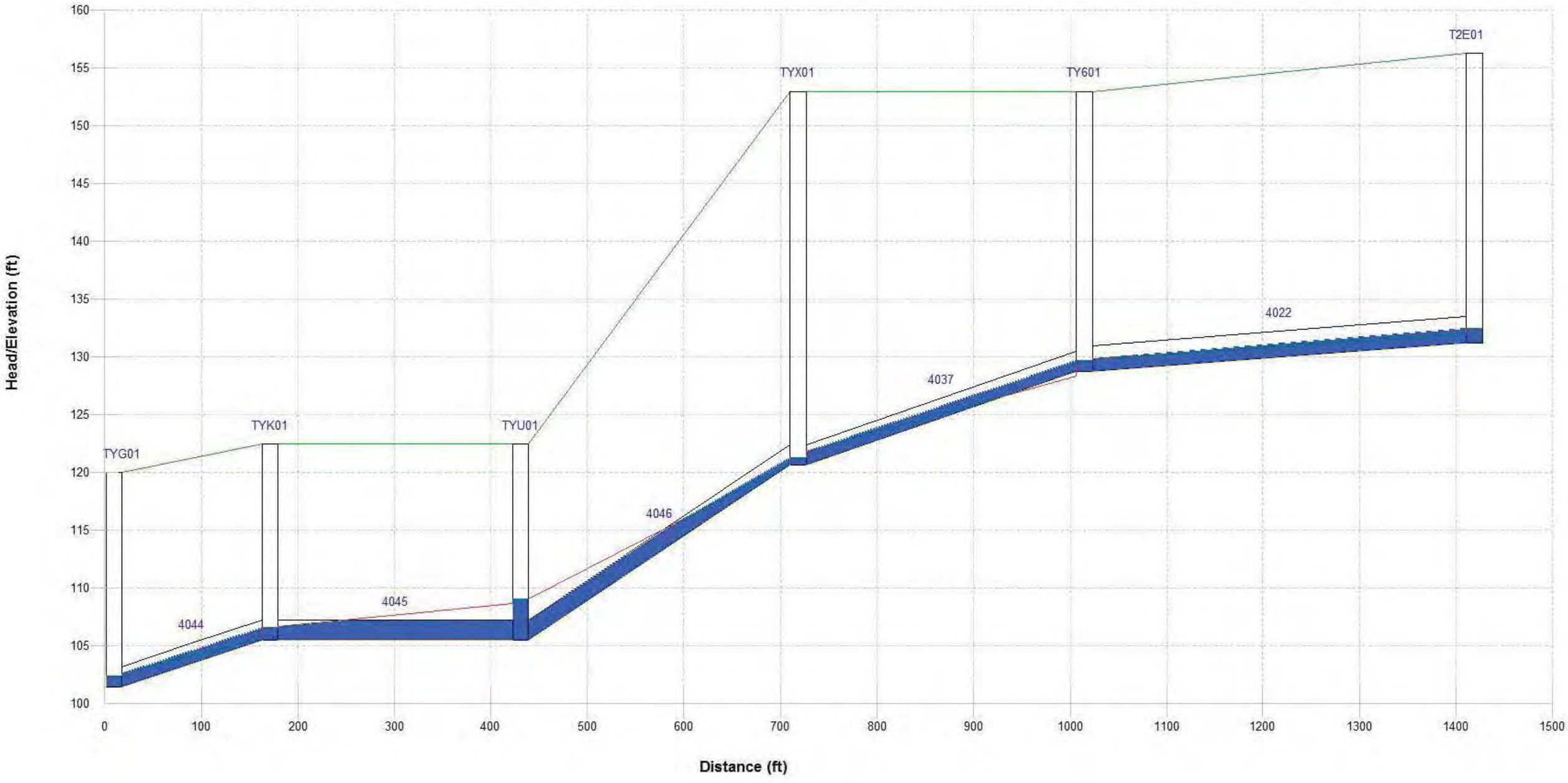
230
225
220
215
210
205
200
195
190
185
180
175
170
165
160
155

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 15000

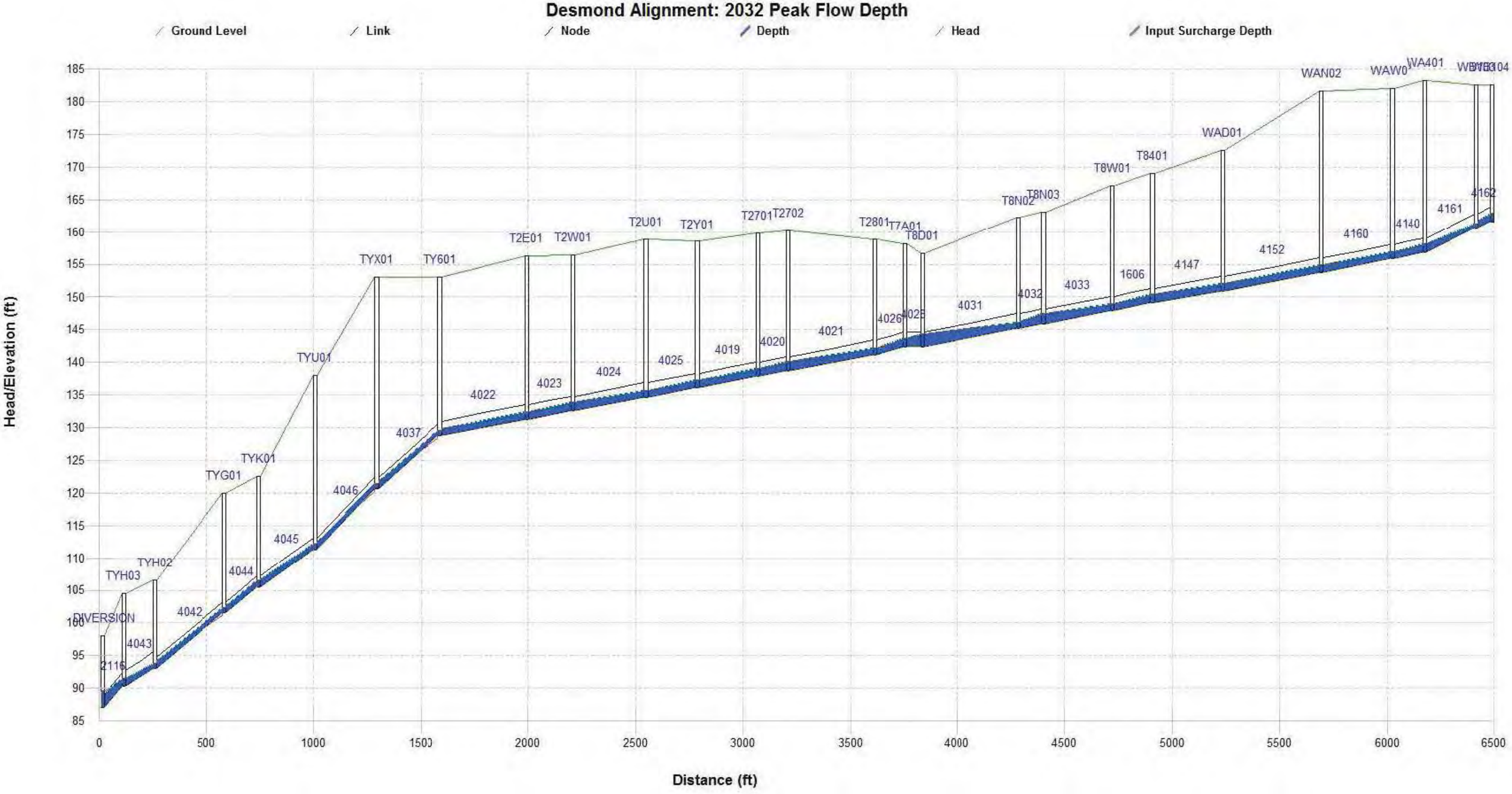
Distance (ft)

Ruddell Profile at Desmond & Martin Way: 2032 Peak Flow

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



Desmond Alignment: 2032 Peak Flow Depth



Galaxy Profile: 2032 Peak Flow Depth (Max d/D=0.77)

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

Distance (ft)

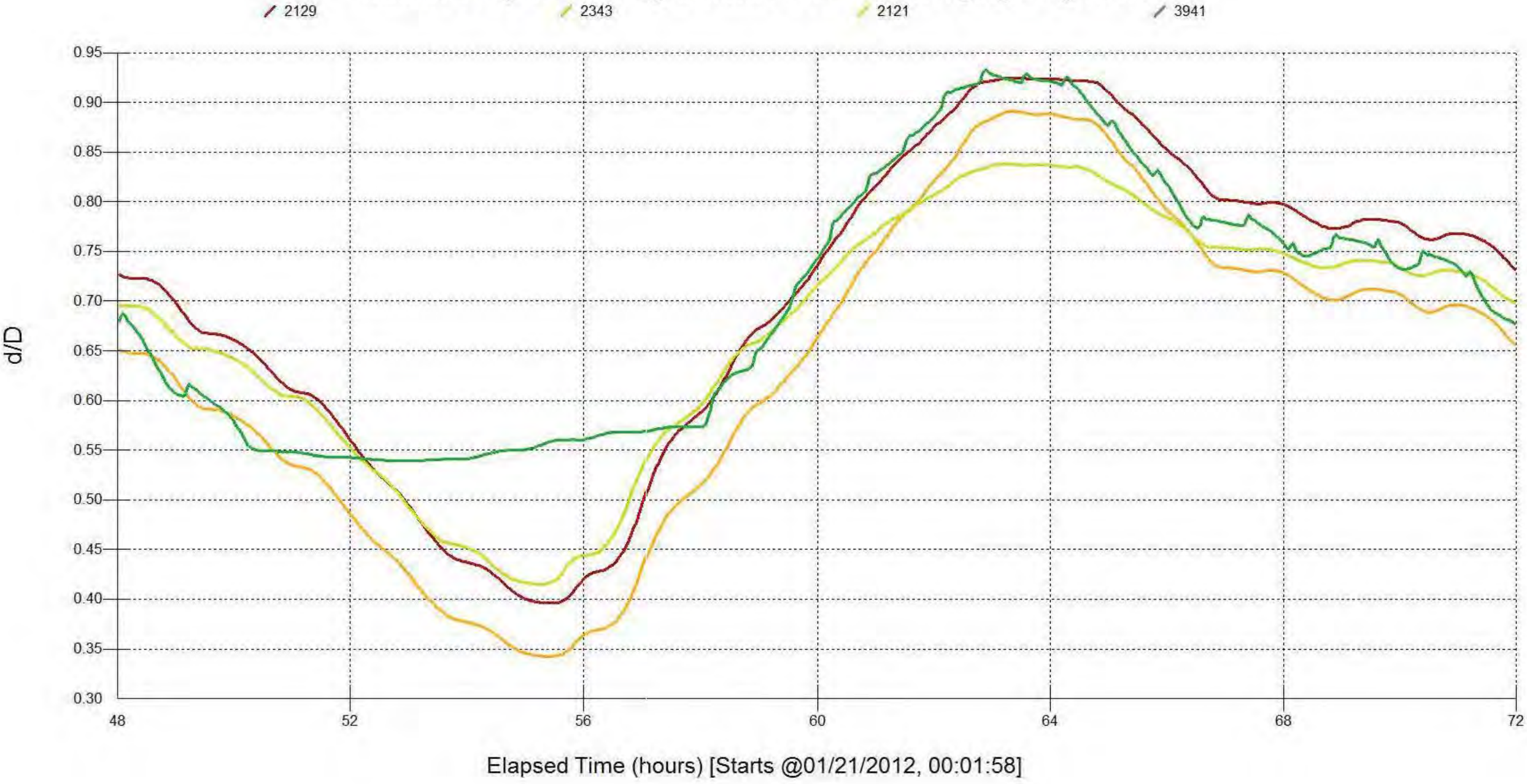
RG502 RG501 RG402 RGW01 805 809 808 810 230 231 234 667 674 673 675 676 170

RKM03 RKM01 806 807

RQN01 RQE01 RK501 RK401 RKW01 RKV01

3938 3907 3906 3926 3925 3922 3920 1608 3895 3894 3896 2949 2771 2775 2948 2772 2773 2867 2952 3464 2866 2878 2951 2882 2861 2767

Martin Way South Alignment: 2032 Surcharging Segments

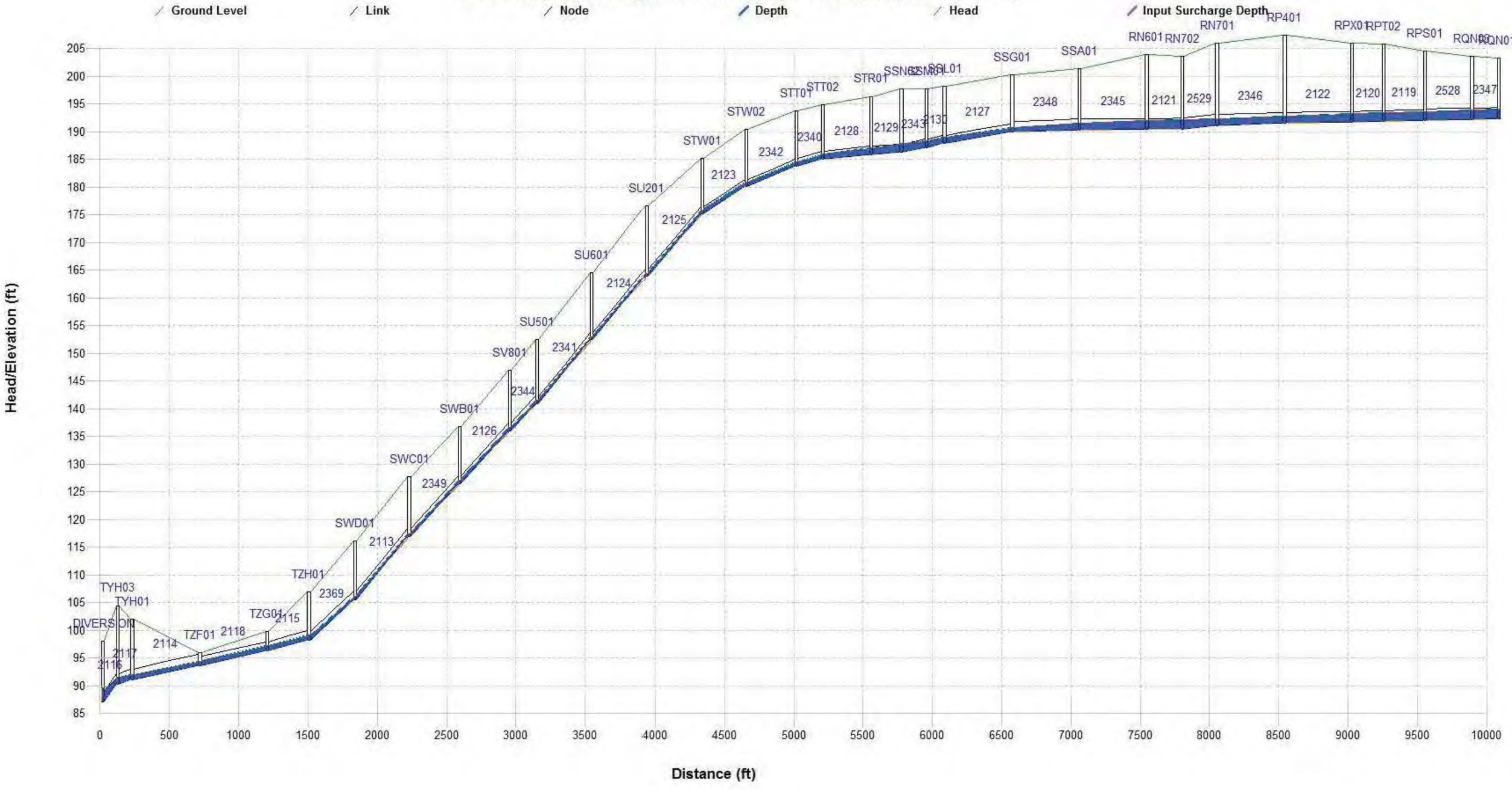


Martin Way South Alignment: 2032 Peak Flow Depth (Max d/D=0.92)

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

Distance (ft)

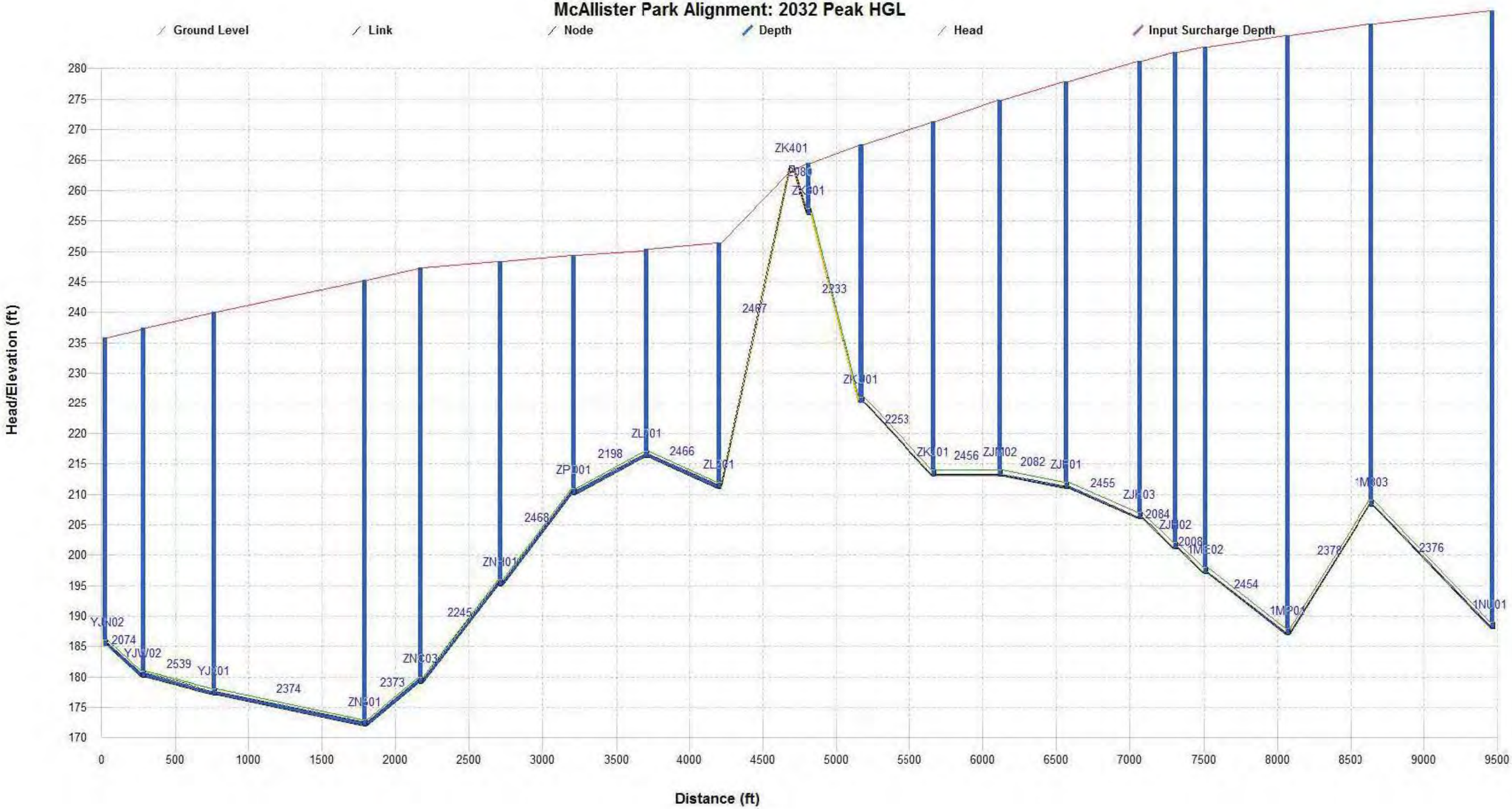


McAllister Park Alignment: 2032 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

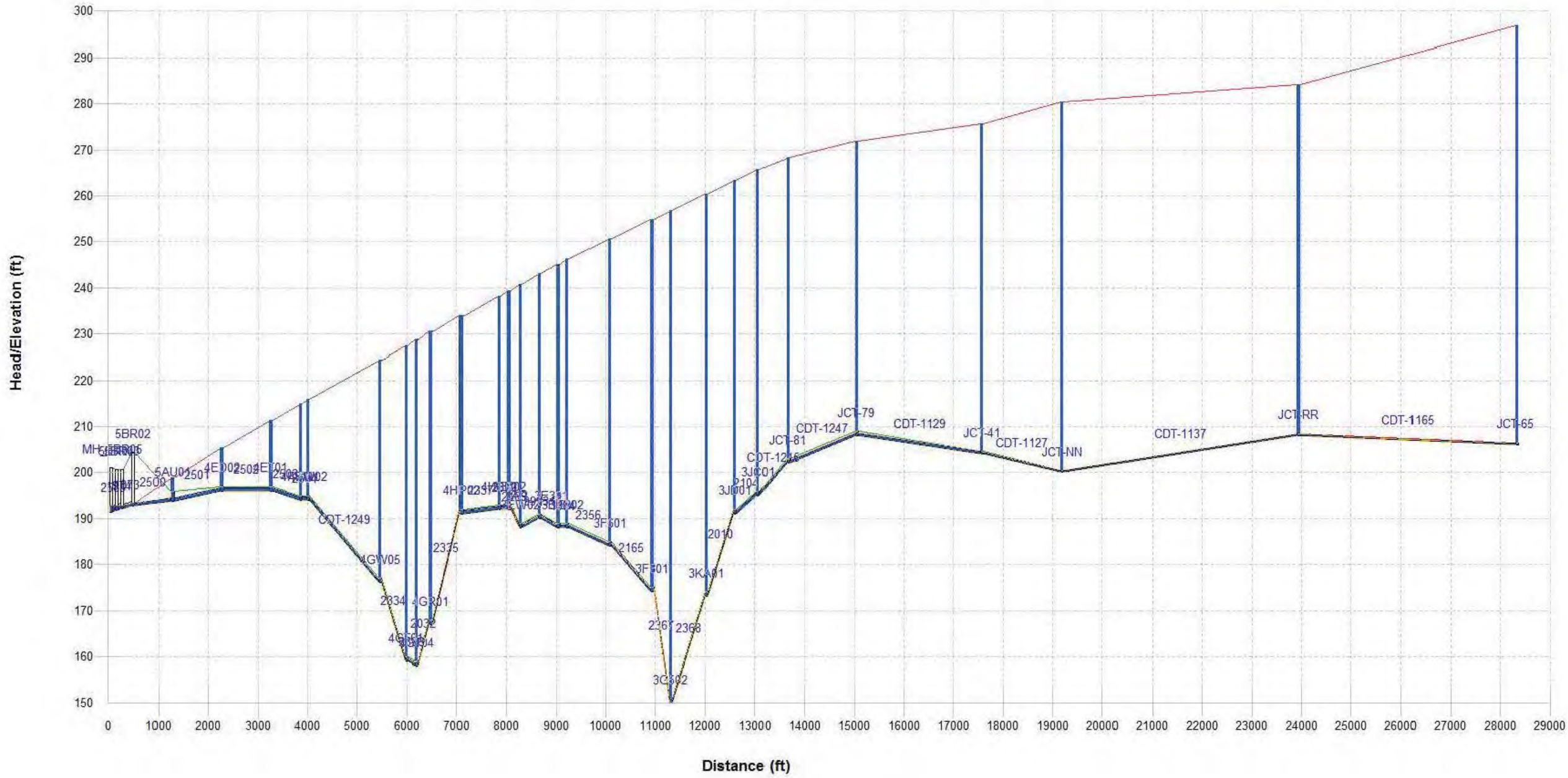
Head/Elevation (ft)

Distance (ft)



Mullen Road Alignment (Ruddell to Basin SS): 2032 Peak Depth (8")

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



Mullen Road Alignment (Ruddell to Basin SS): 2032 Peak Flow Depth

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

800
750
700
650
600
550
500
450
400
350
300
250
200
150

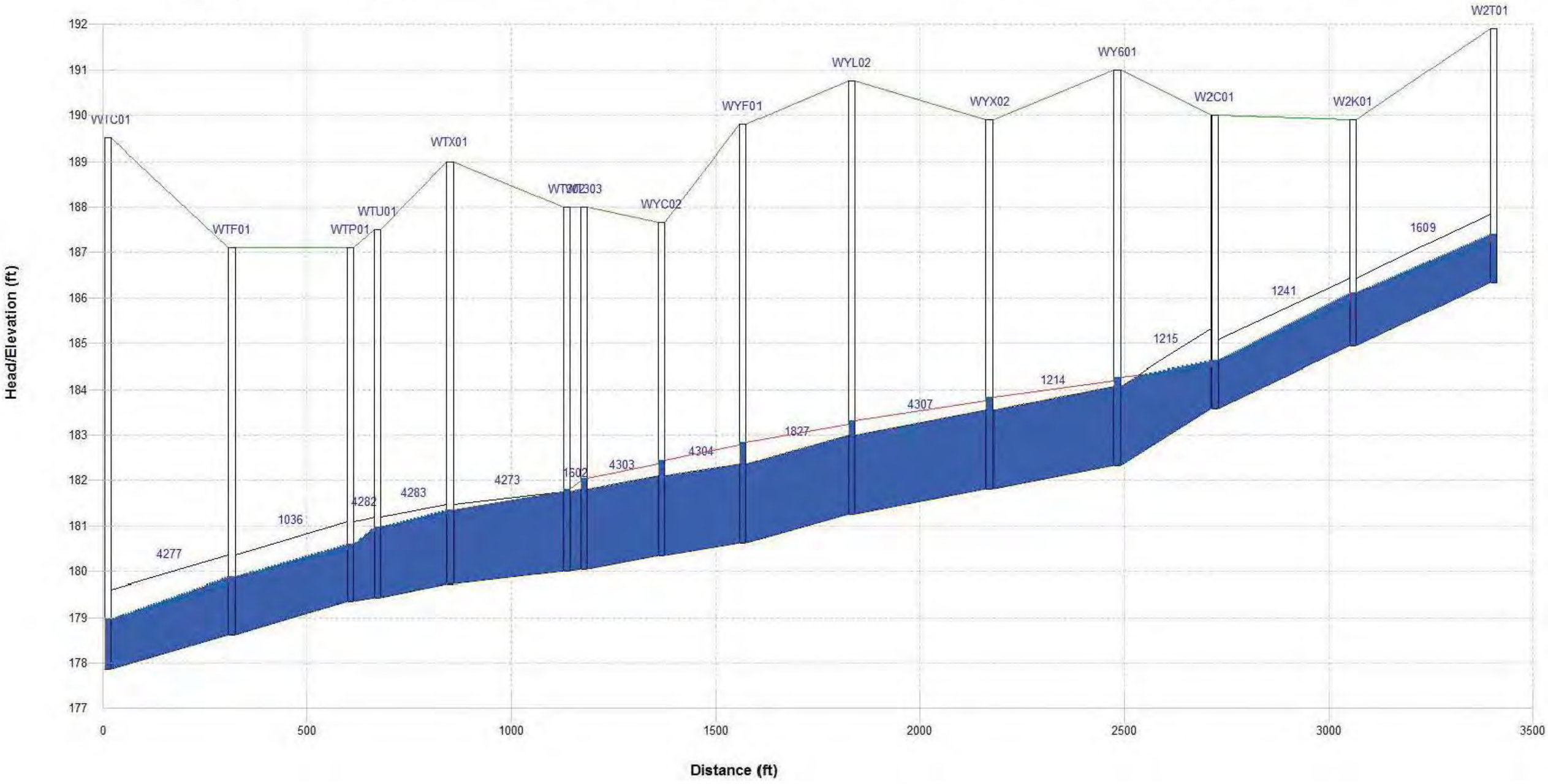
0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 15000 16000 17000 18000 19000 20000 21000 22000 23000 24000 25000 26000 27000 28000 29000

Distance (ft)

CDT-1249 4GW05 2335 2334 2368 3G302 2010 CDT-124 JCT-79 CDT-1129 JCT-41 CDT-1127 JCT-NN CDT-1137 JCT-RR CDT-1165 JCT-65

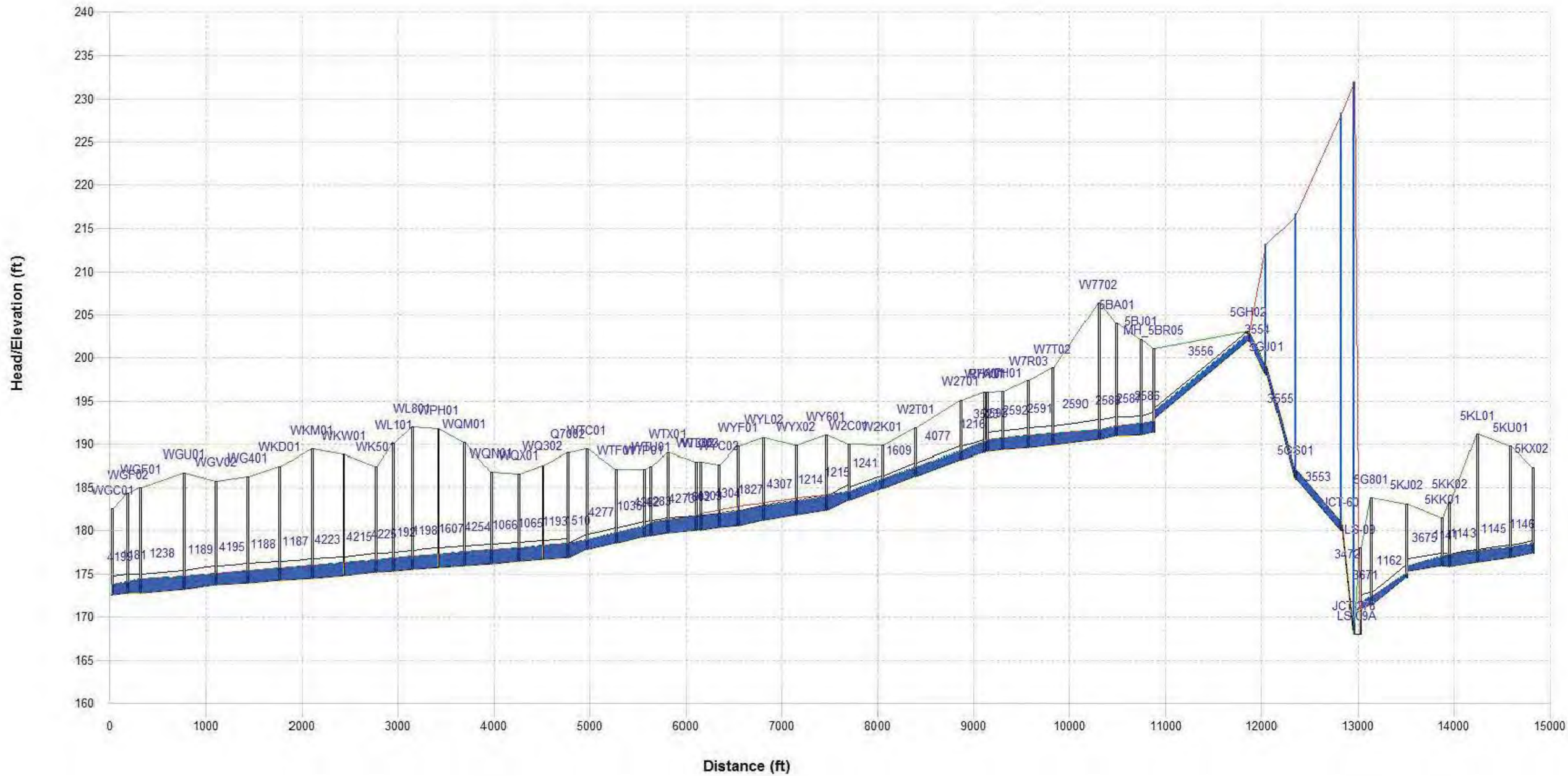
Ruddell Deficiency: 2032 Peak Flow No Improvements

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



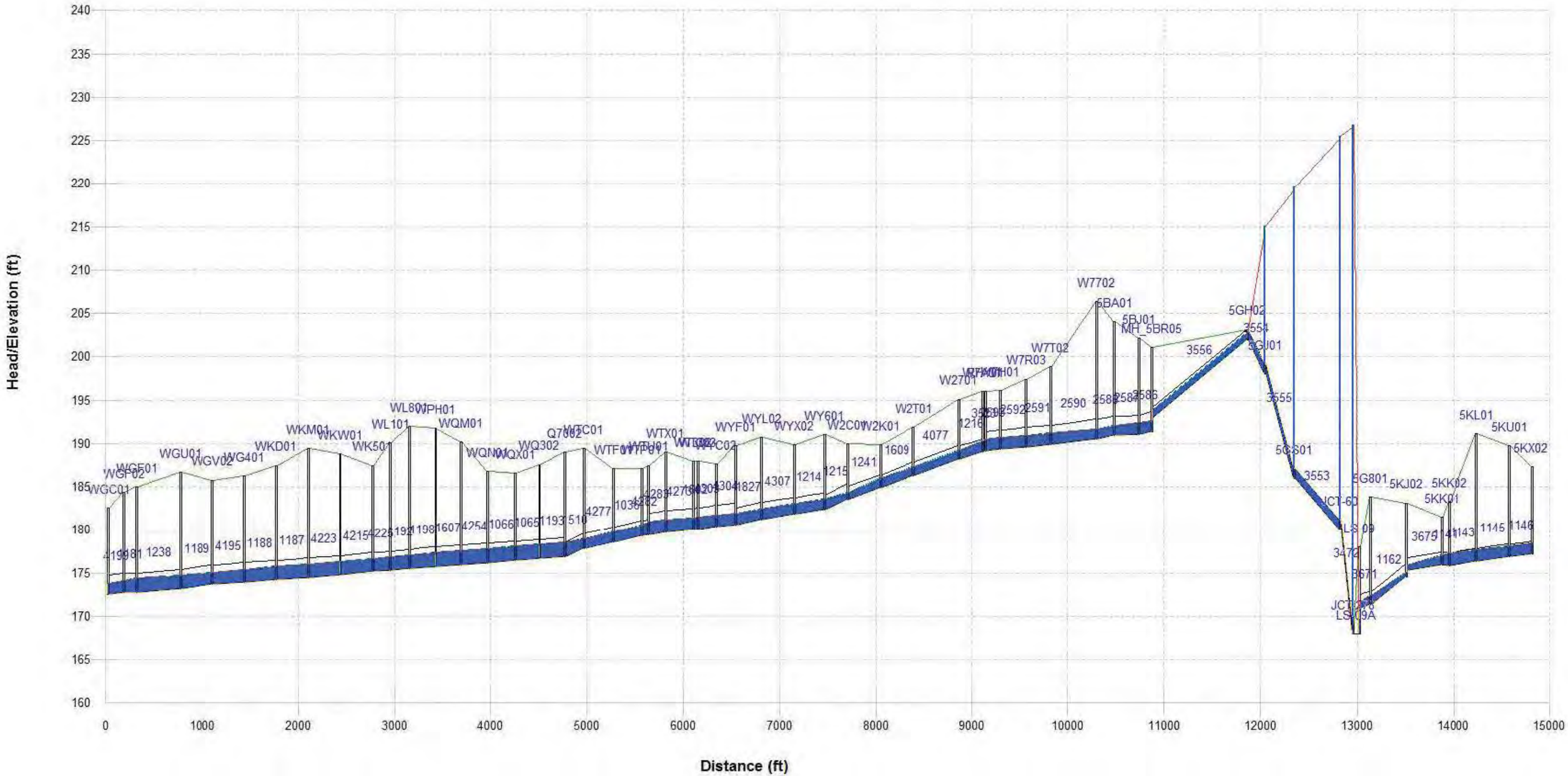
Ruddell Alignment: 2032 Peak Flow Depth: No Improvements (Max d/D=1.0)

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

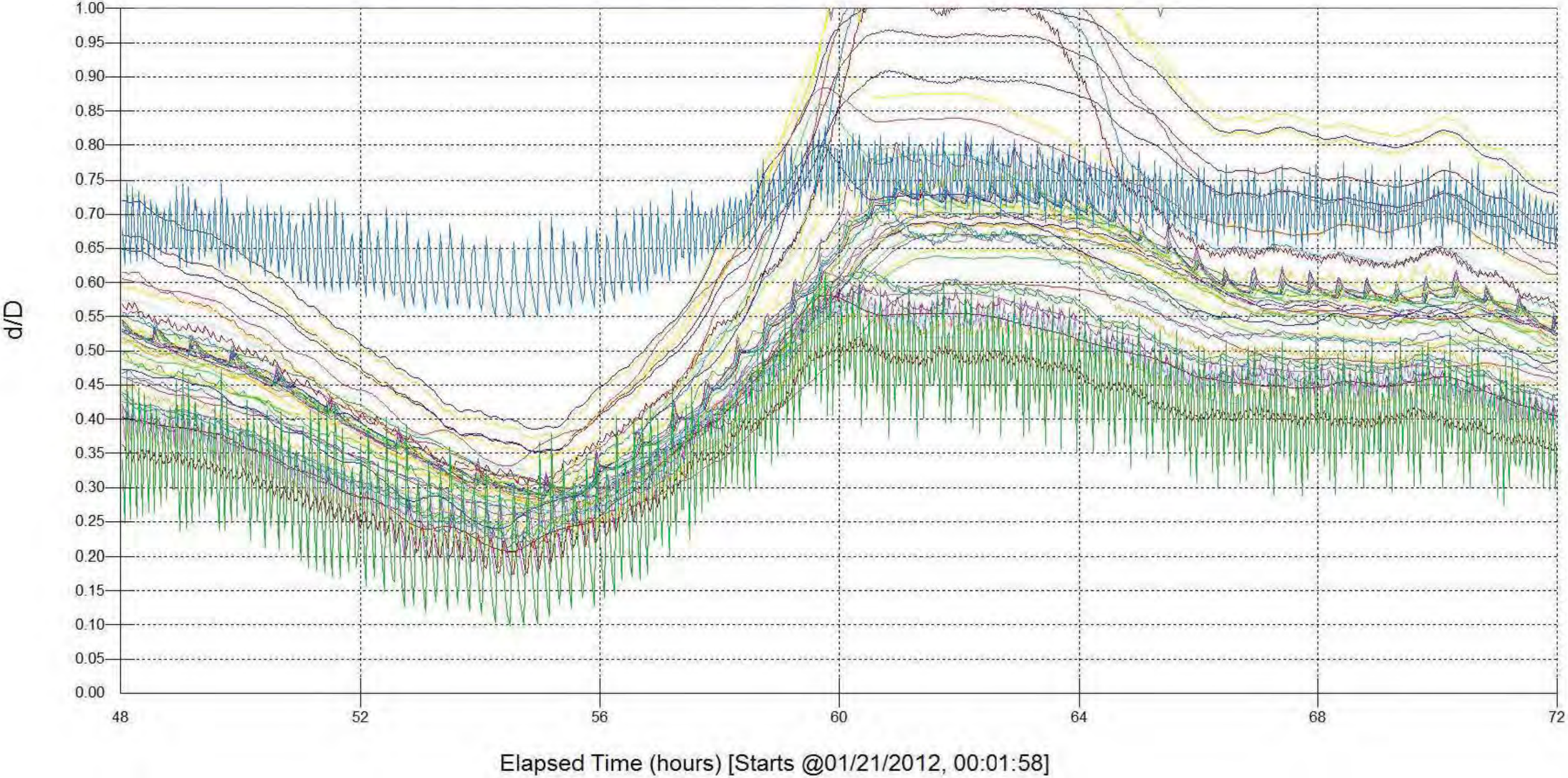


Ruddell Alignment: 2032 Peak Flow Depth: With Improvements

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth



Ruddell Alignment d/D: 2032 Peak Day (No Improvements)



Union Mills Alignment: 2032 Peak HGL

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

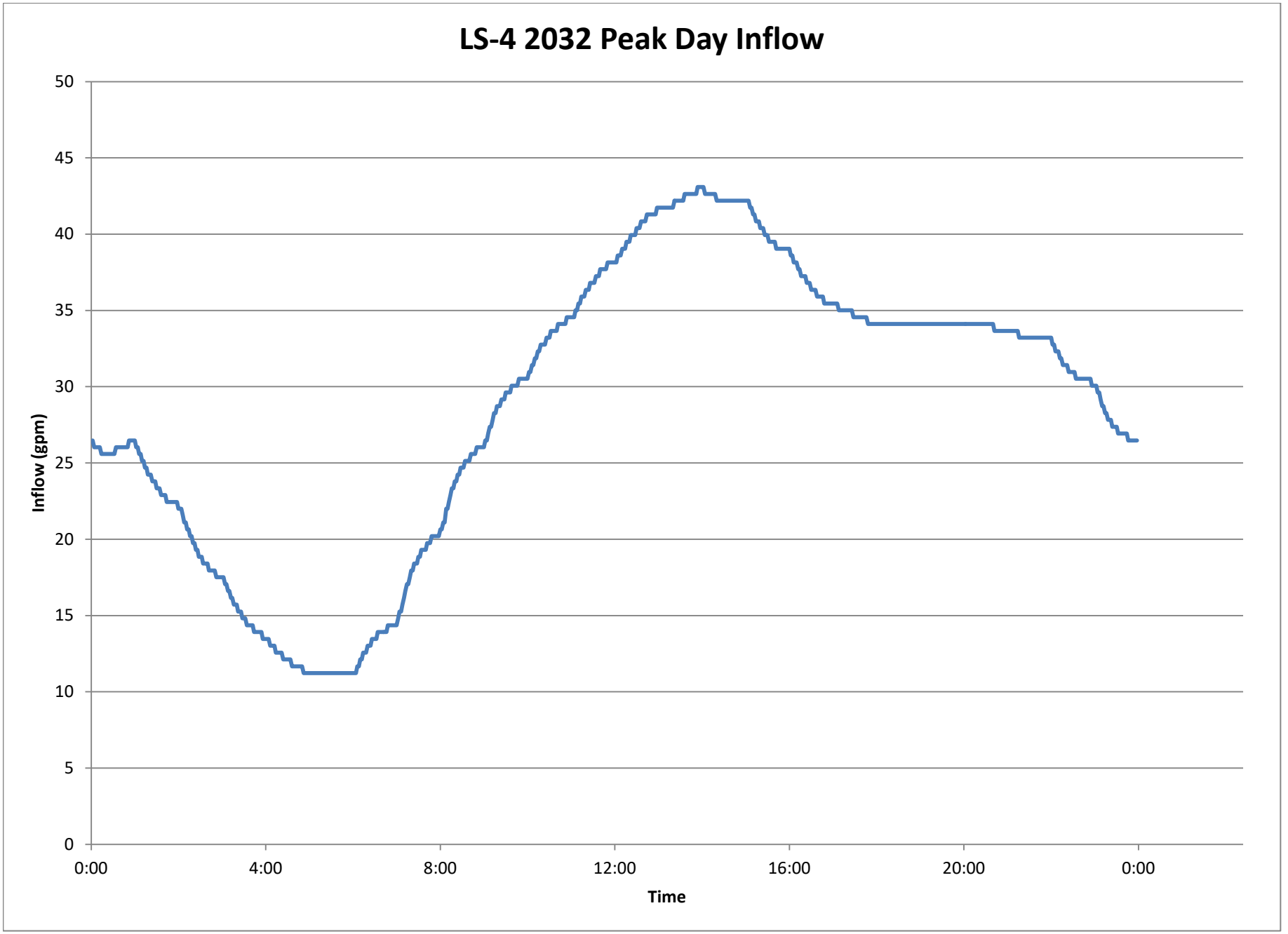
Head/Elevation (ft)

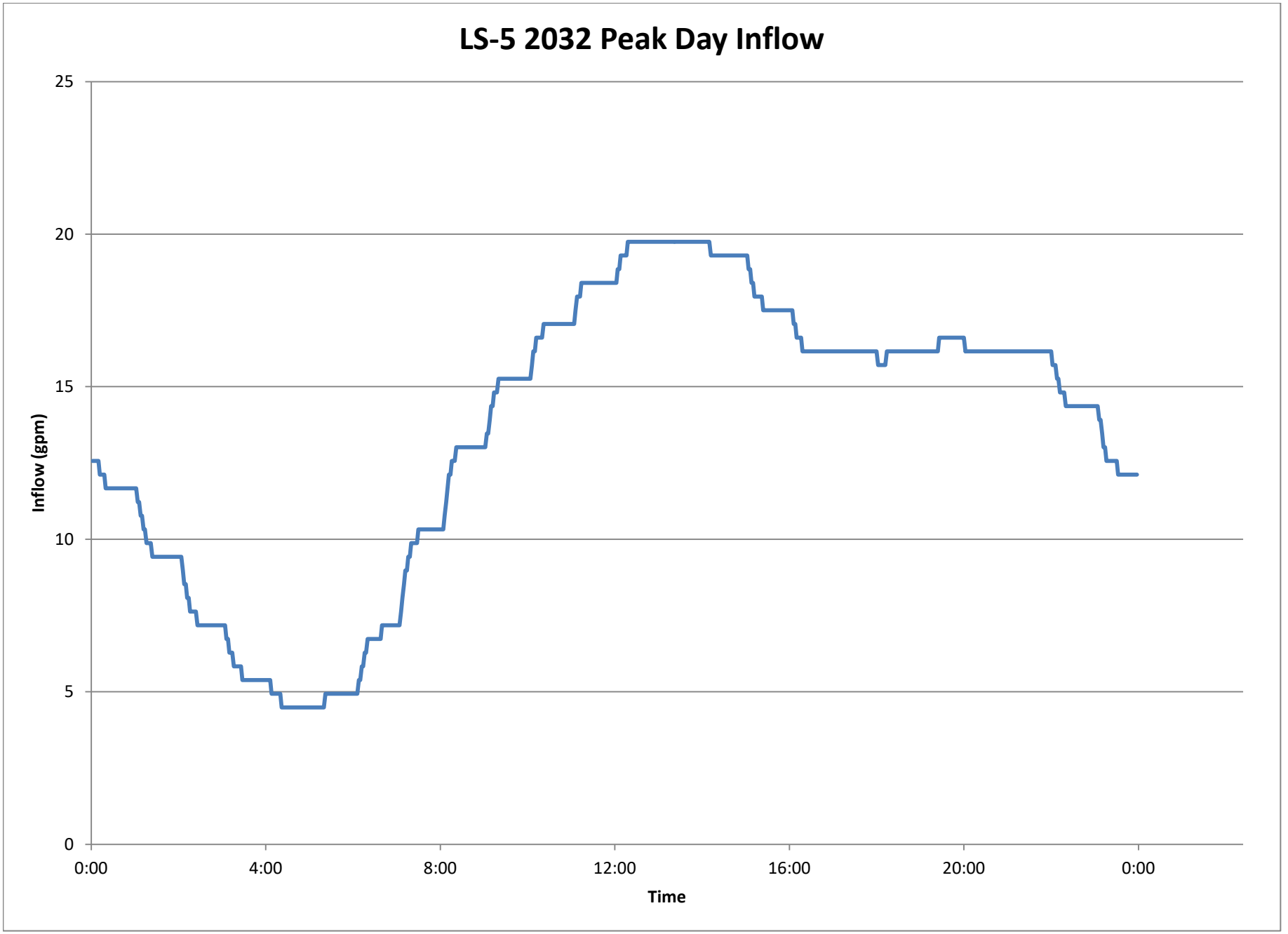
225 220 215 210 205 200 195 190 185 180 175 170 165 160 155 150

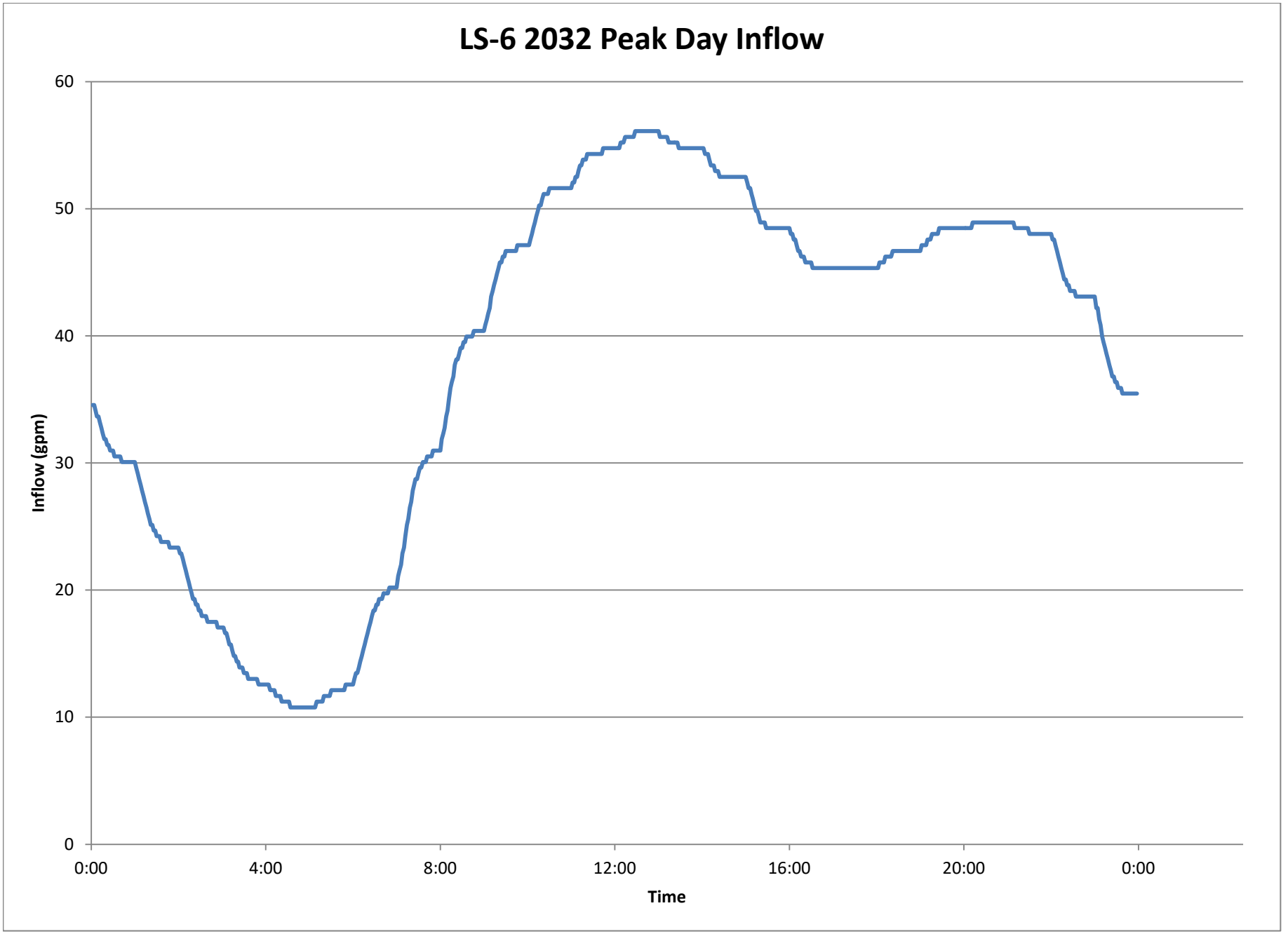
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000 10500 11000 11500 12000

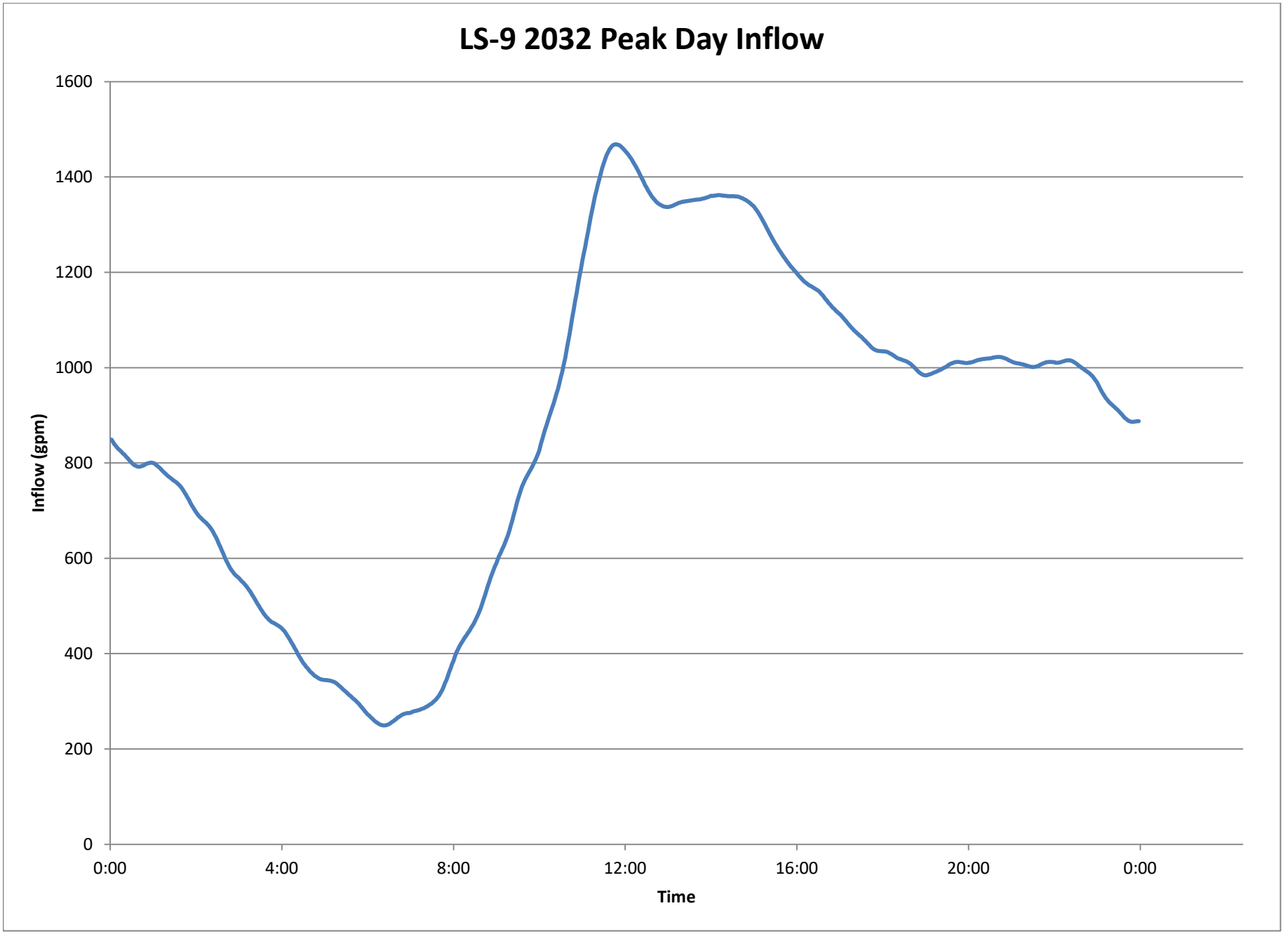
Distance (ft)

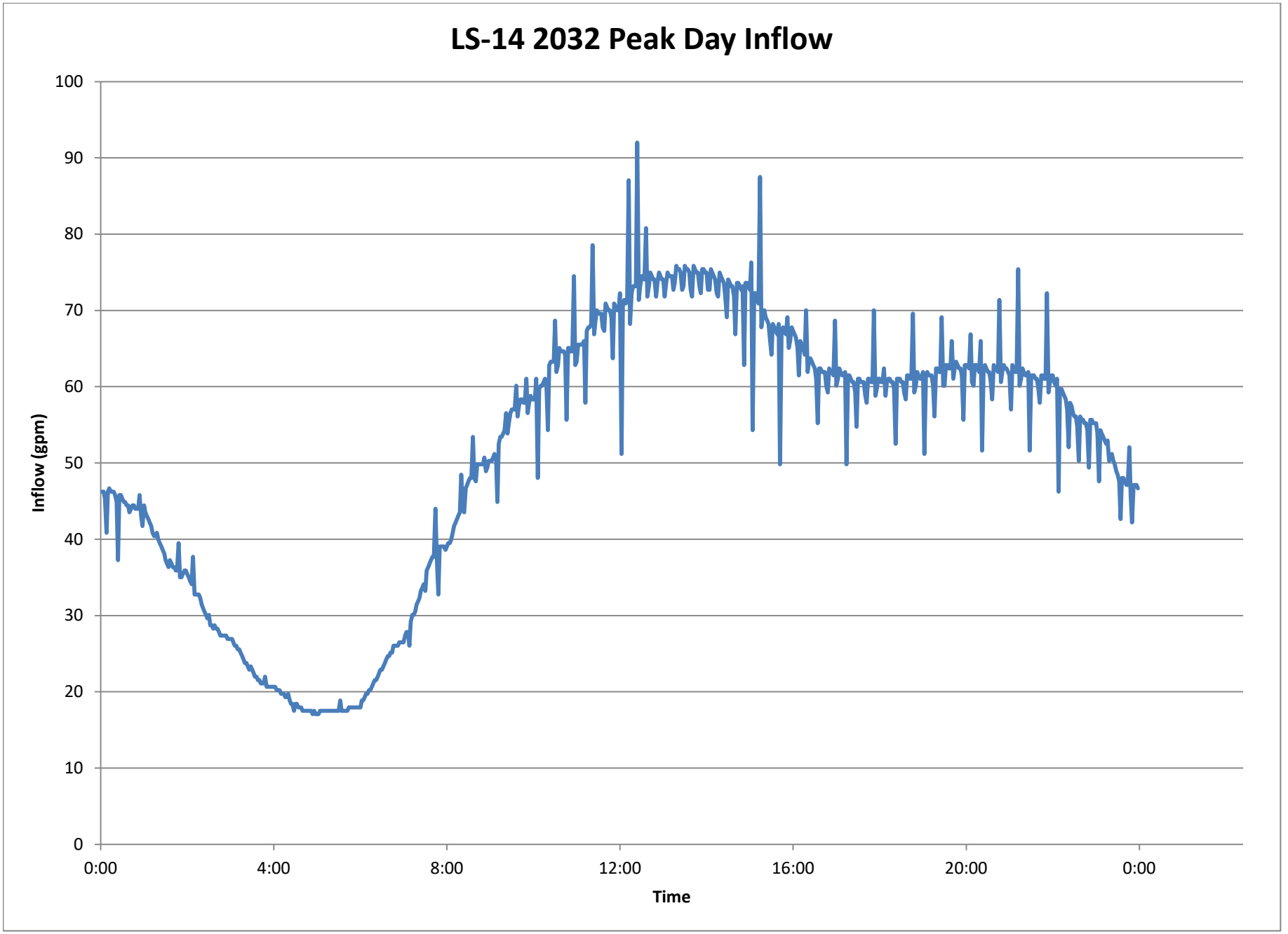
STEP_CDT-99_TRAP
AR_WA301
CDT-99
WB604
CDTW02
WA302
WA204
WX603
2059
2424
4410
XF601
4409
XF801
4411
AR_XGB01
2092
2420
XH001
2298
YE601
AR_YE101
2072
2290
YE102
2418
YF501
2288
YLC01
2419
2287
YL001
YK101
2218
2085
YKP04
2220
YKP01
2267
2217
AR_YKQ01
YKQ05
2270
YKR01
2067
YJ002

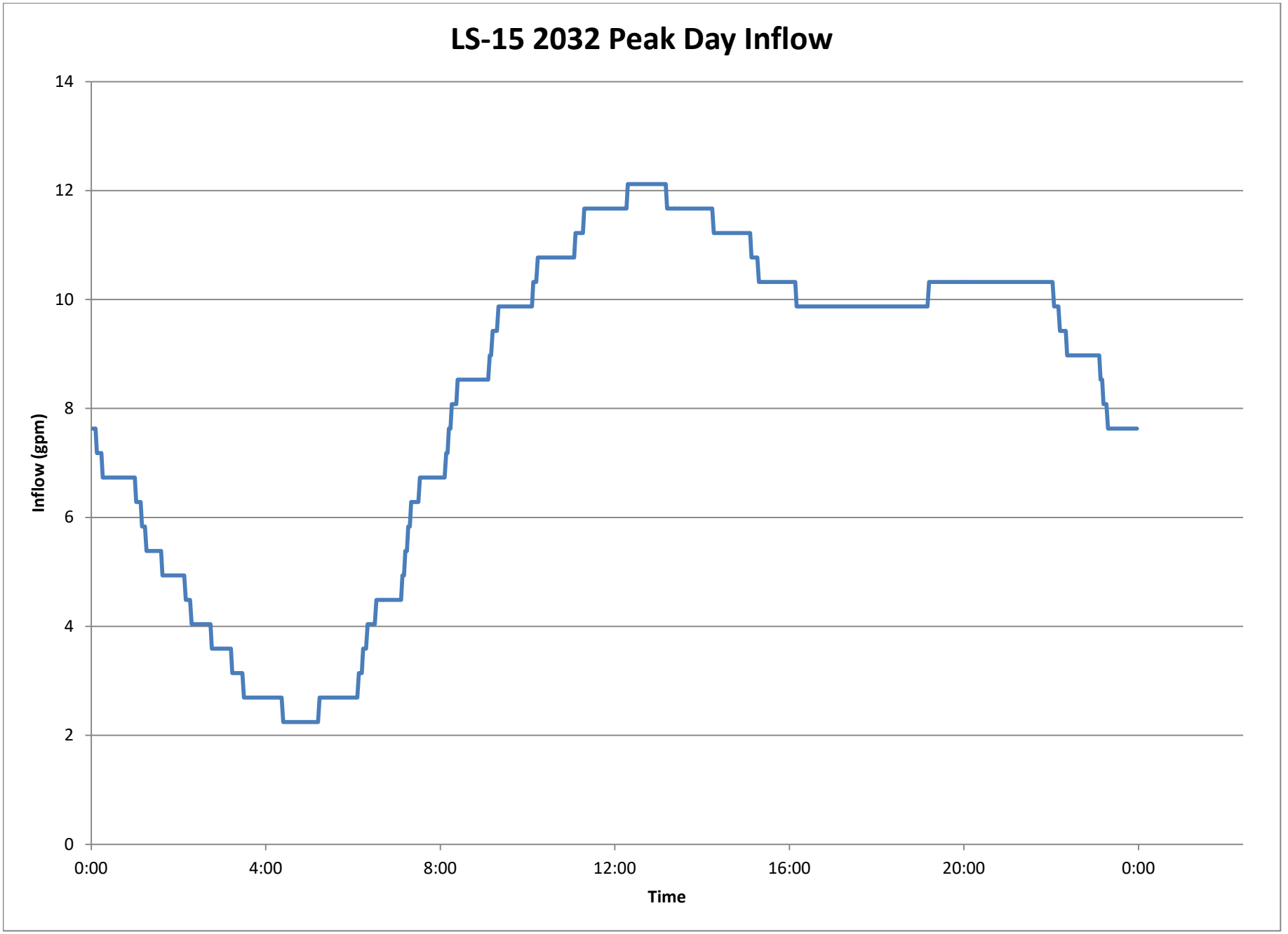

LS-4 2032 Peak Day Inflow
Inflow (gpm)
50
45
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

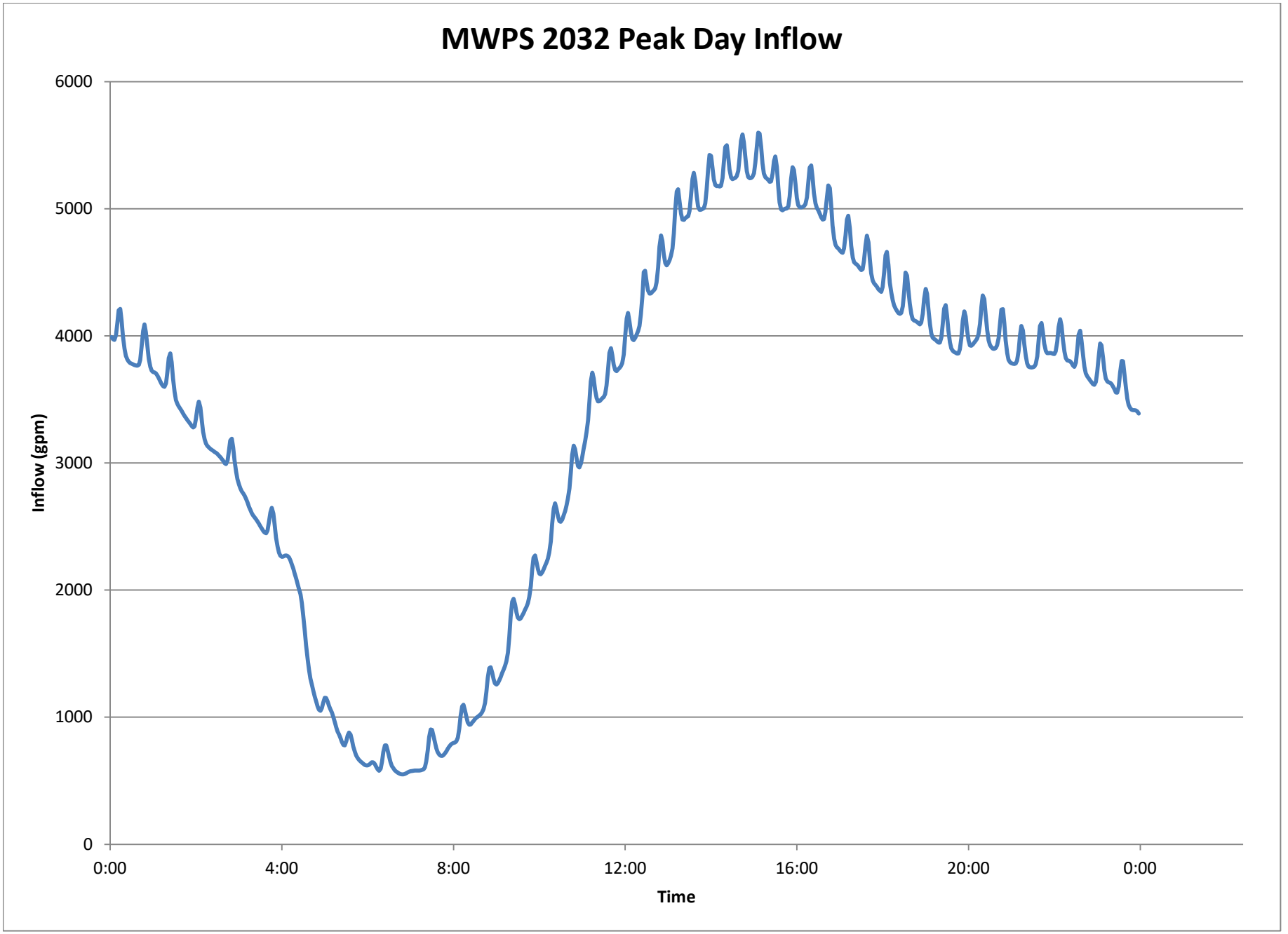

LS-5 2032 Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

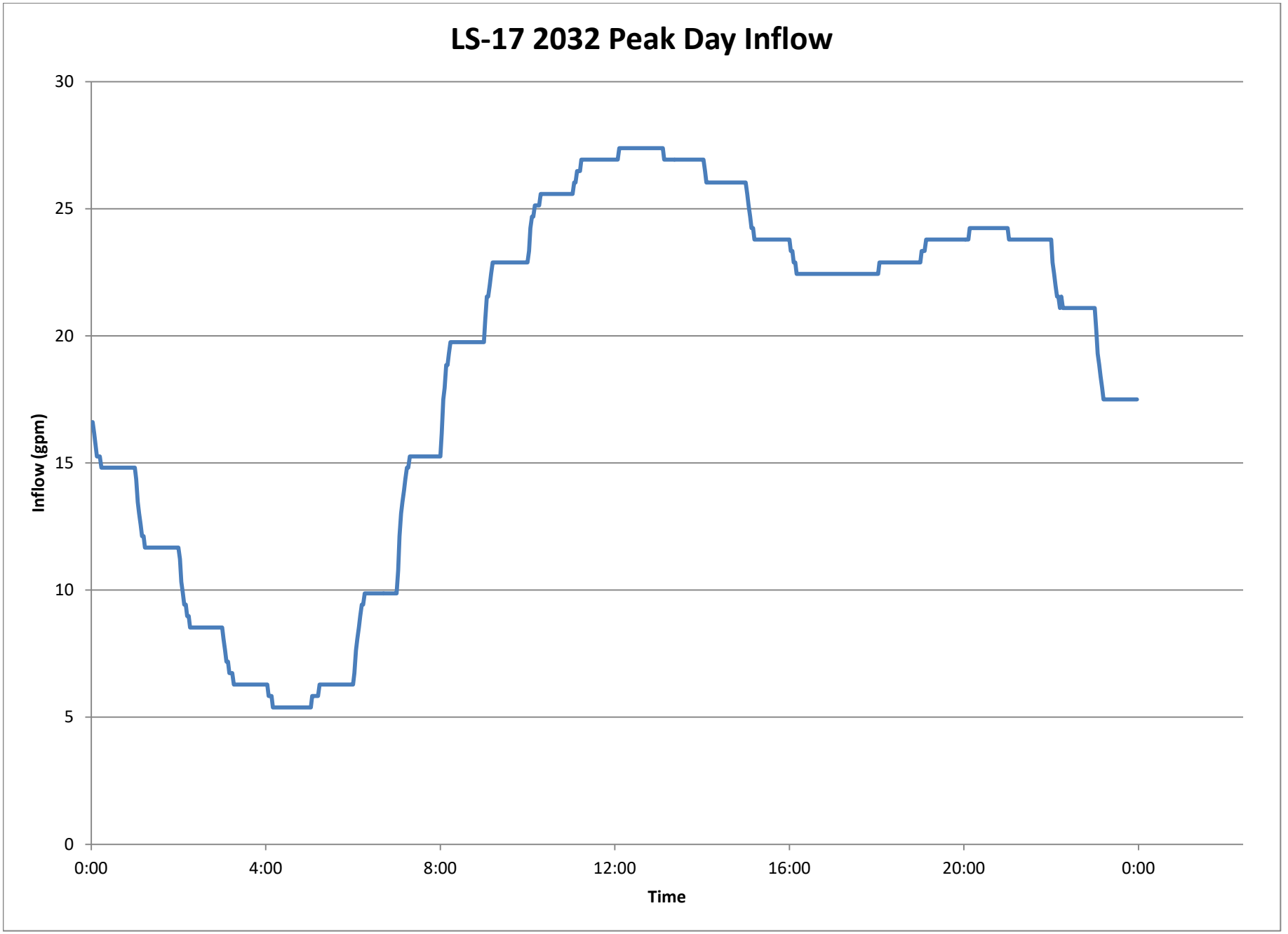

LS-6 2032 Peak Day Inflow
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

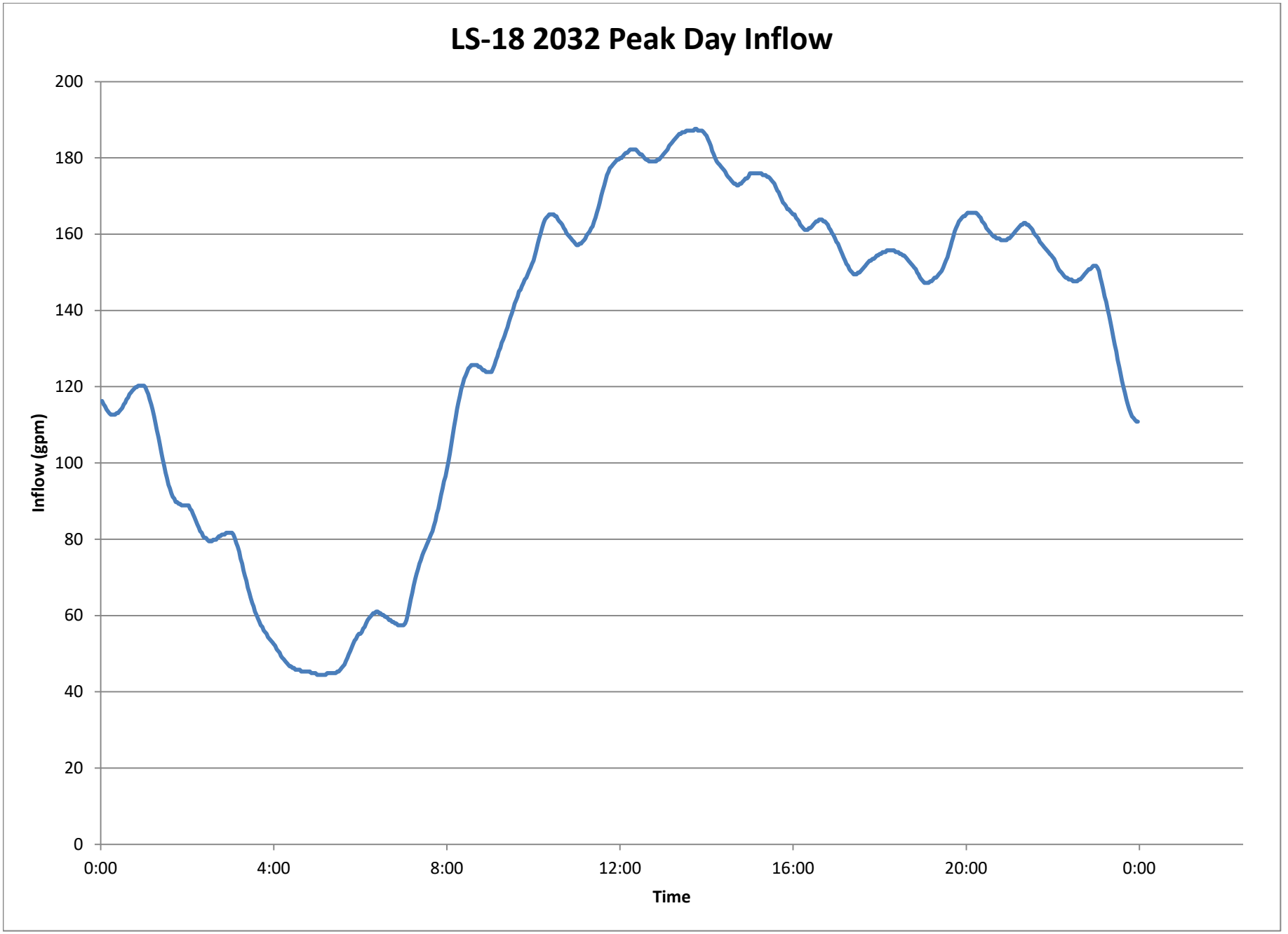

LS-9 2032 Peak Day Inflow
1600
1400
1200
1000
800
600
400
200
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

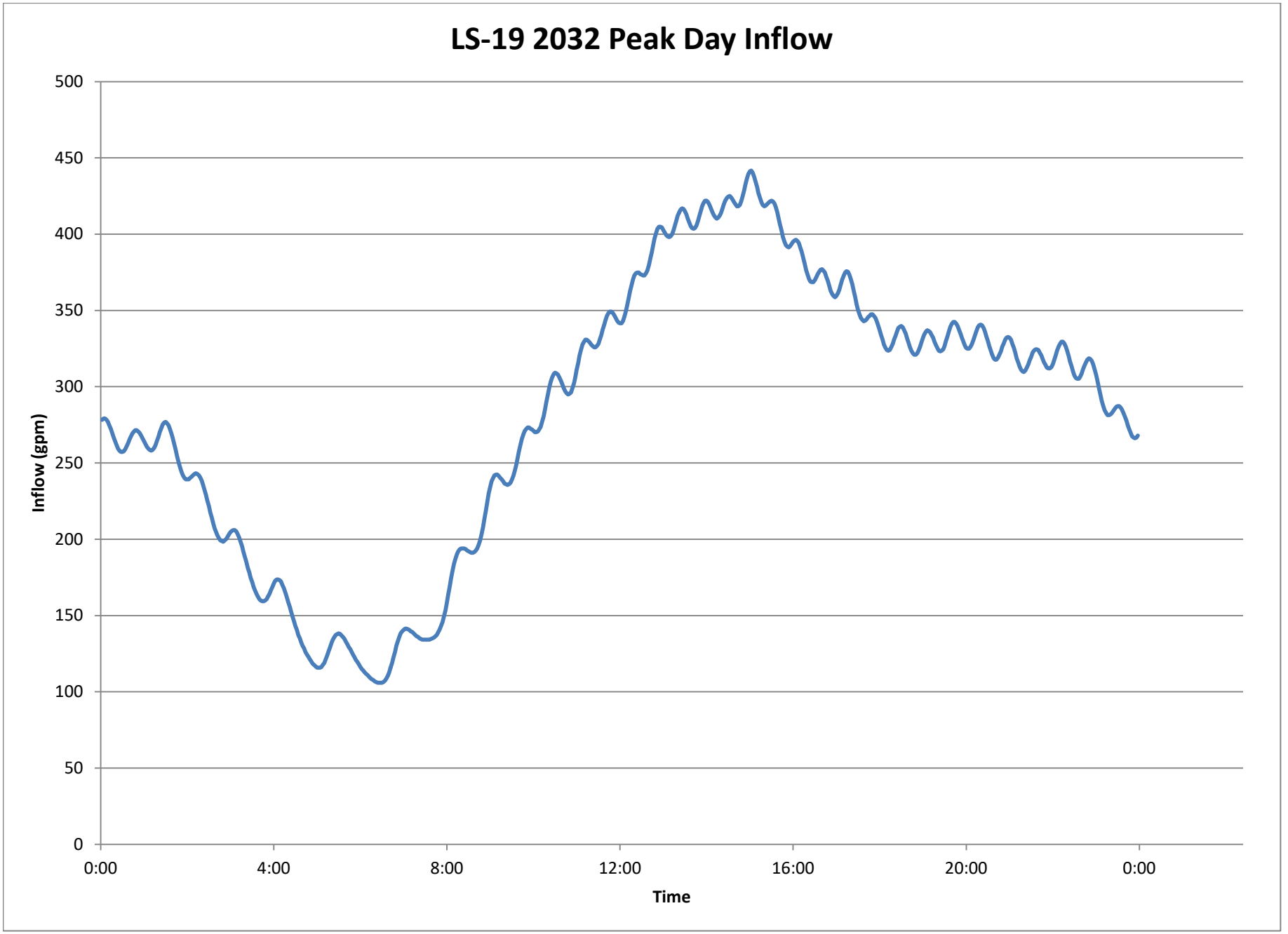

LS-14 2032 Peak Day Inflow
Inflow (gpm)
100
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

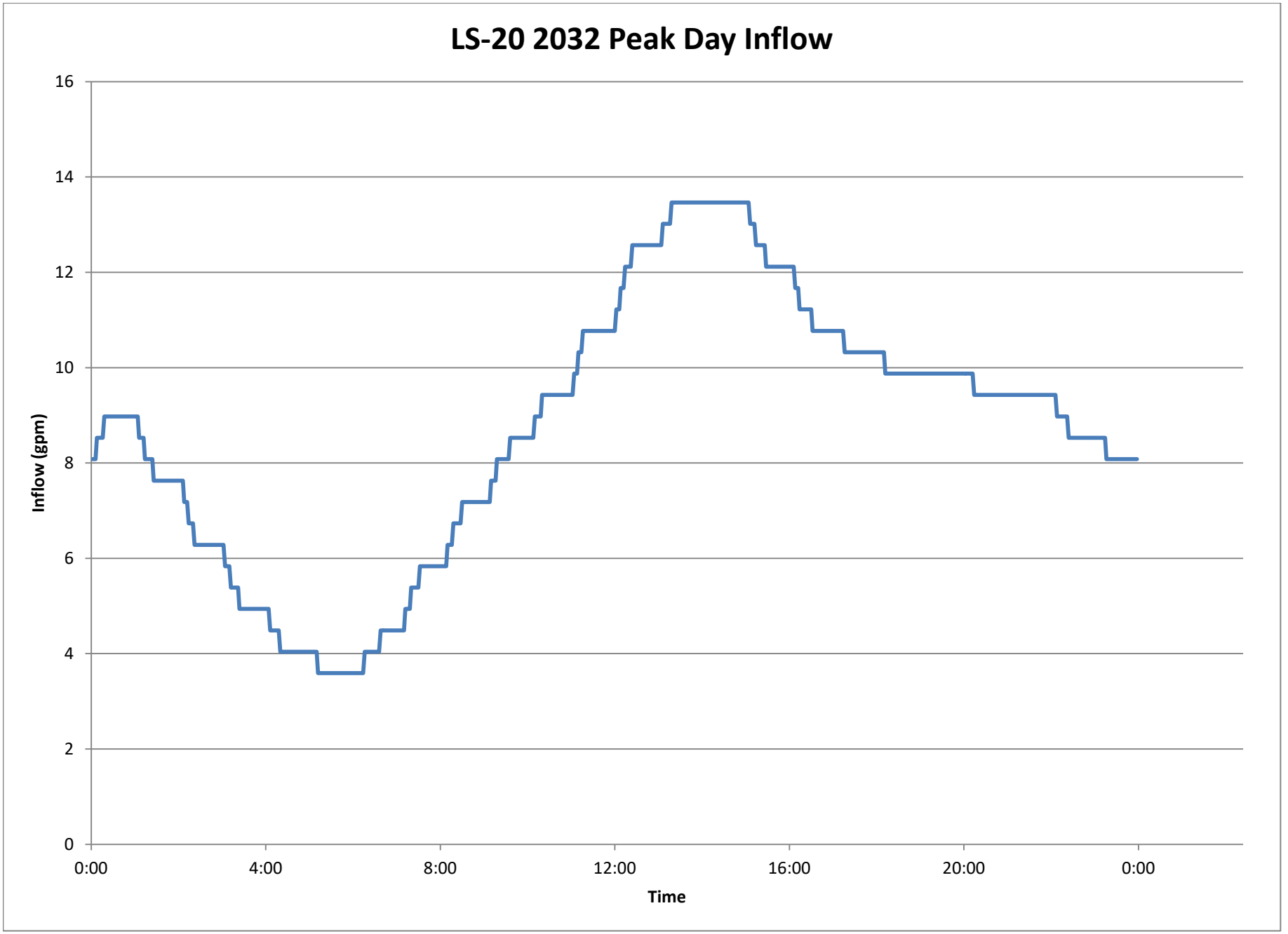

LS-15 2032 Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

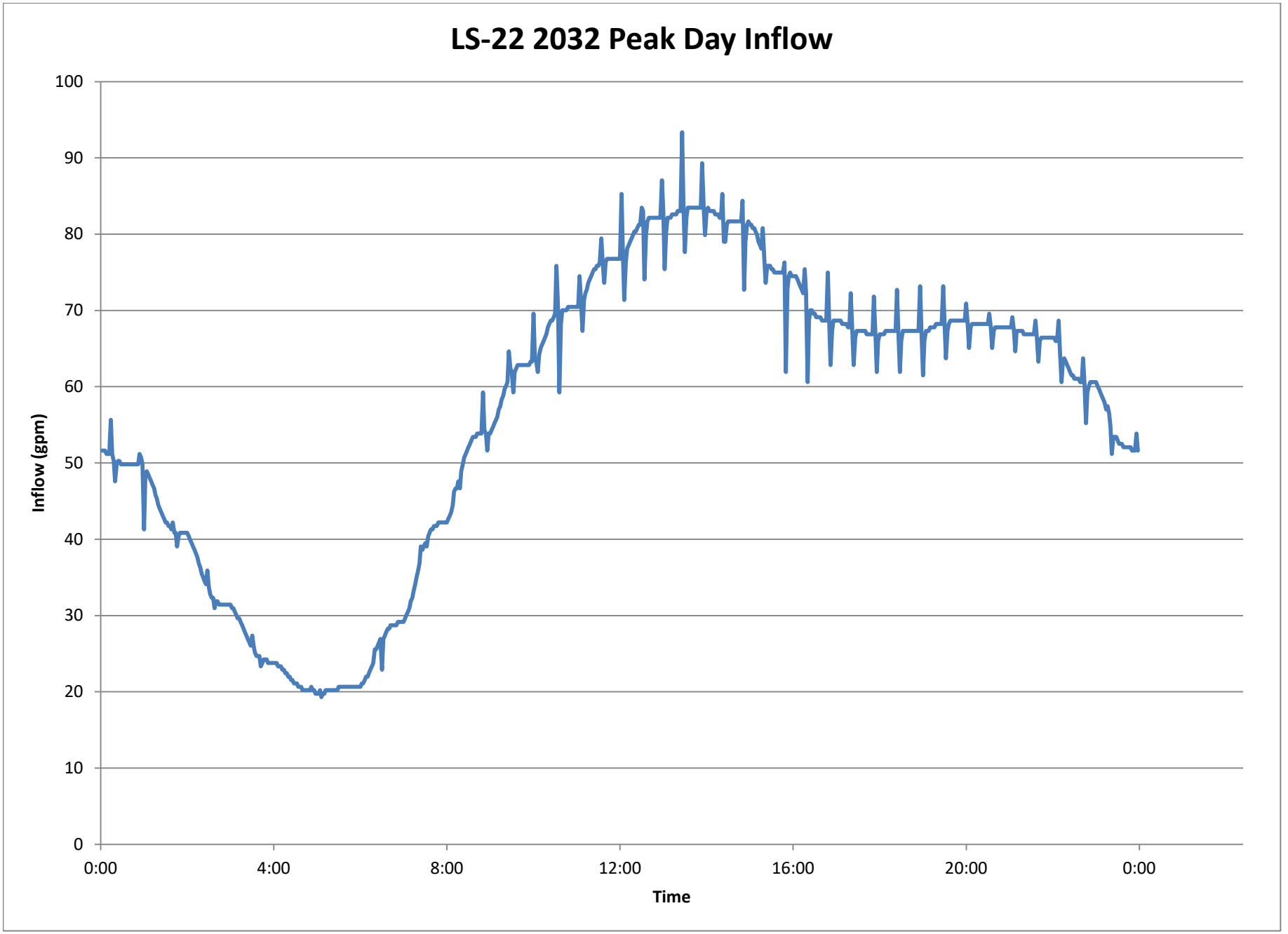

MWPS 2032 Peak Day Inflow
6000
5000
4000
3000
2000
1000
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

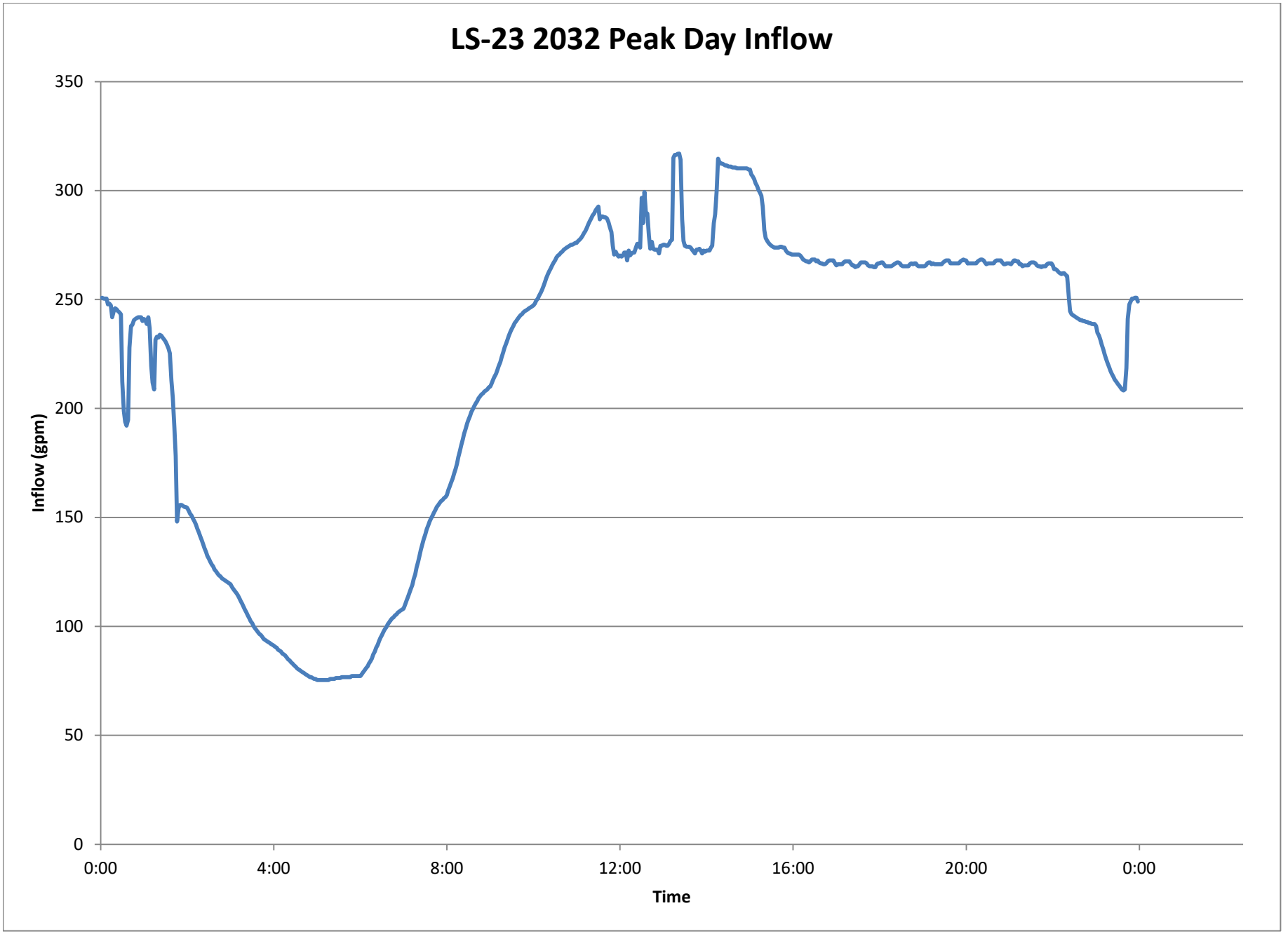

LS-17 2032 Peak Day Inflow
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

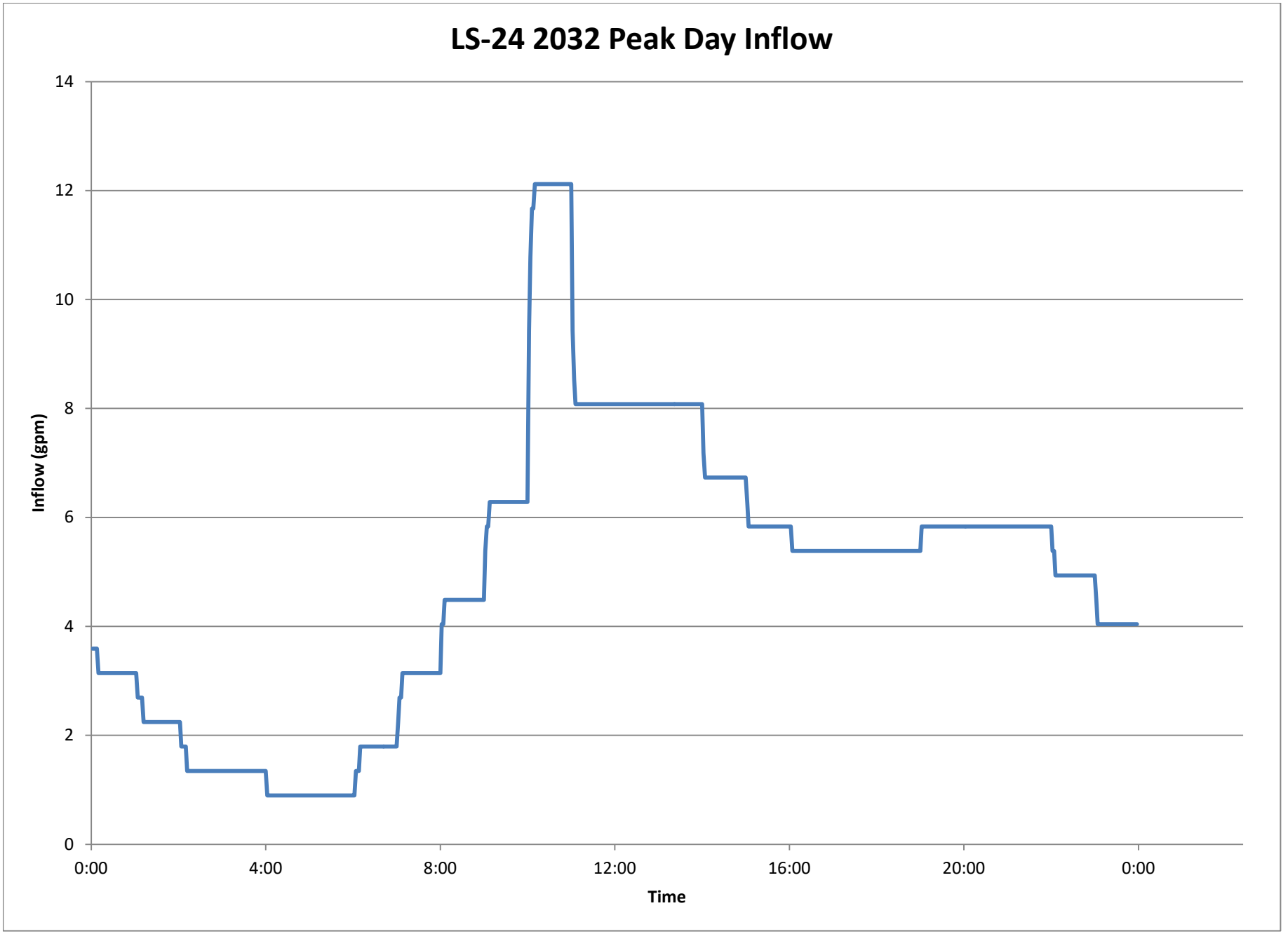

LS-18 2032 Peak Day Inflow
Inflow (gpm)
200
180
160
140
120
100
80
60
40
20
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

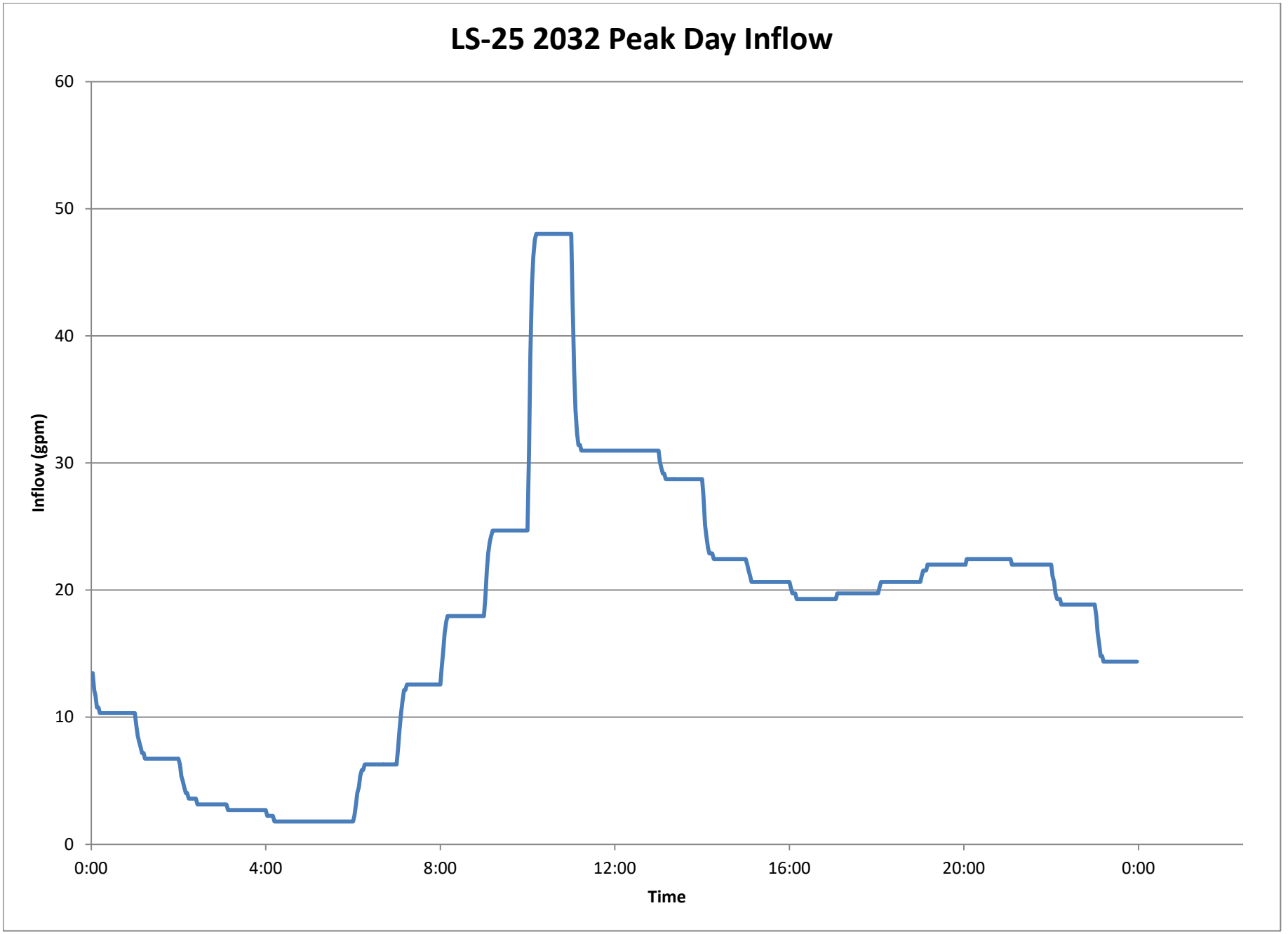

LS-19 2032 Peak Day Inflow
Inflow (gpm)
500
450
400
350
300
250
200
150
100
50
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

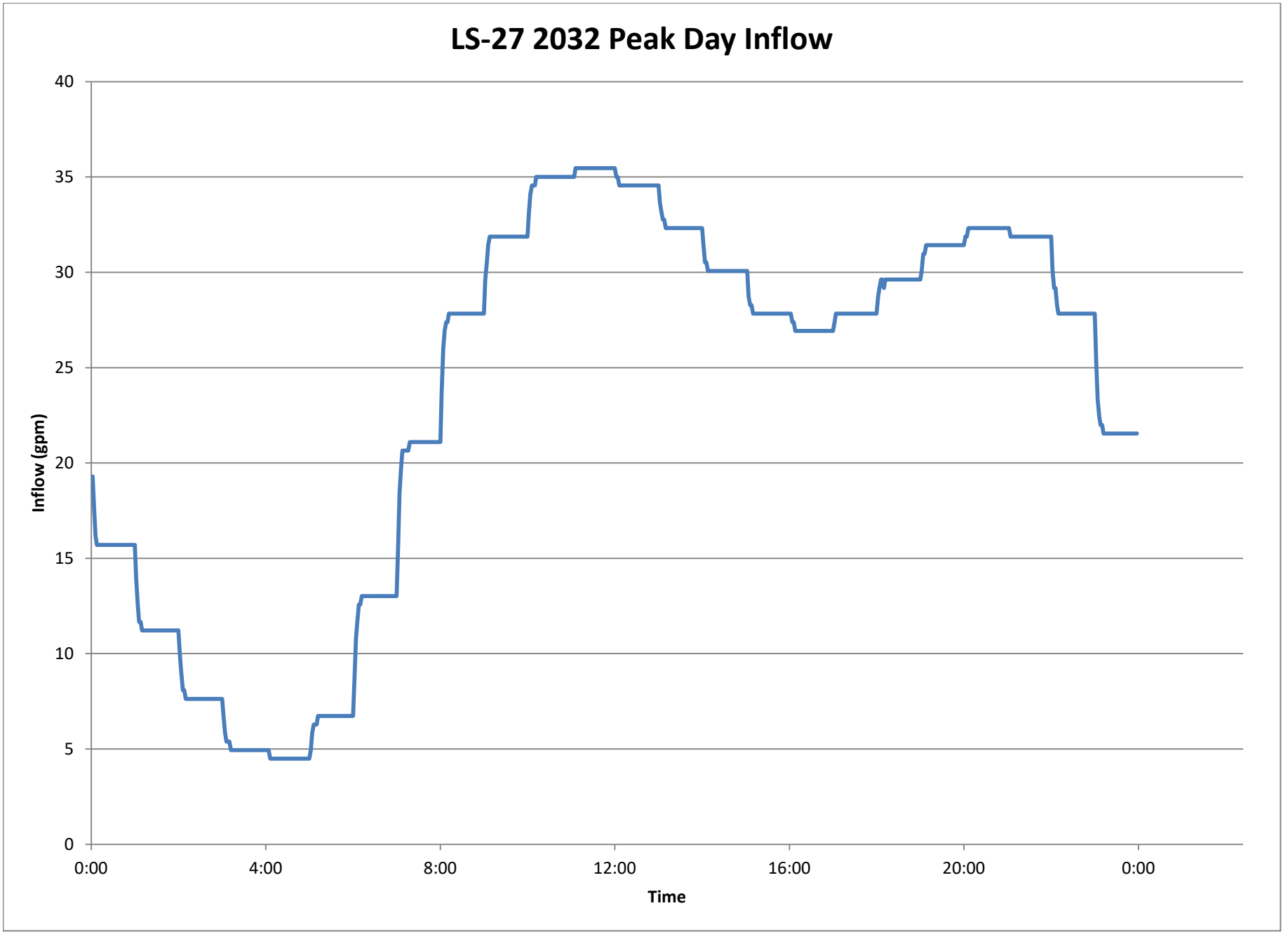

LS-20 2032 Peak Day Inflow
16
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

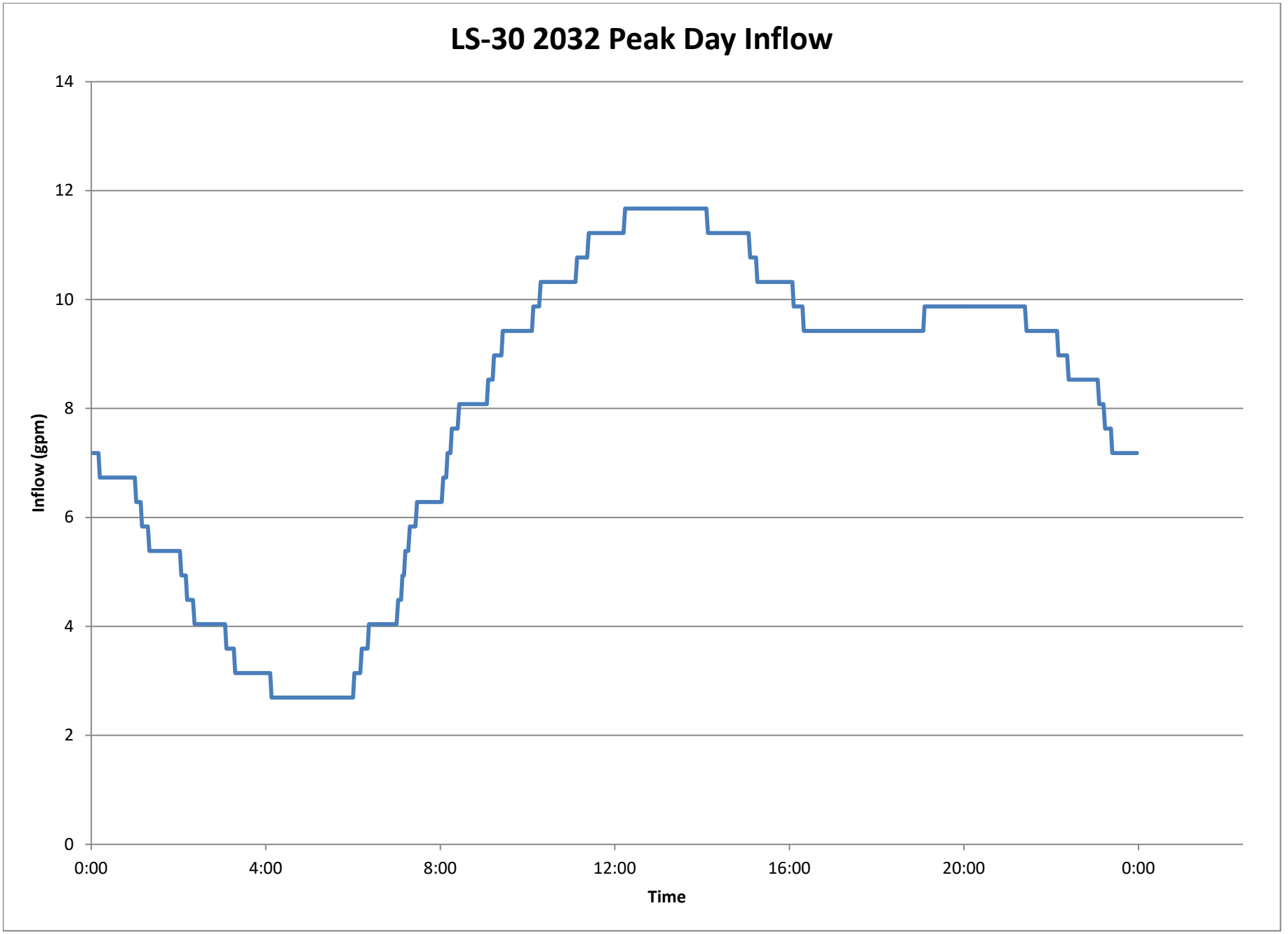

LS-22 2032 Peak Day Inflow
Inflow (gpm)
100
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

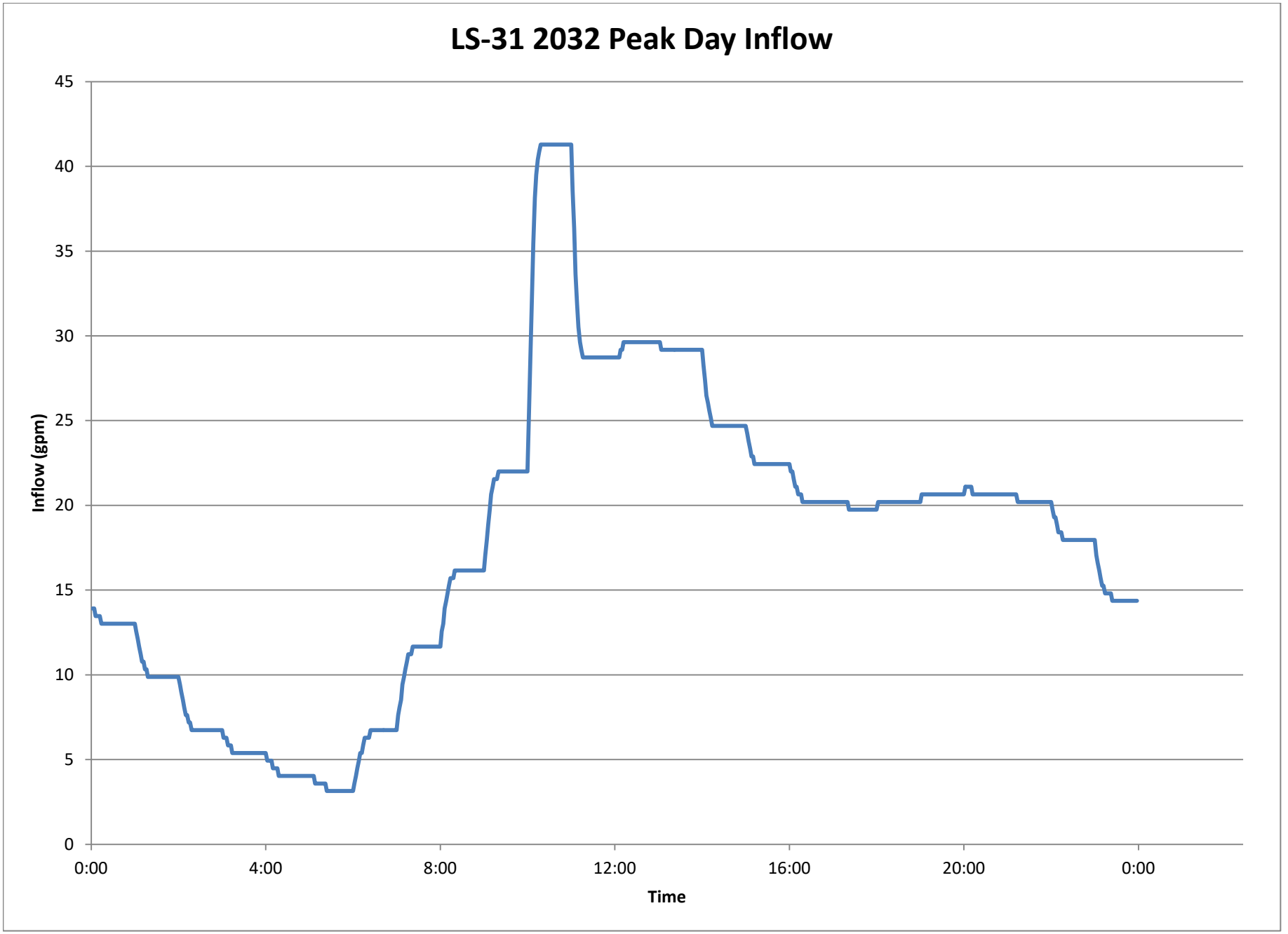

LS-23 2032 Peak Day Inflow
350
300
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

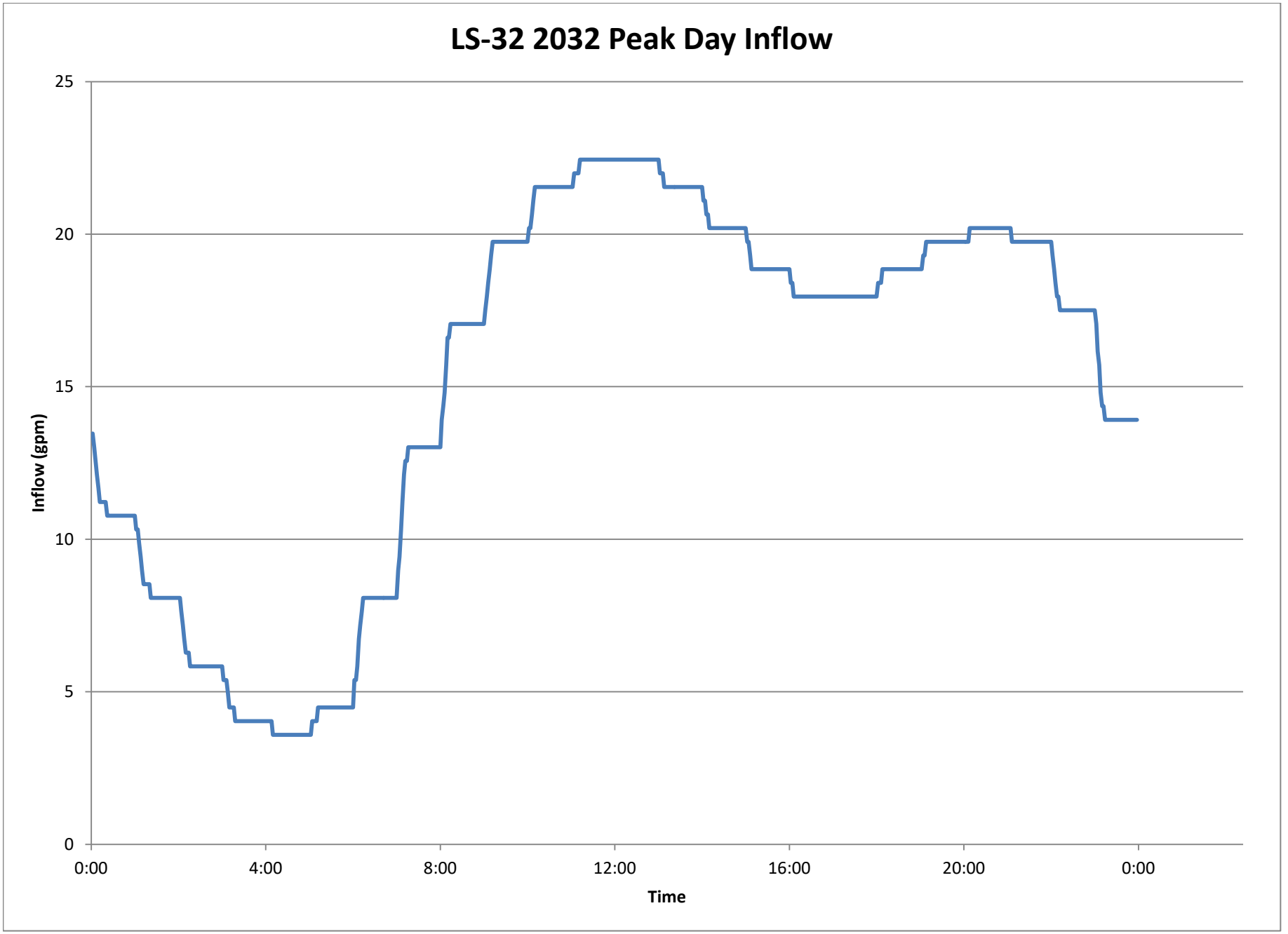

LS-24 2032 Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

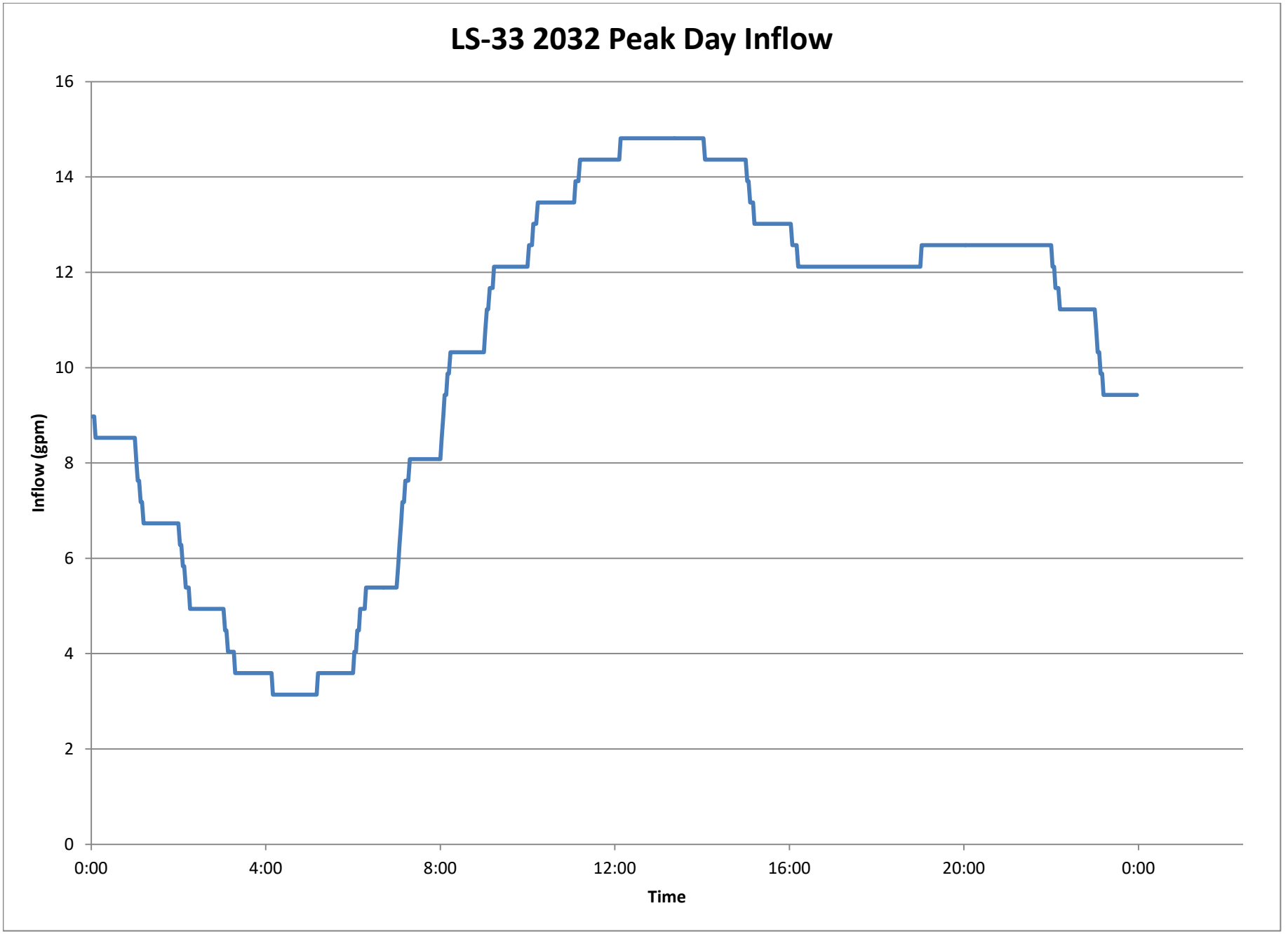

LS-25 2032 Peak Day Inflow
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

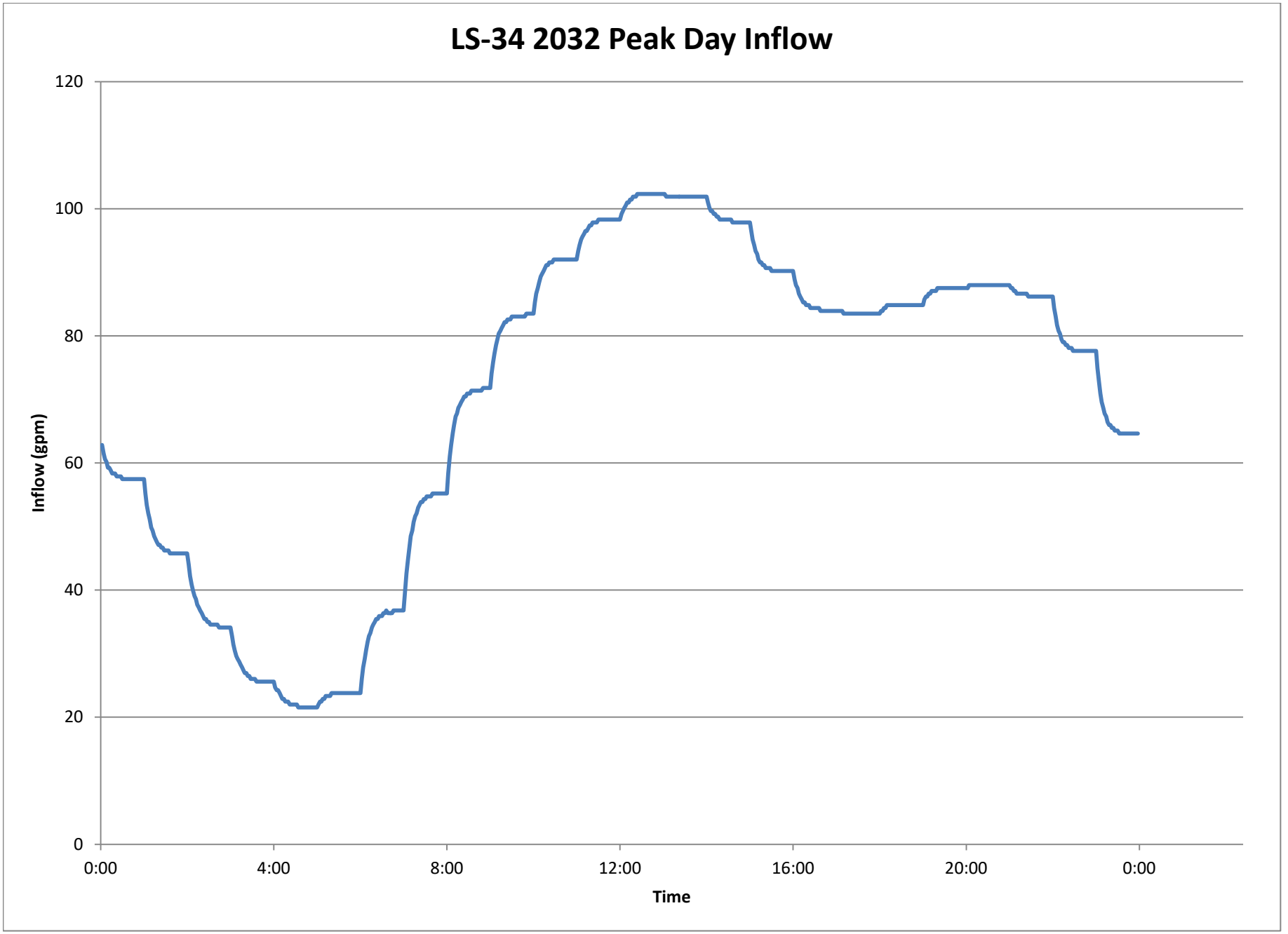

LS-27 2032 Peak Day Inflow
Inflow (gpm)
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

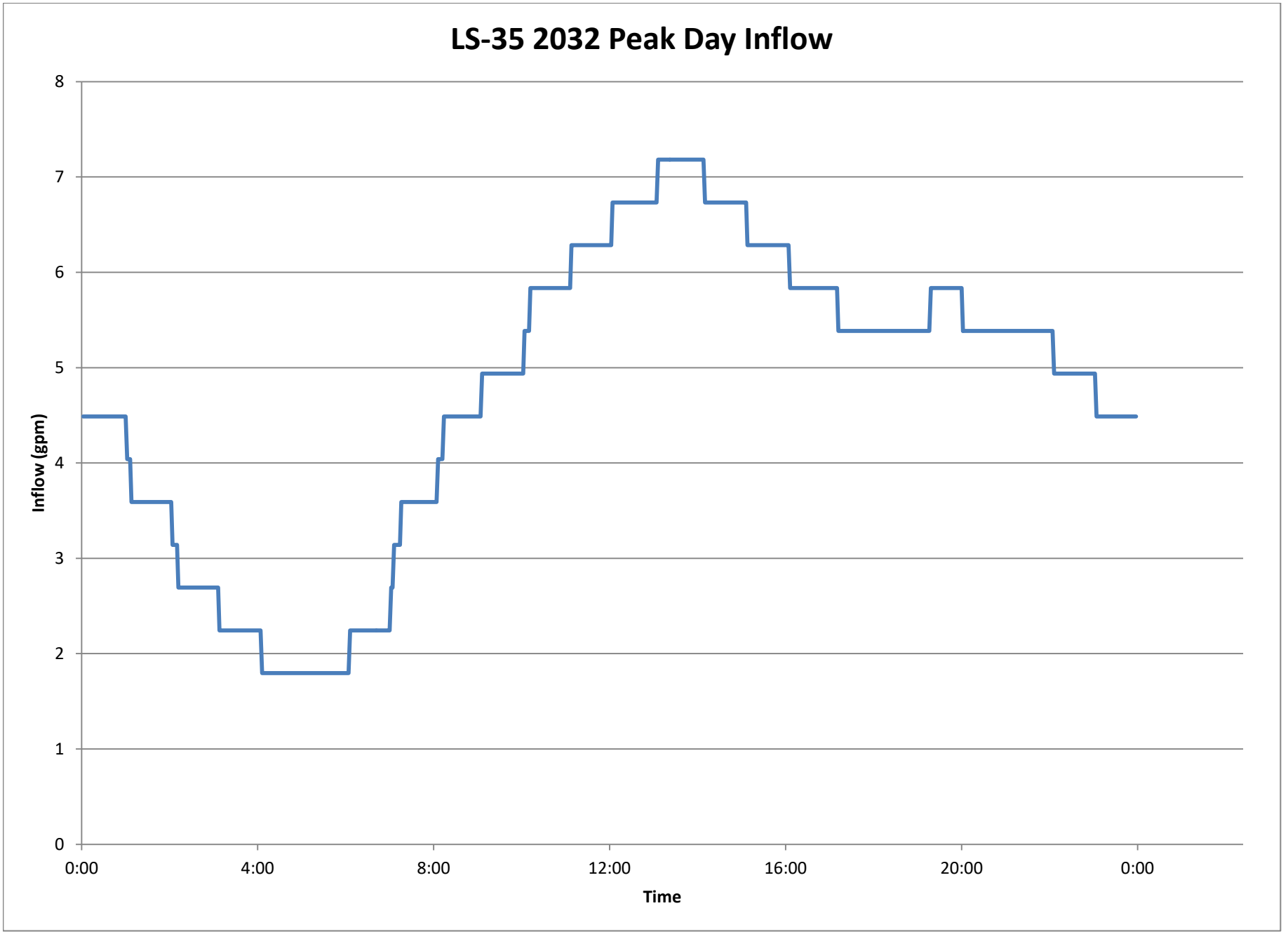

LS-30 2032 Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

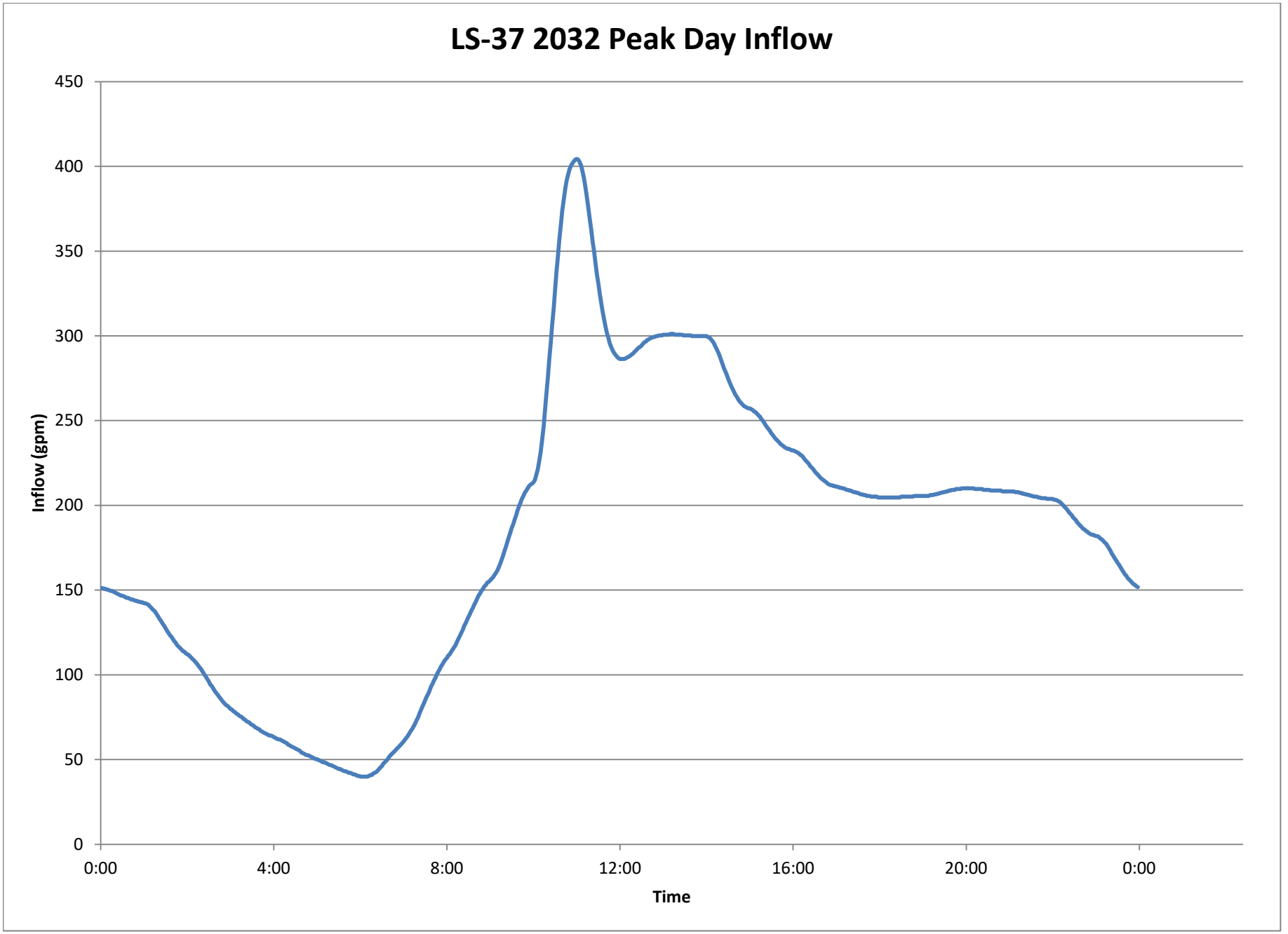

LS-31 2032 Peak Day Inflow
Inflow (gpm)
45
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

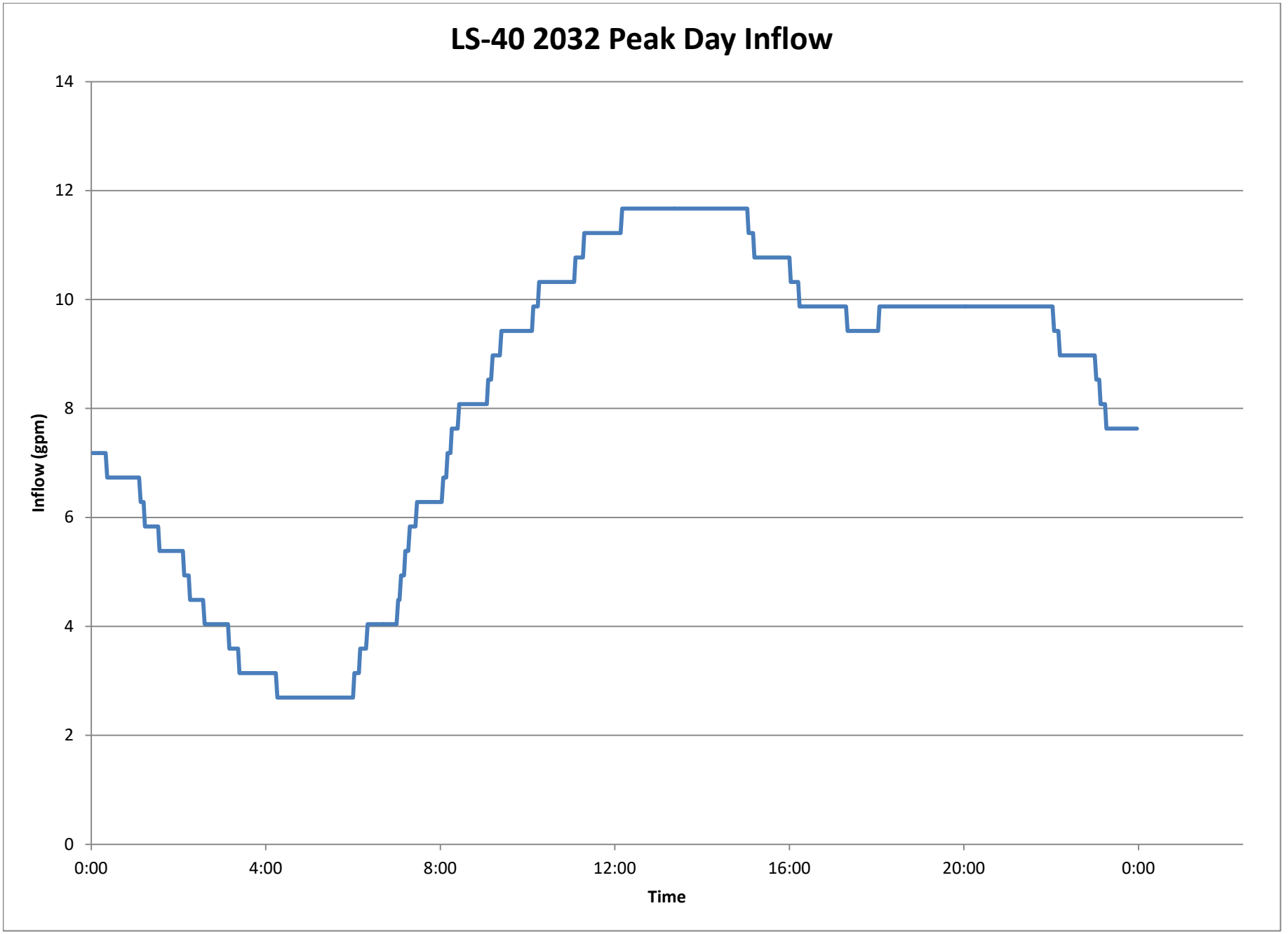

LS-32 2032 Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

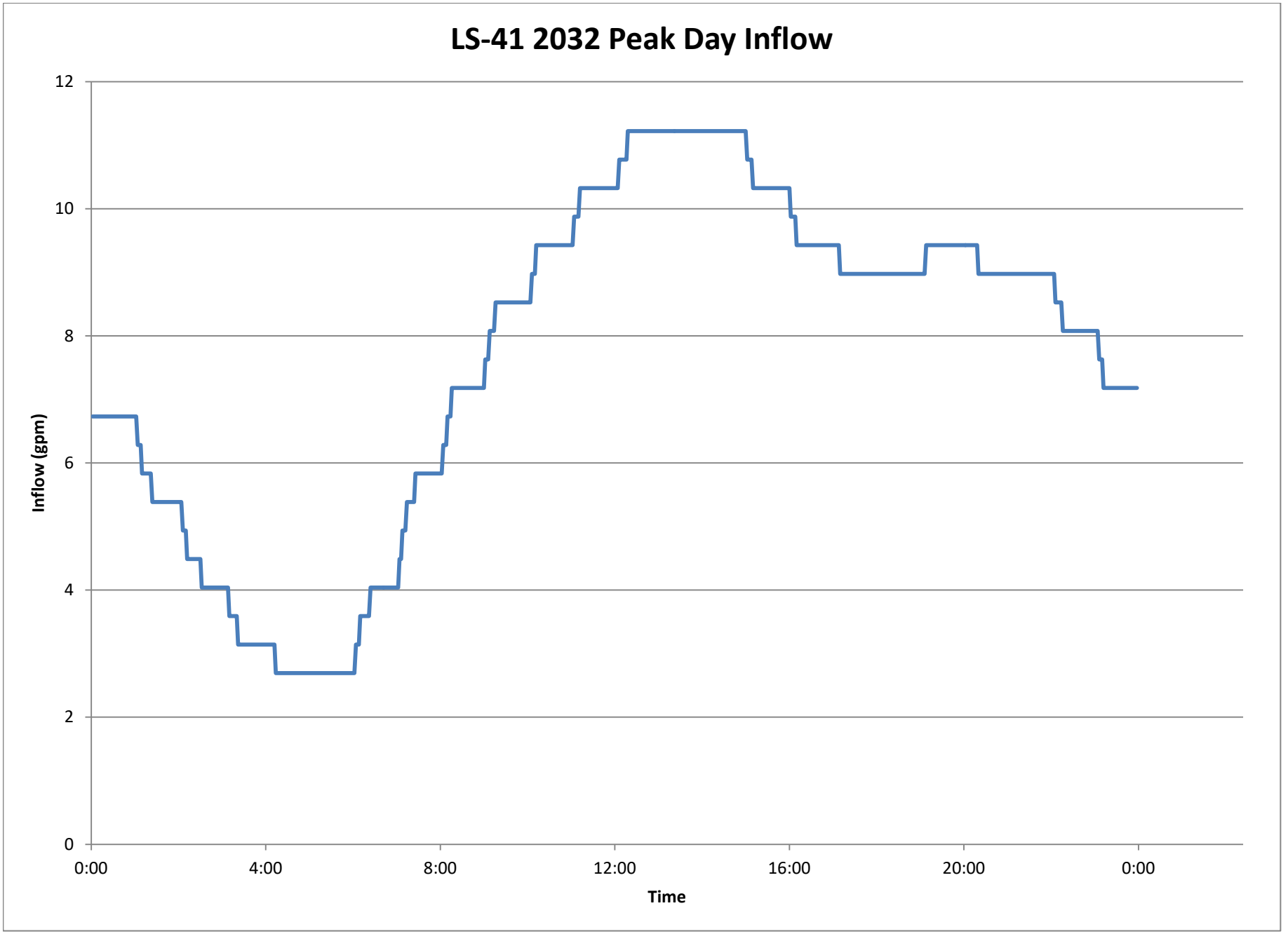

LS-33 2032 Peak Day Inflow
Inflow (gpm)
16
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

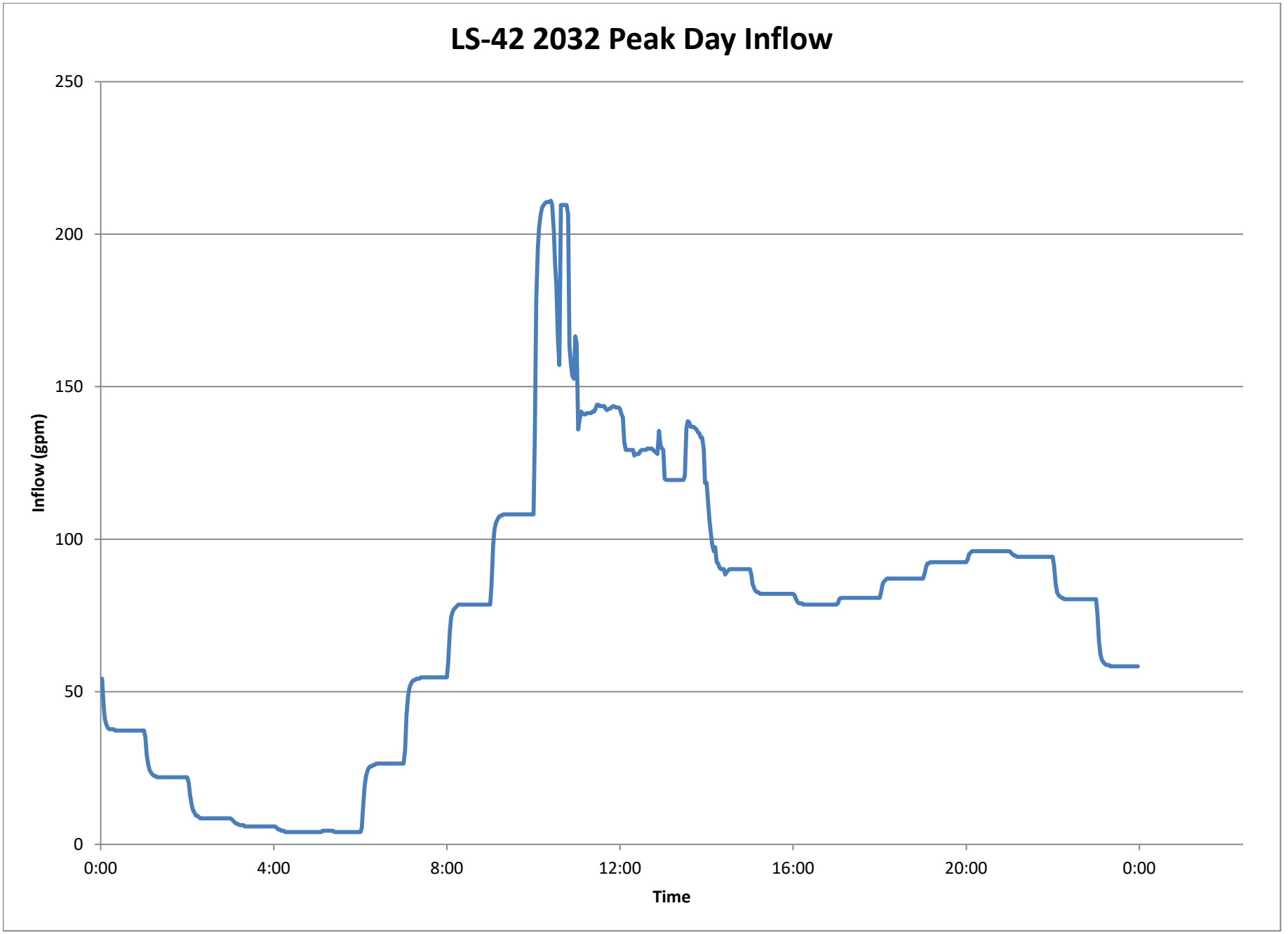

LS-34 2032 Peak Day Inflow
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

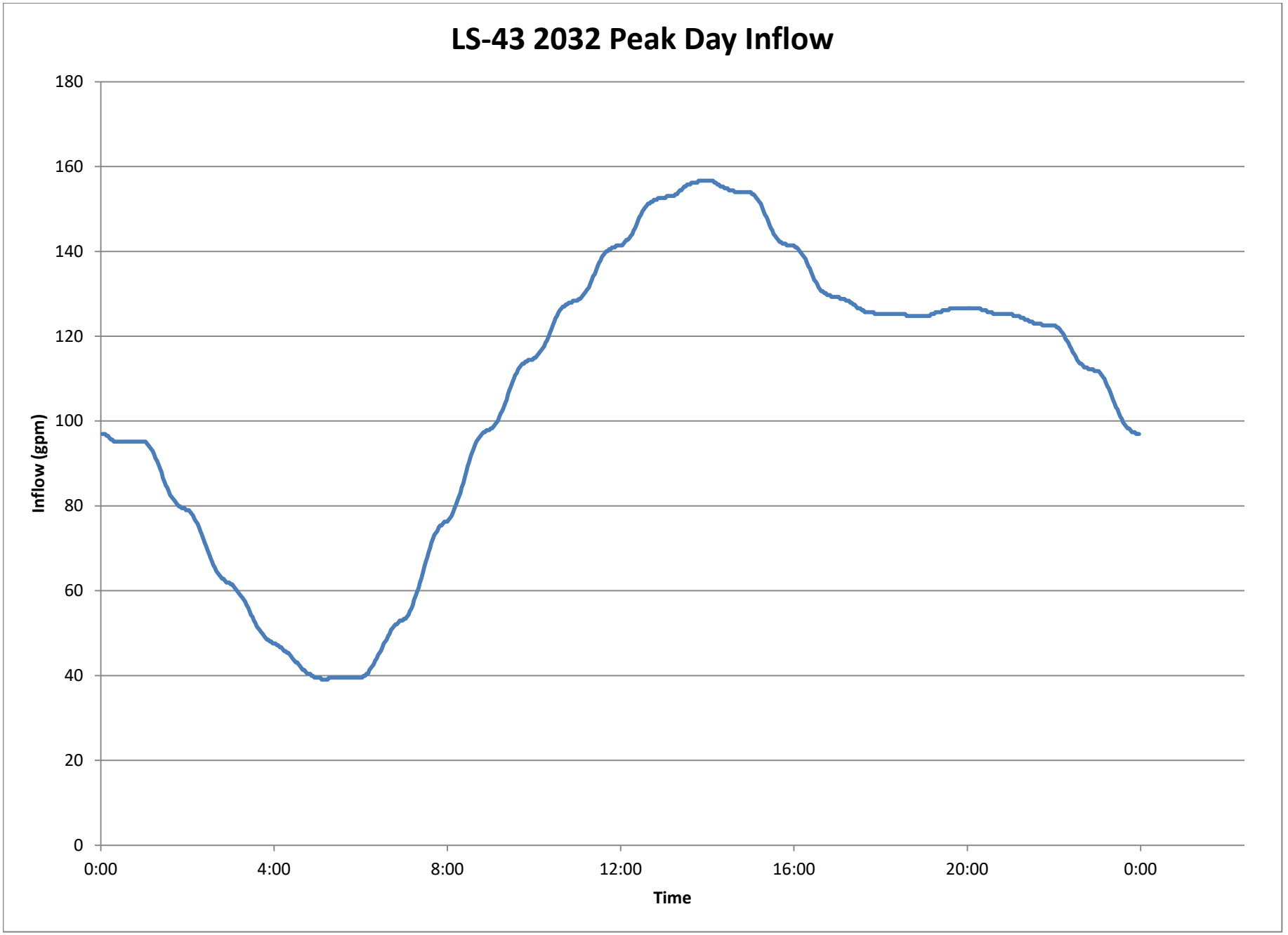

LS-35 2032 Peak Day Inflow
Inflow (gpm)
0
1
2
3
4
5
6
7
8
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

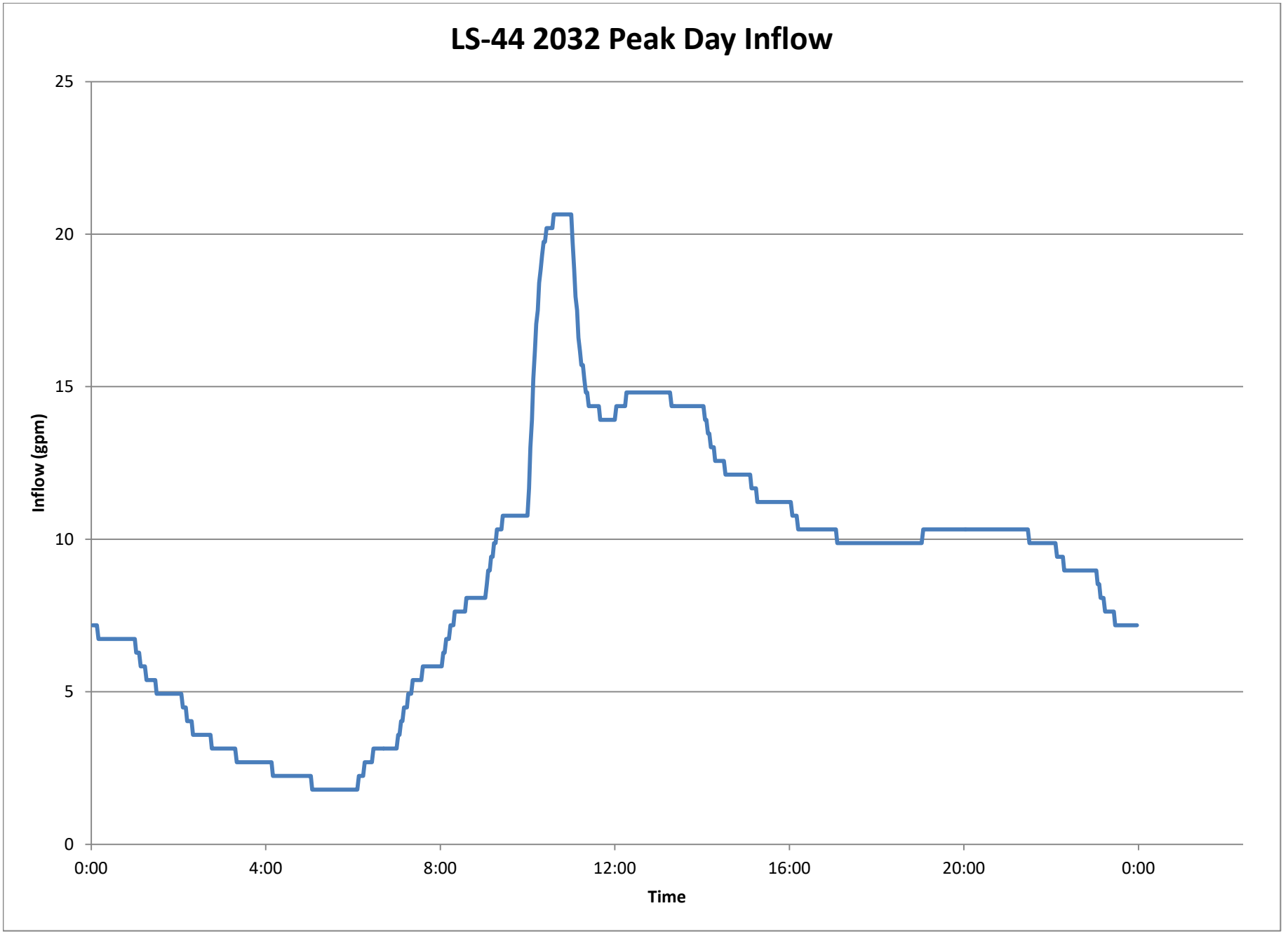

LS-37 2032 Peak Day Inflow
Inflow (gpm)
450
400
350
300
250
200
150
100
50
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

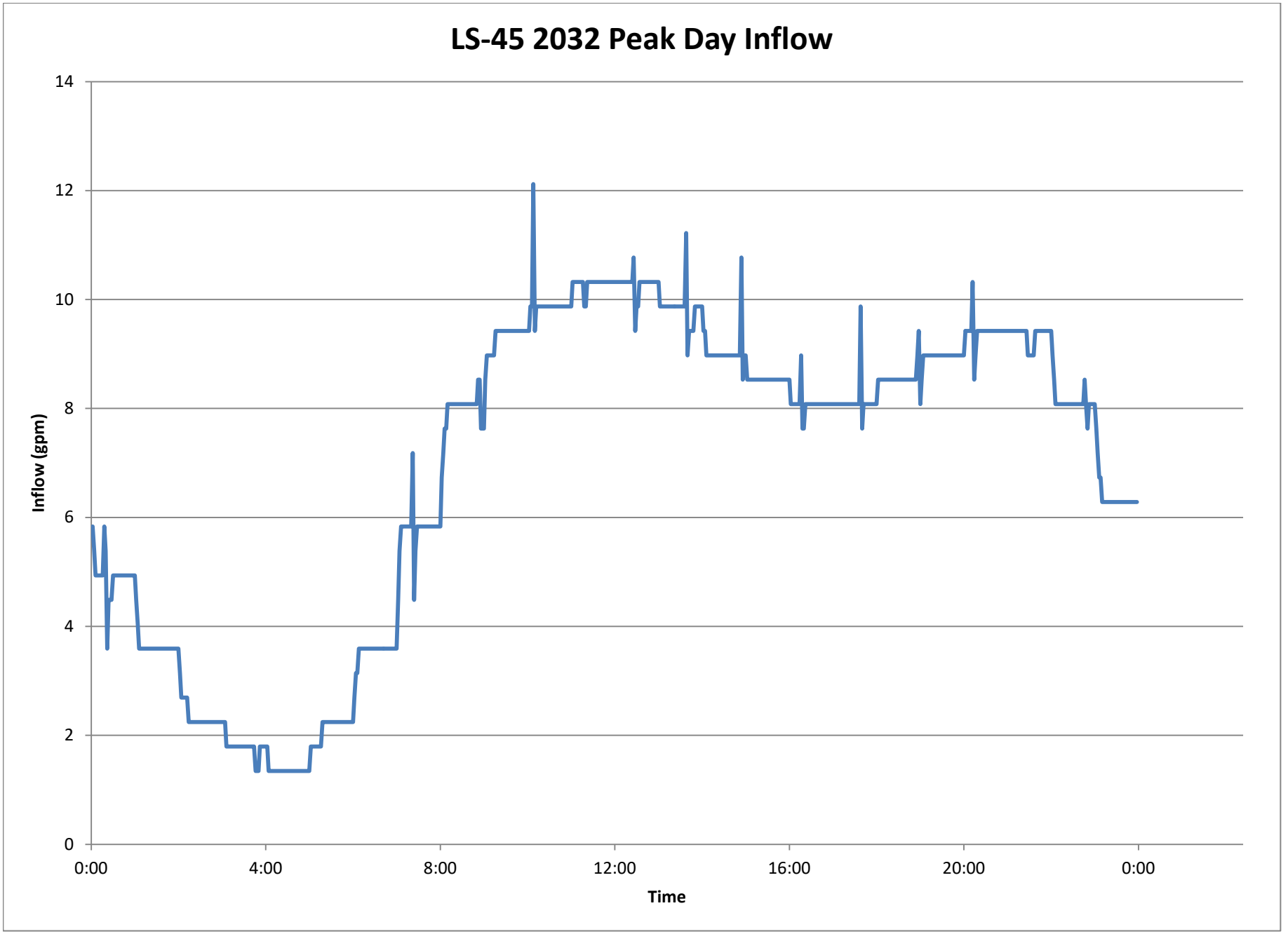

LS-40 2032 Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

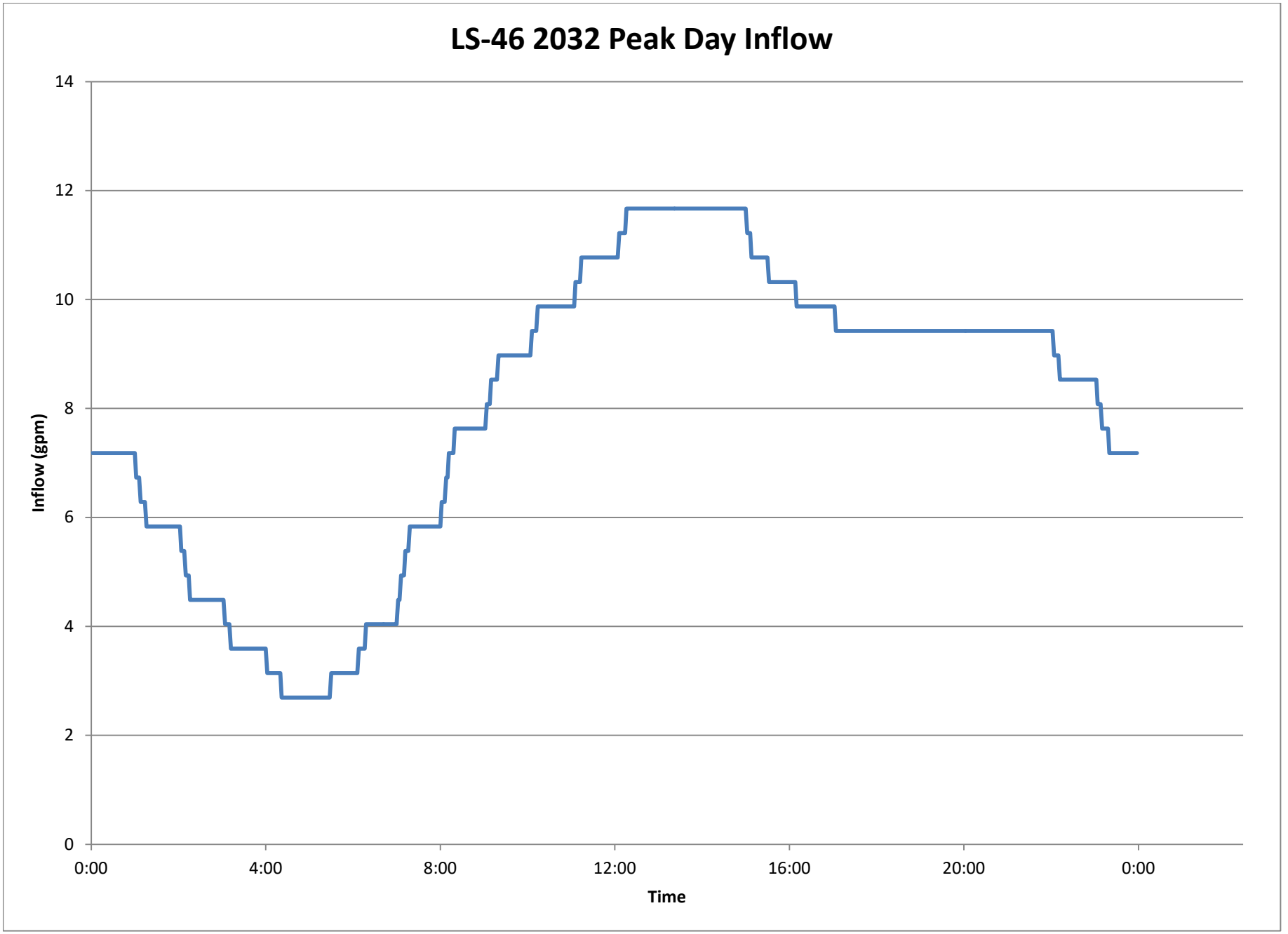

LS-41 2032 Peak Day Inflow
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

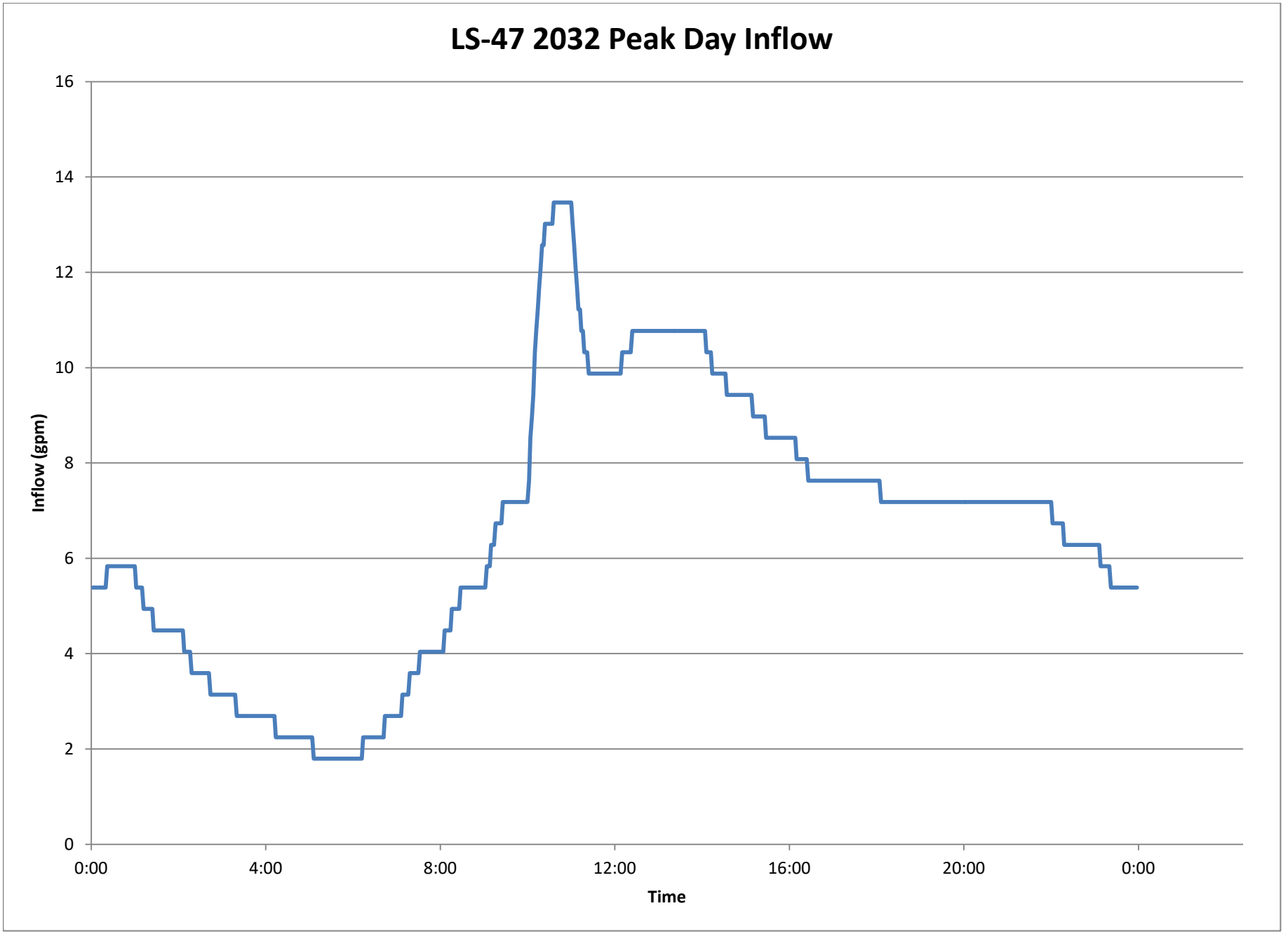

LS-42 2032 Peak Day Inflow
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

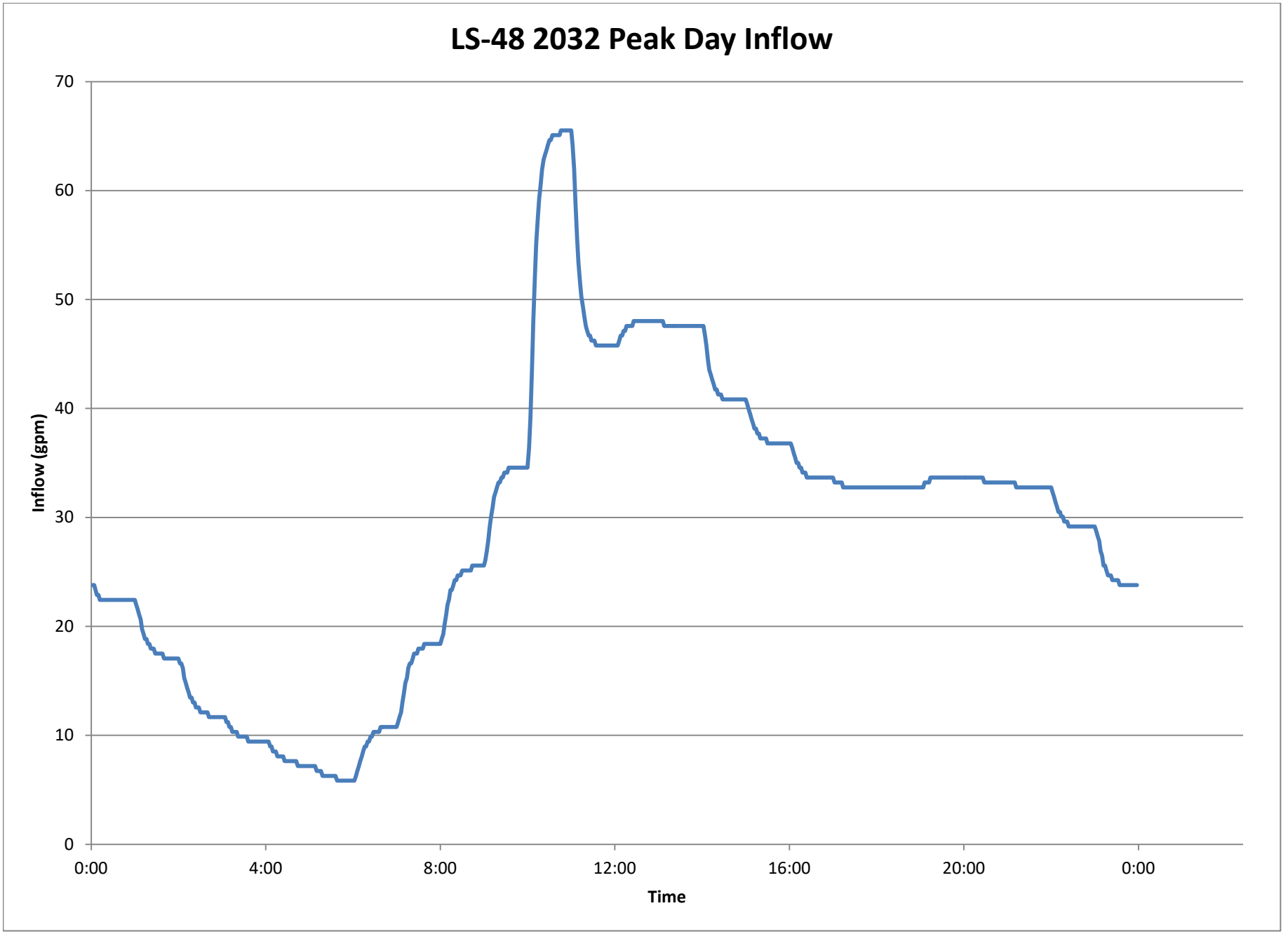

LS-43 2032 Peak Day Inflow
180
160
140
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

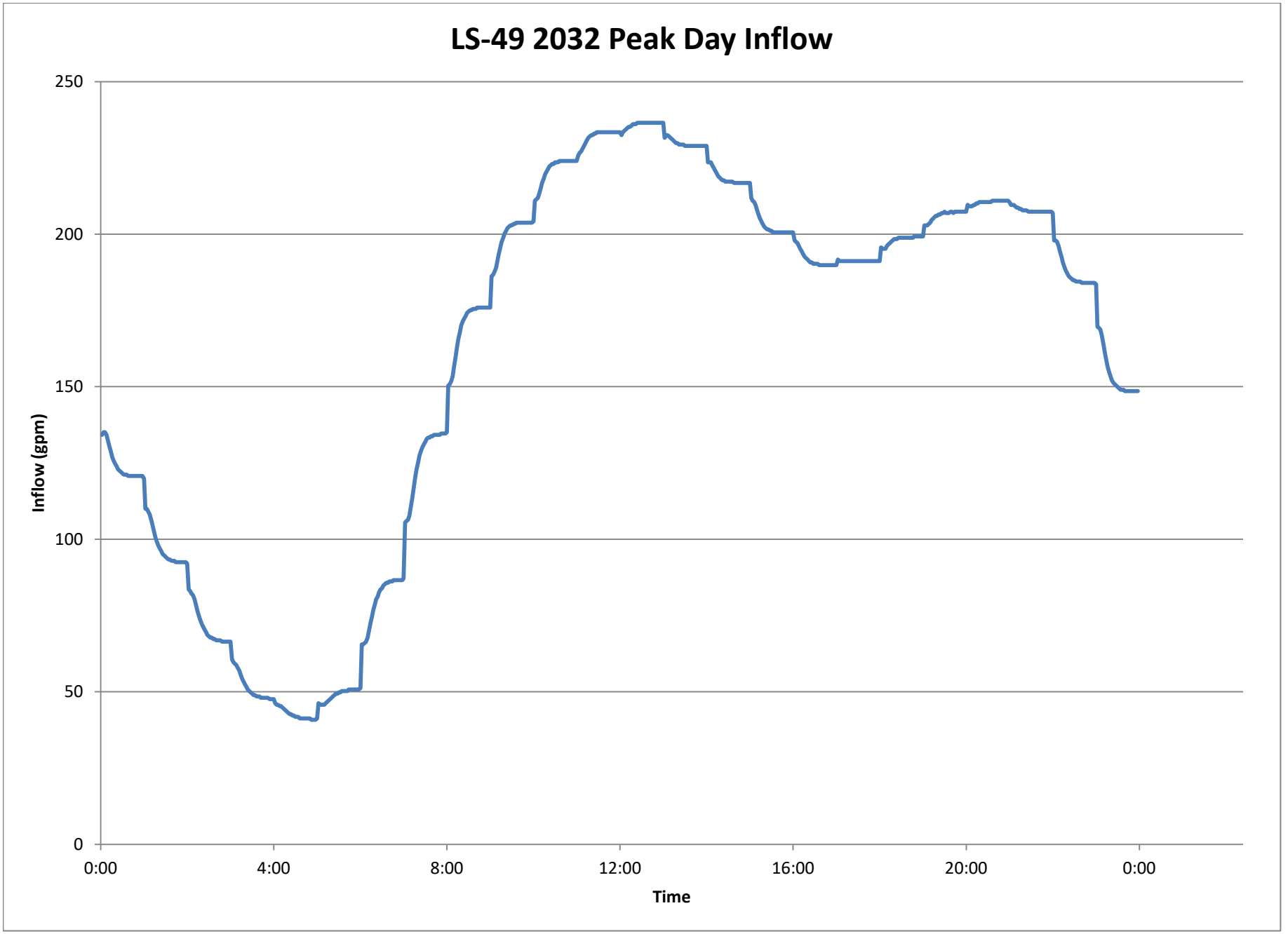

LS-44 2032 Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

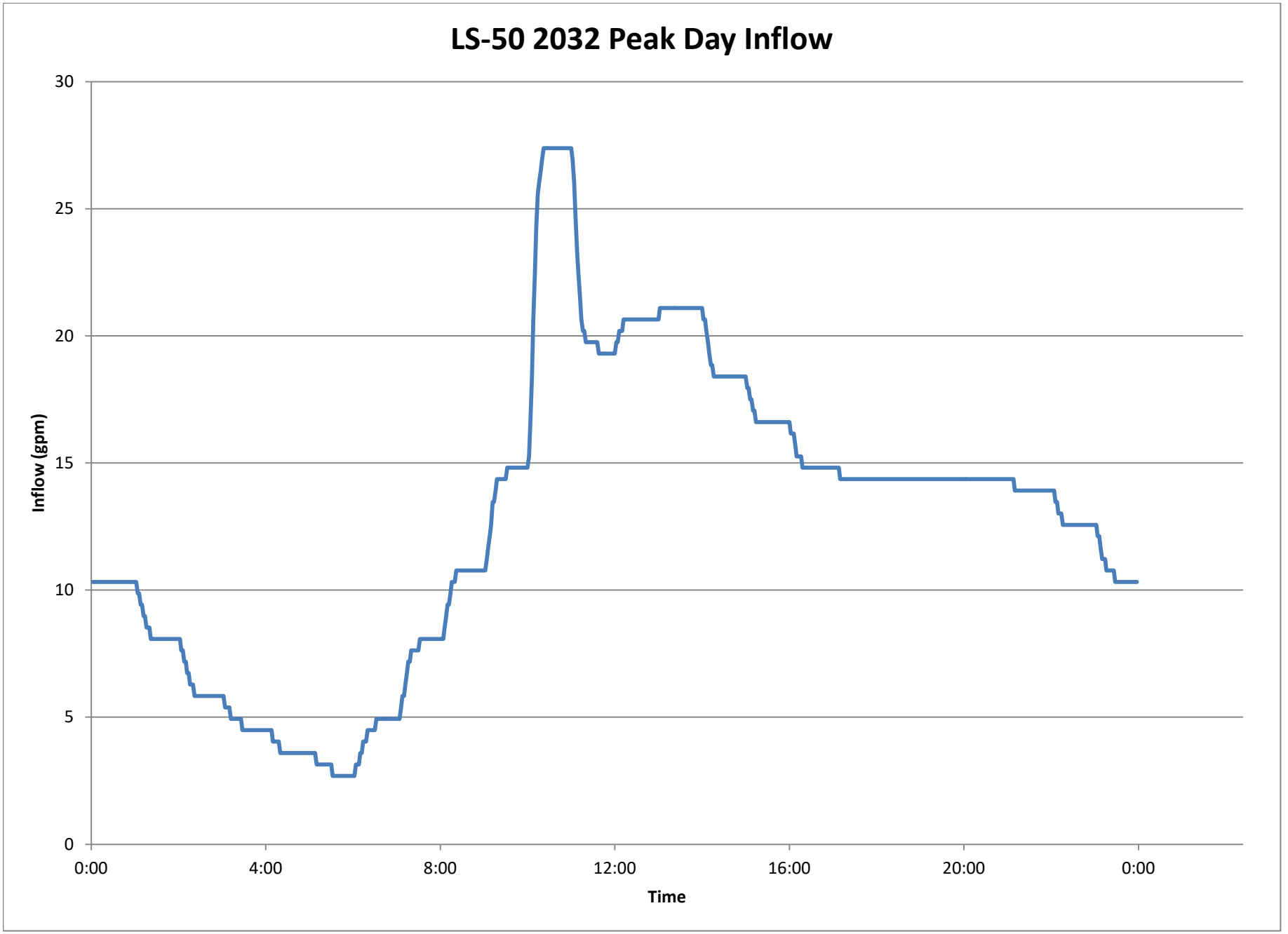

LS-45 2032 Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

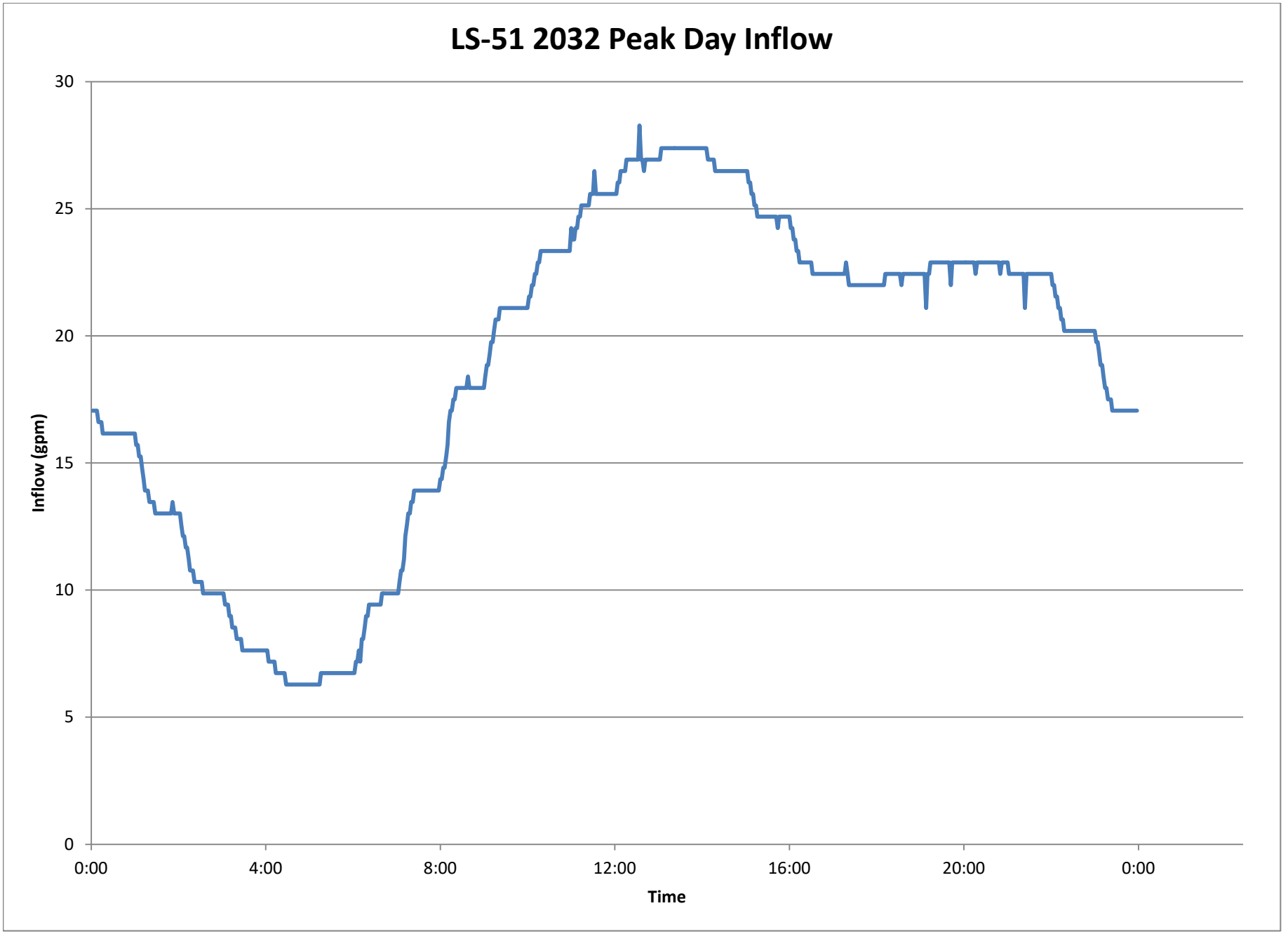

LS-46 2032 Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

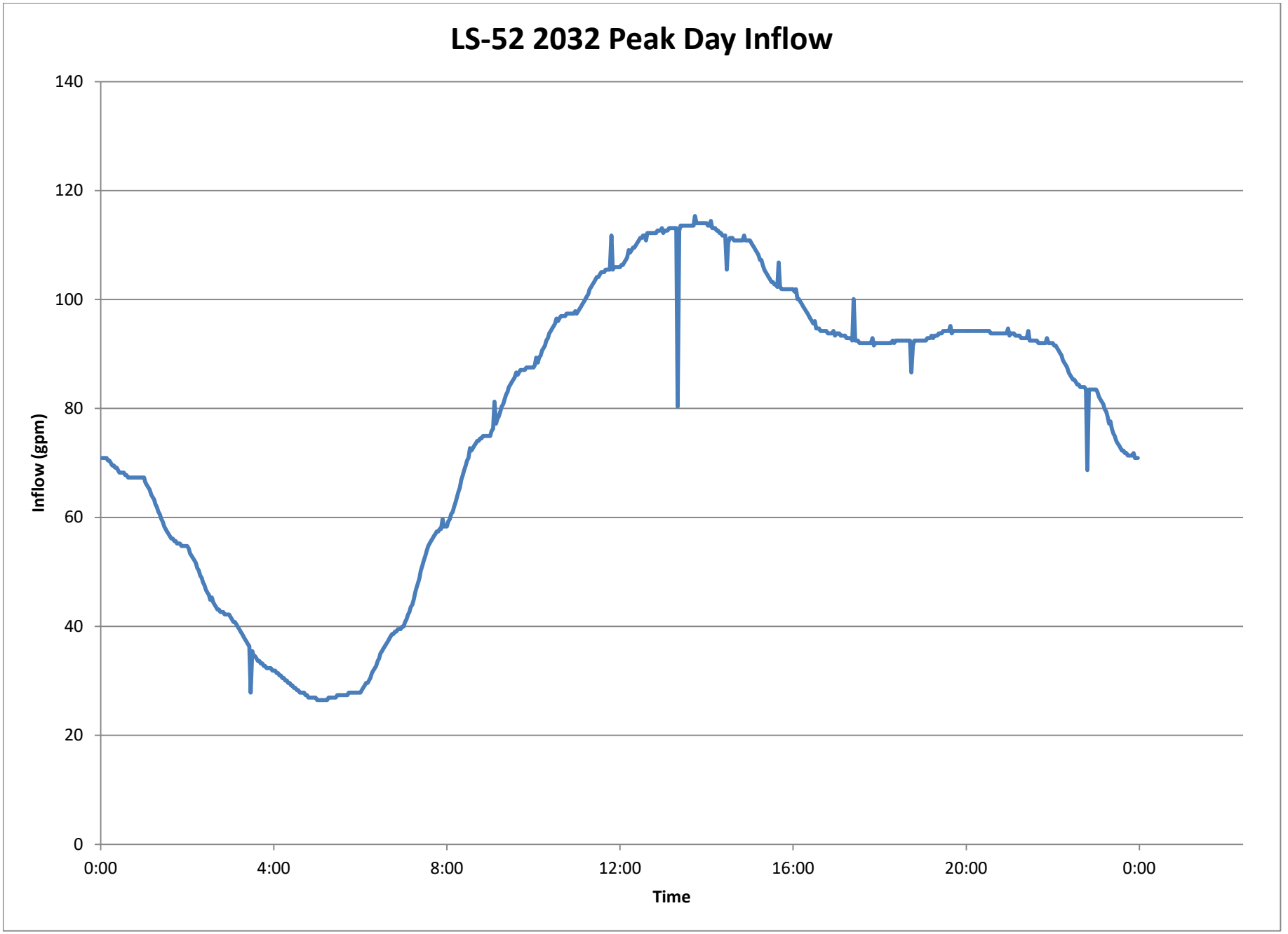

LS-47 2032 Peak Day Inflow
16
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

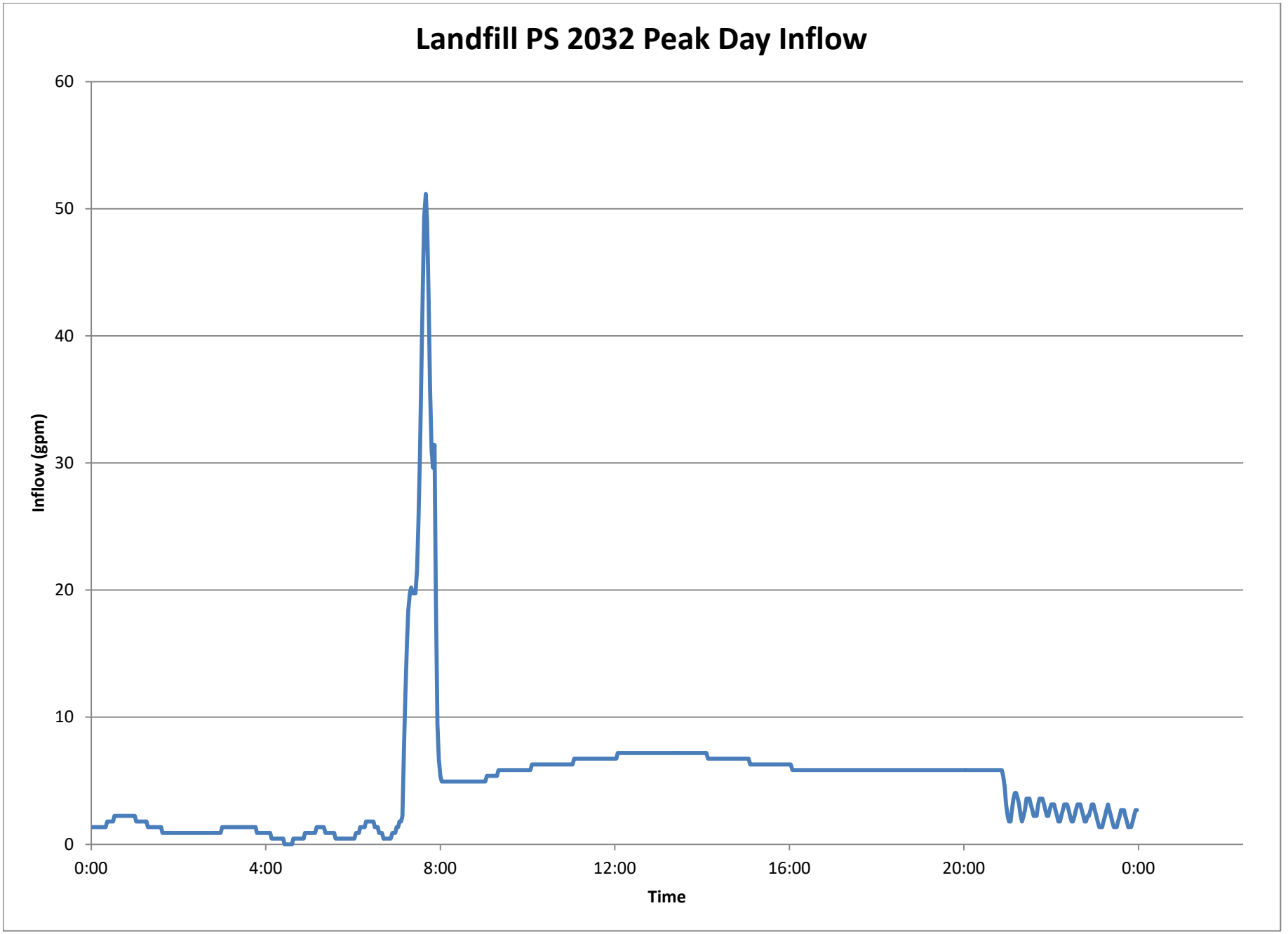

LS-48 2032 Peak Day Inflow
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

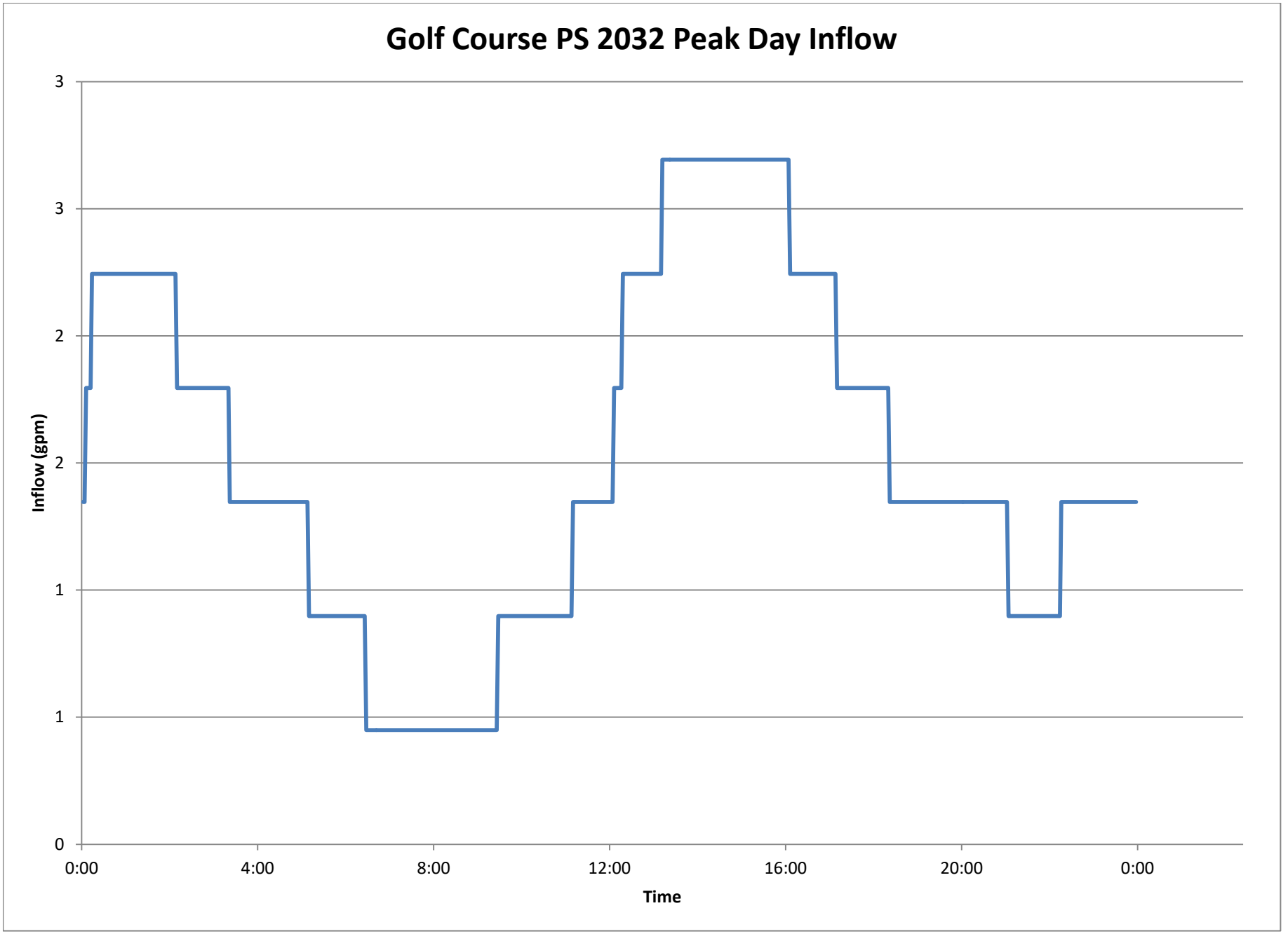

LS-49 2032 Peak Day Inflow
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

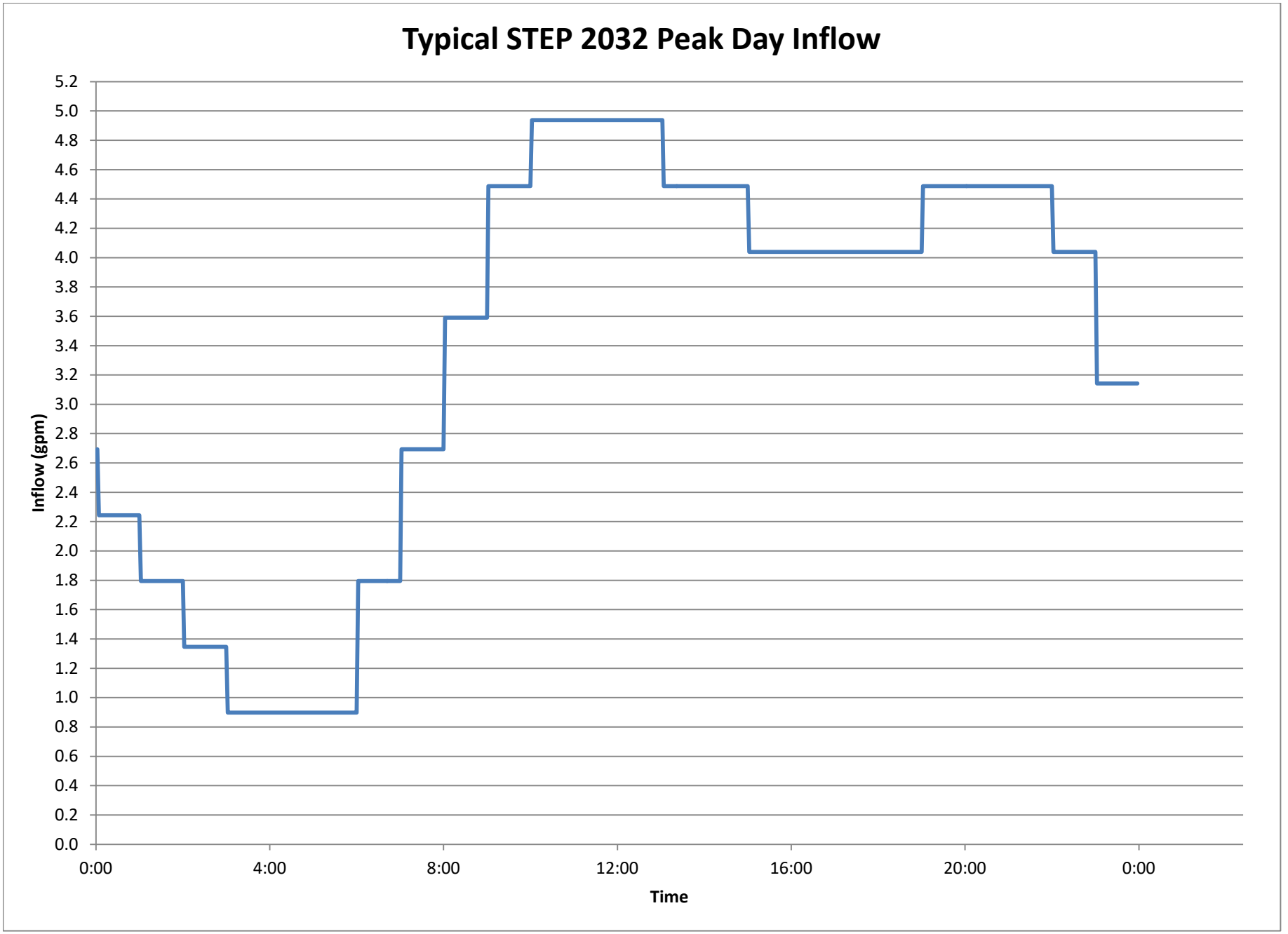

LS-50 2032 Peak Day Inflow
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

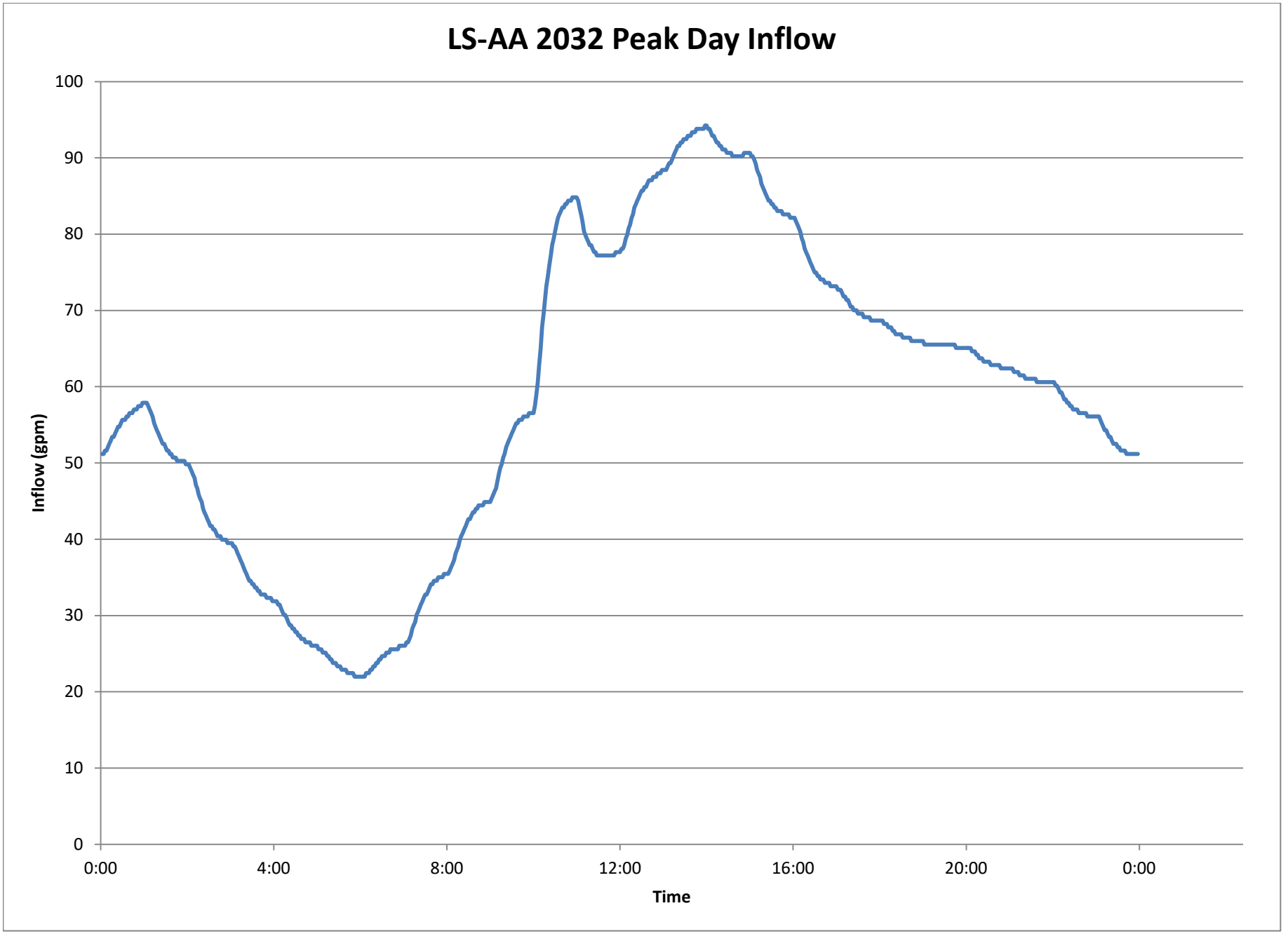

LS-51 2032 Peak Day Inflow
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

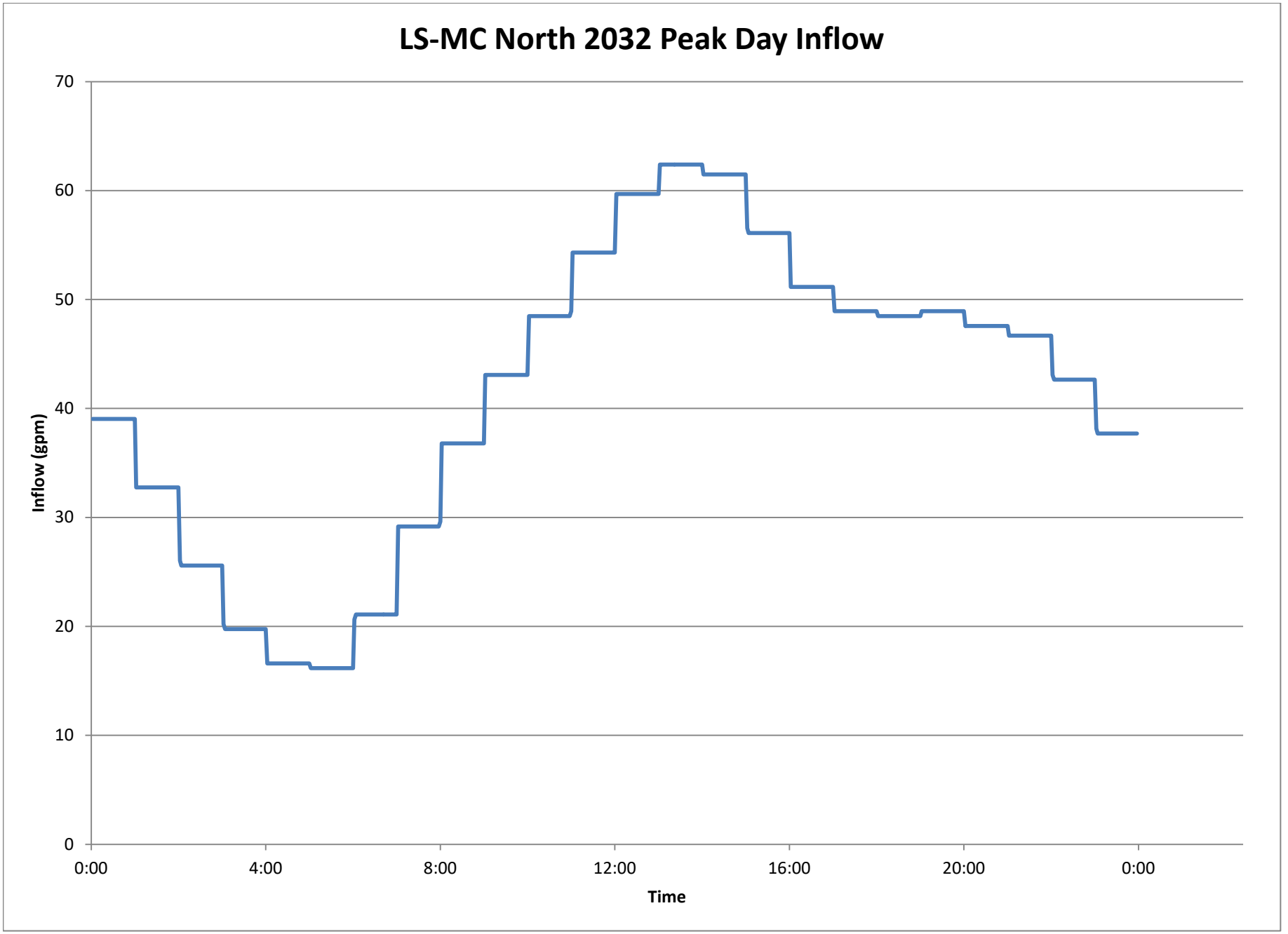

LS-52 2032 Peak Day Inflow
Inflow (gpm)
140
120
100
80
60
40
20
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Landfill PS 2032 Peak Day Inflow
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Golf Course PS 2032 Peak Day Inflow
Inflow (gpm)
3
3
2
2
1
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Typical STEP 2032 Peak Day Inflow
Inflow (gpm)
5.2
5.0
4.8
4.6
4.4
4.2
4.0
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

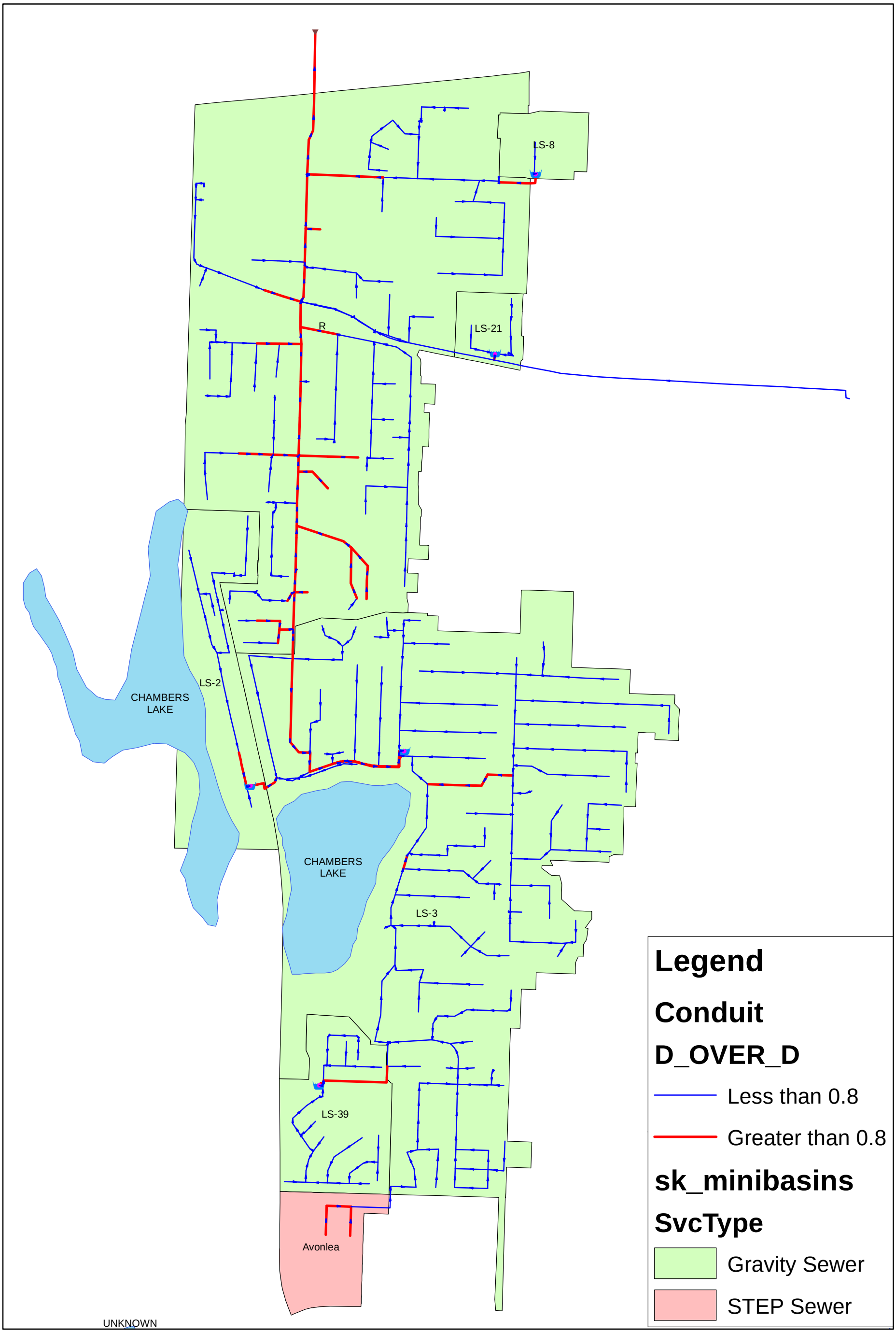

LS-AA 2032 Peak Day Inflow
Inflow (gpm)
100
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-MC North 2032 Peak Day Inflow
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

2032 MODEL RESULTS

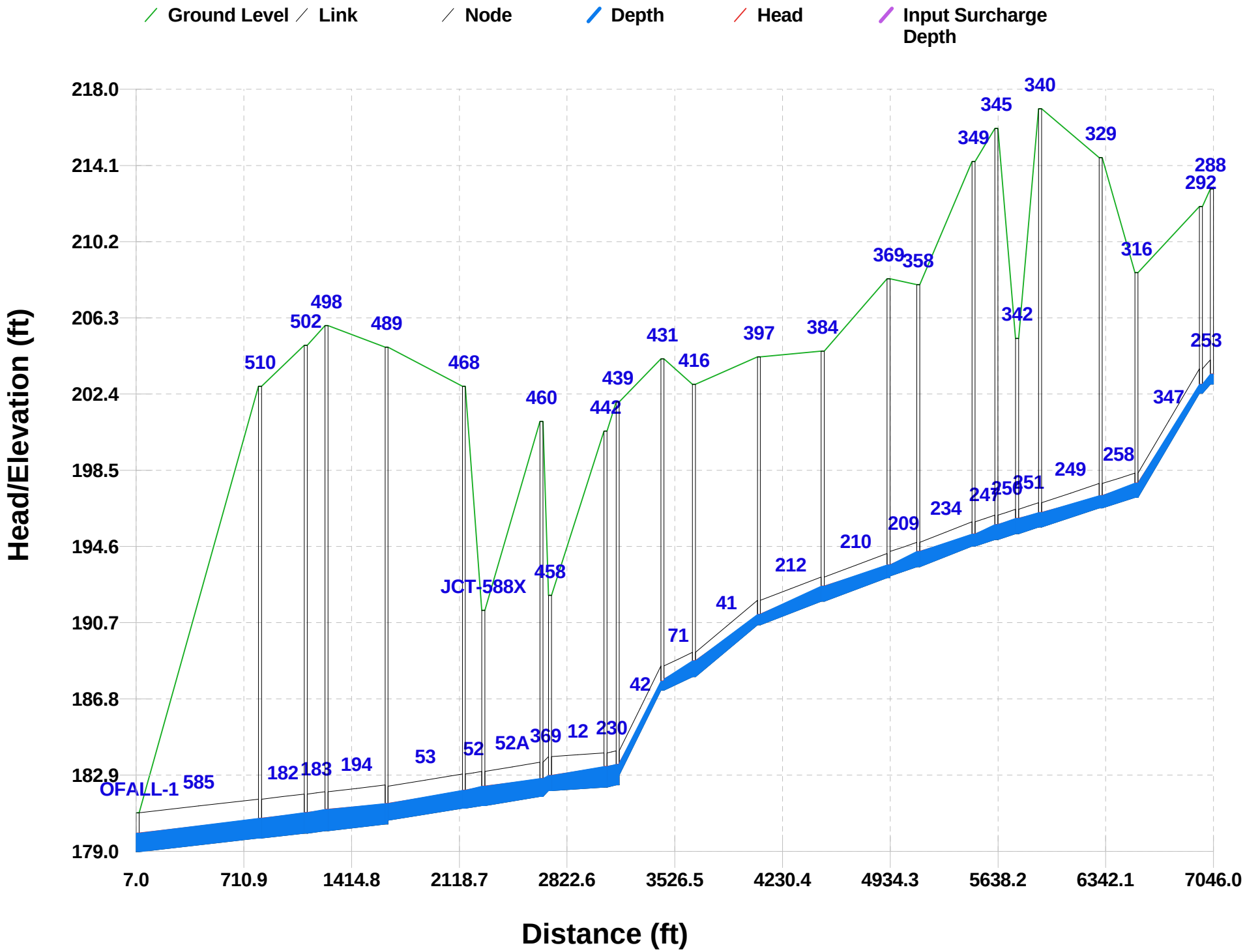
SLEATER KINNEY BASIN

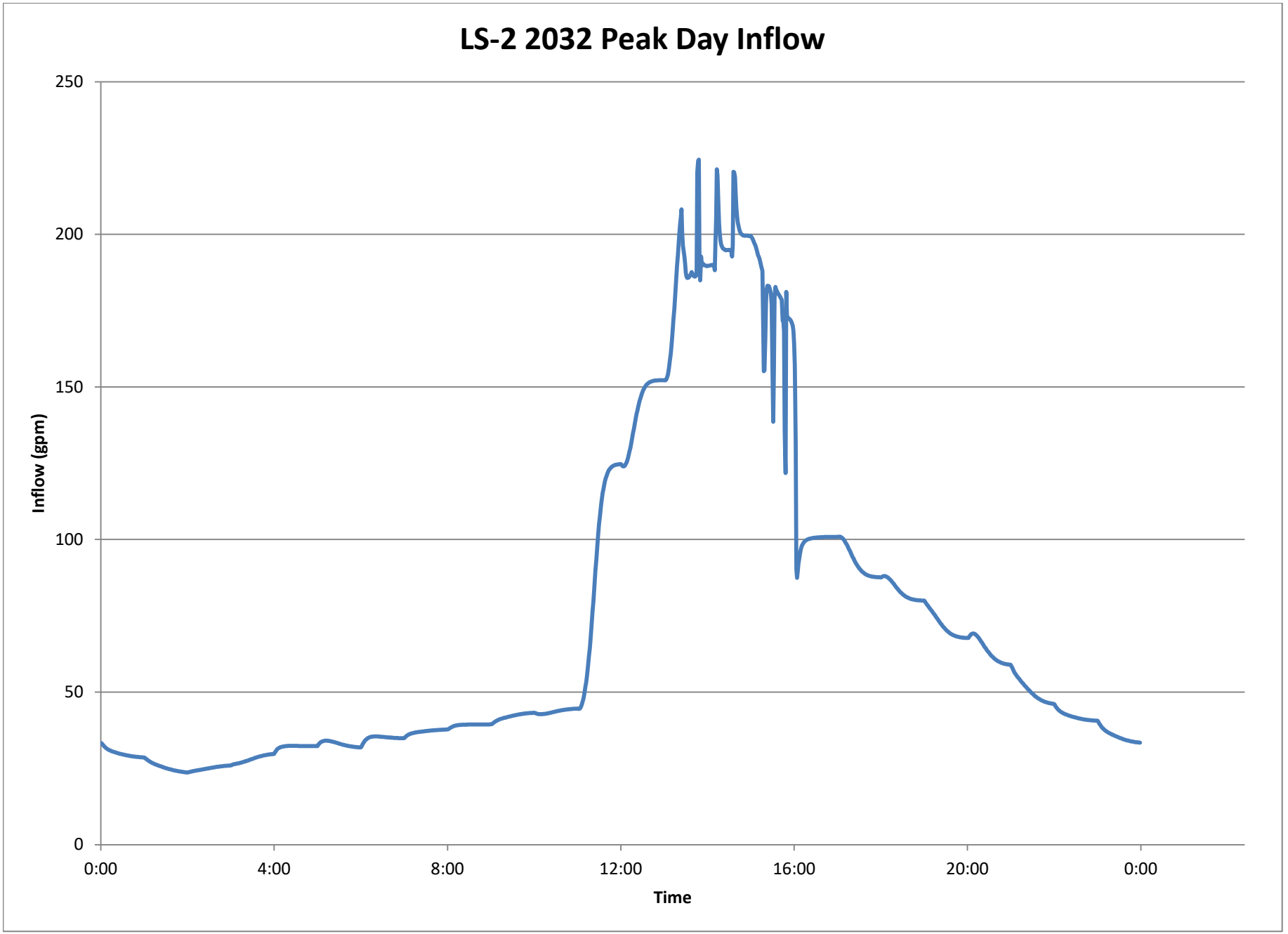
Lacey - Sleater Kinney Collection System Model
2032 Peak Day Surcharging
d/D Criteria = 0.80

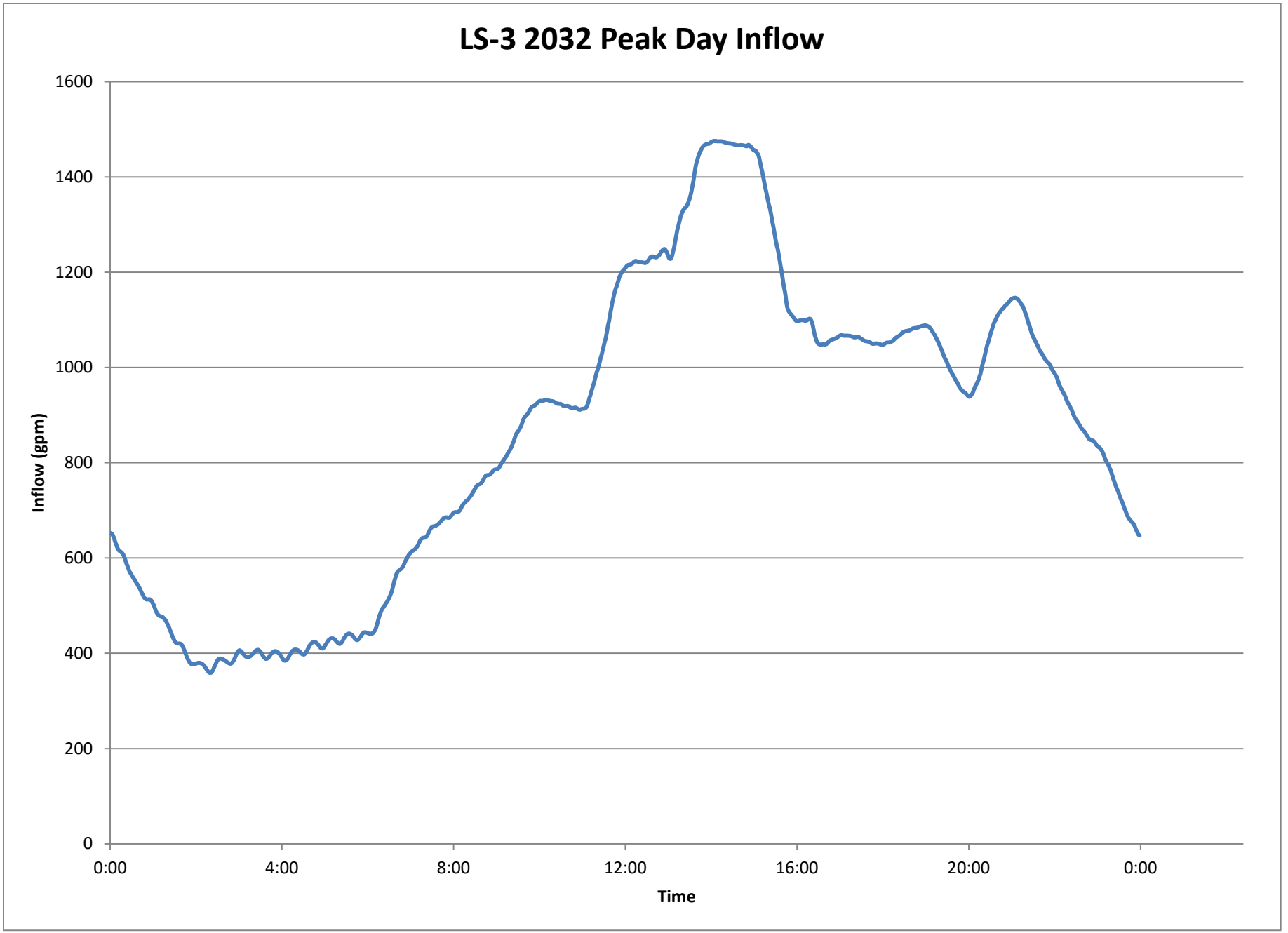


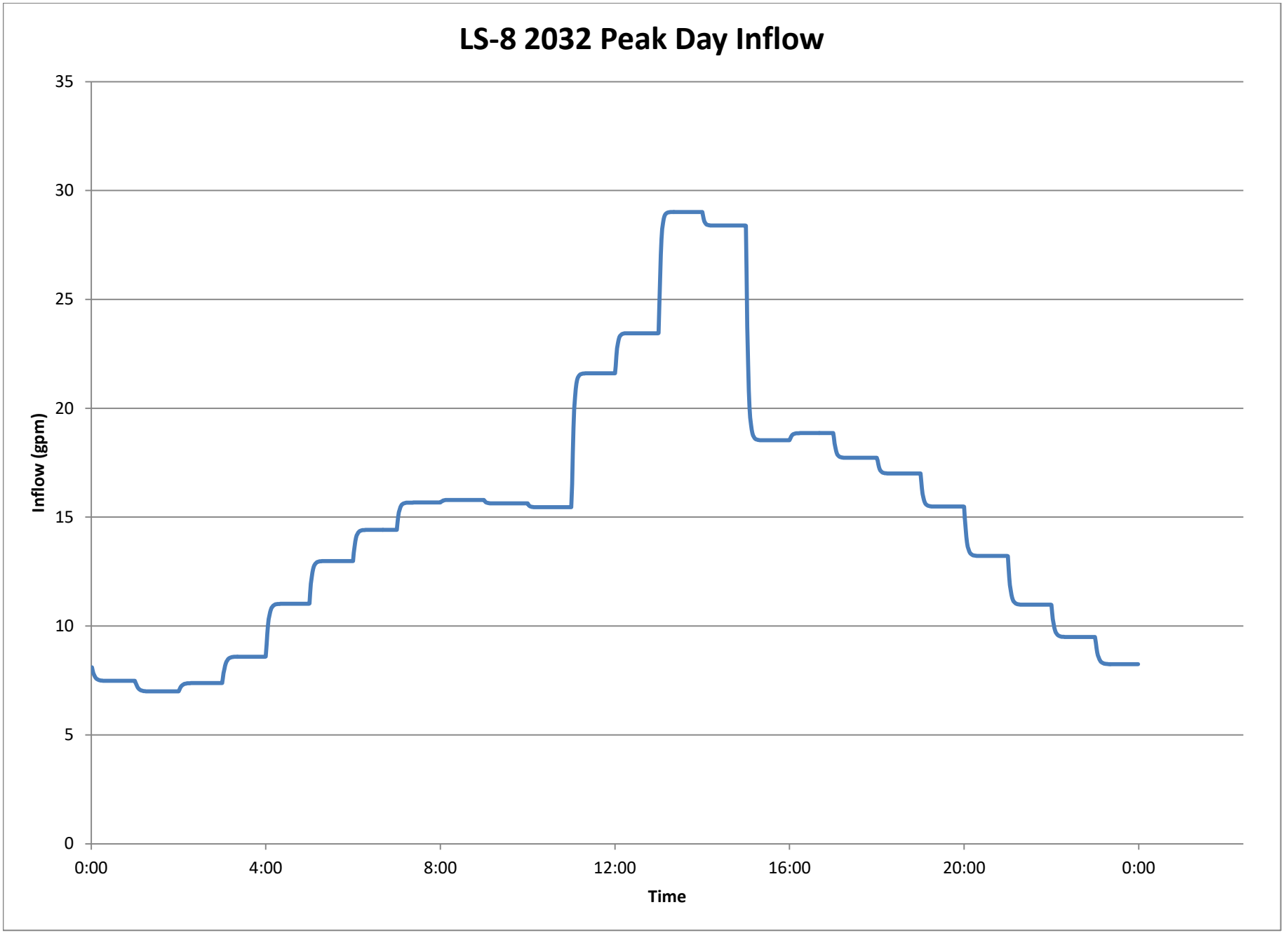
Note: Force mains and STEP mains are always full and are shown as always surcharging.

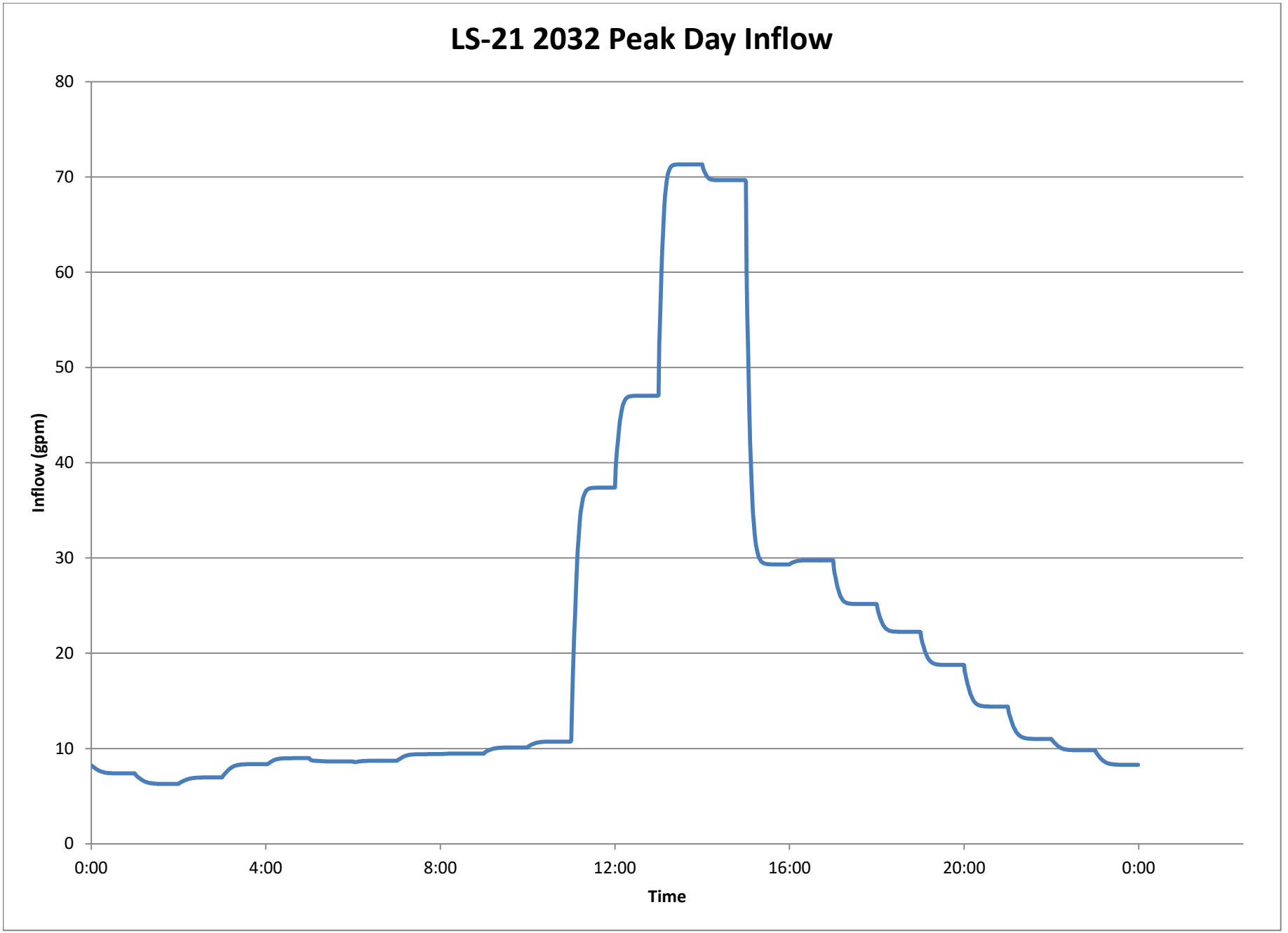
Sleater Kinney Alignment: 2032 Peak HGL

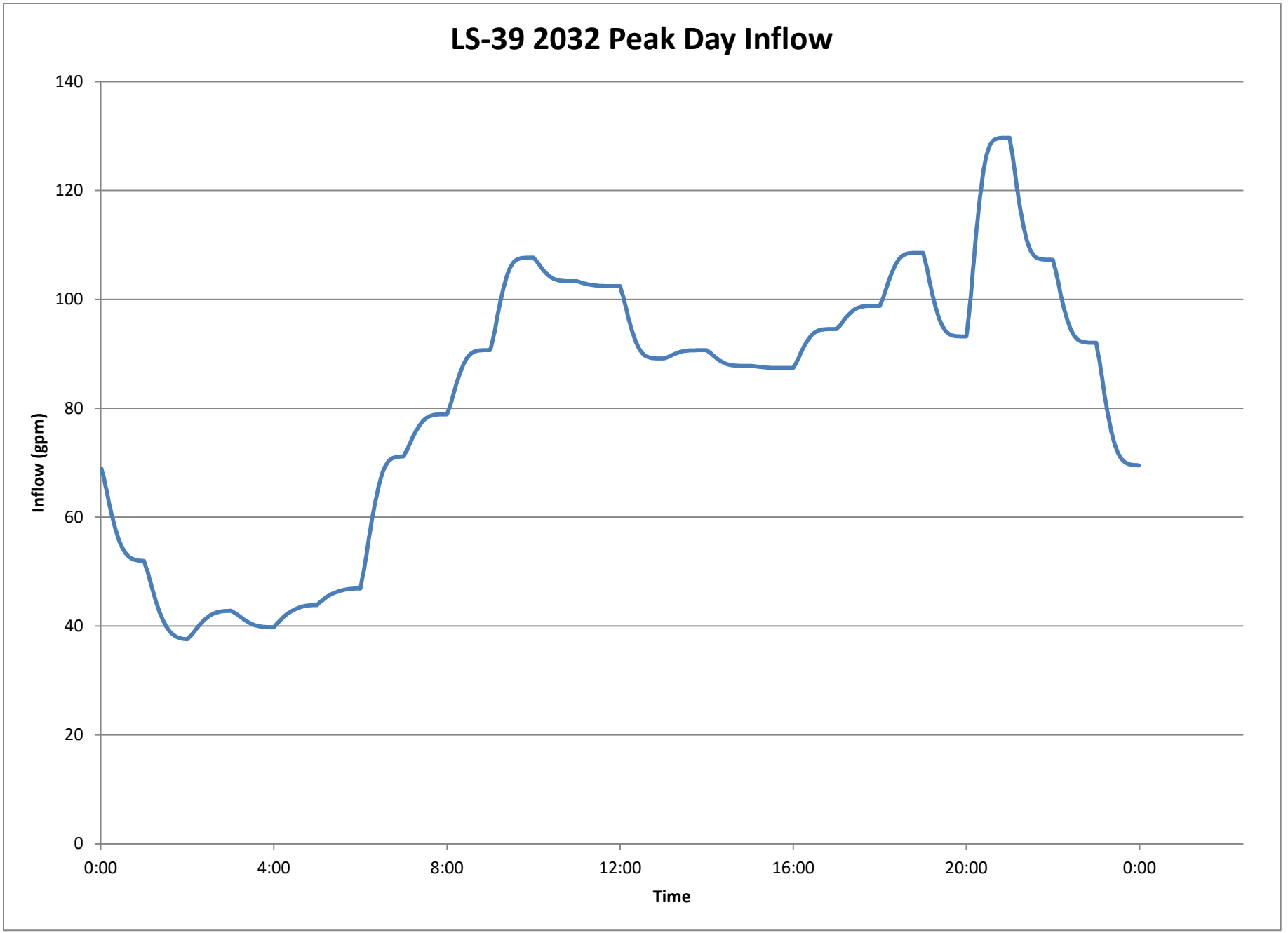



LS-2 2032 Peak Day Inflow
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-3 2032 Peak Day Inflow
1600
1400
1200
1000
800
600
400
200
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-8 2032 Peak Day Inflow
35
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

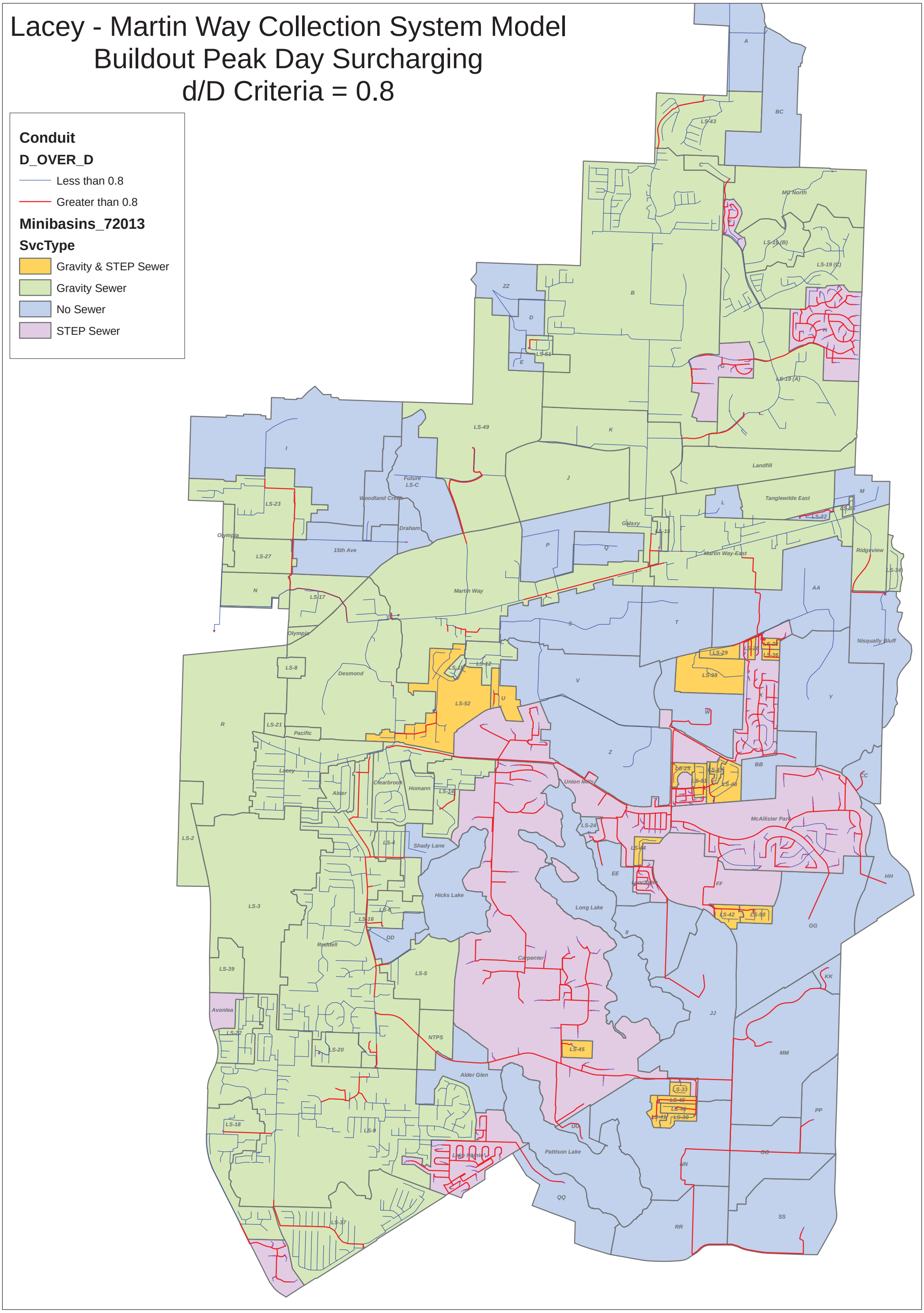

LS-21 2032 Peak Day Inflow
Inflow (gpm)
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-39 2032 Peak Day Inflow
140
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

BUILD-OUT MODEL RESULTS

MARTIN WAY BASIN

Lacey - Martin Way Collection System Model
Buildout Peak Day Surcharging
d/D Criteria = 0.8



Mullen Road Alignment (Ruddell to Basin SS): Buildout Peak HGL & Buildout Imp.

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 15000 16000 17000 18000 19000 20000 21000 22000 23000 24000 25000 26000 27000 28000 29000

Distance (ft)

5BR02
CDT-1249
4GW05
2335
2334
2032
2356
3F501
2165
2367
2368
3G302
2010
3KA01
3JC01
CDT-1247
JCT-81
JCT-79
CDT-1129
JCT-41
CDT-1127
JCT-NN
CDT-1137
JCT-RR
CDT-1165
JCT-65

Ruddell Alignment: Buildout Peak Flow Depth: With Buildout Improvements

Ground Level | Link | Node | Depth | Head | Input Surcharge Depth

Head/Elevation (ft)

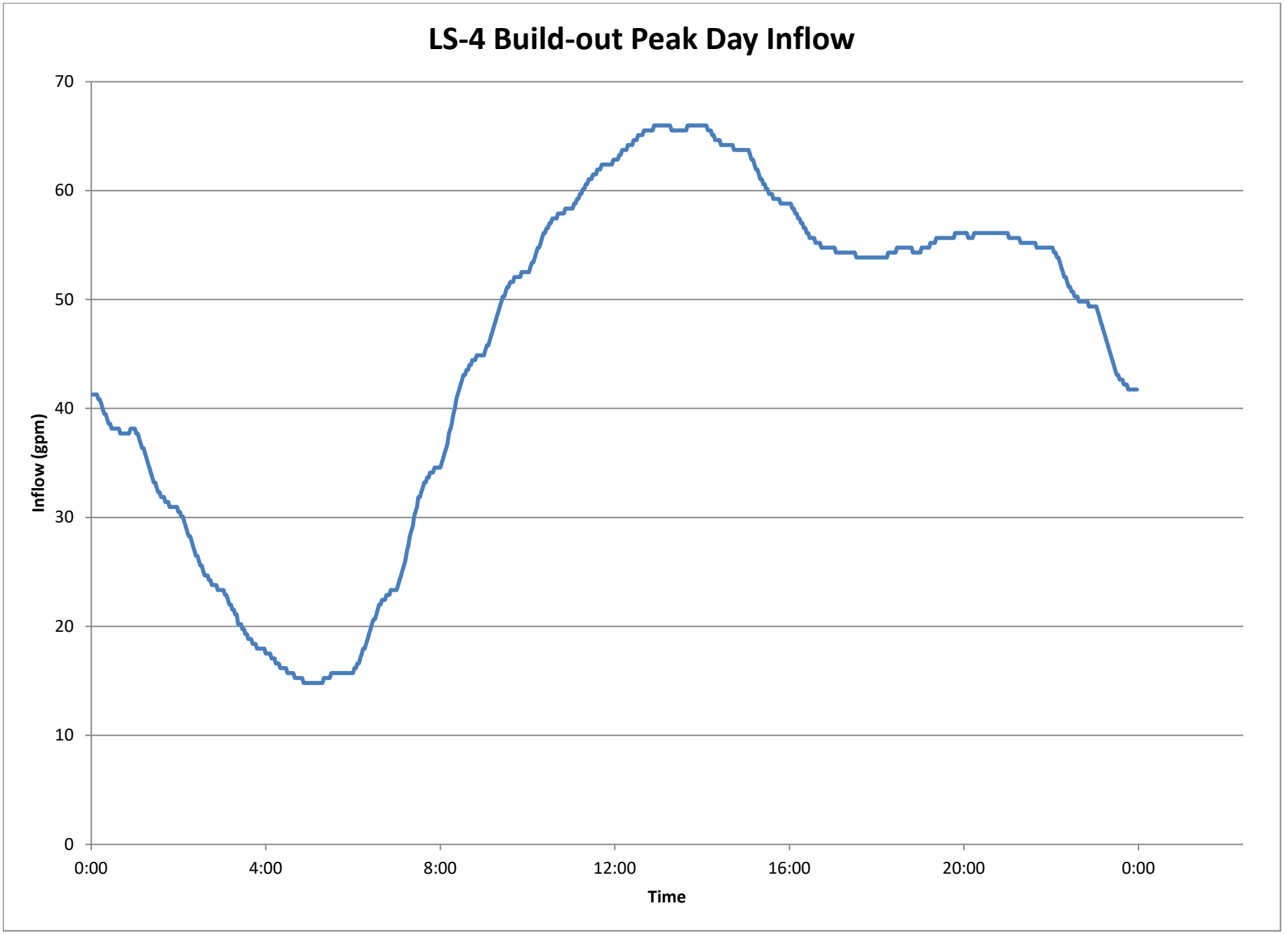
240
235
230
225
220
215
210
205
200
195
190
185
180
175
170
165
160

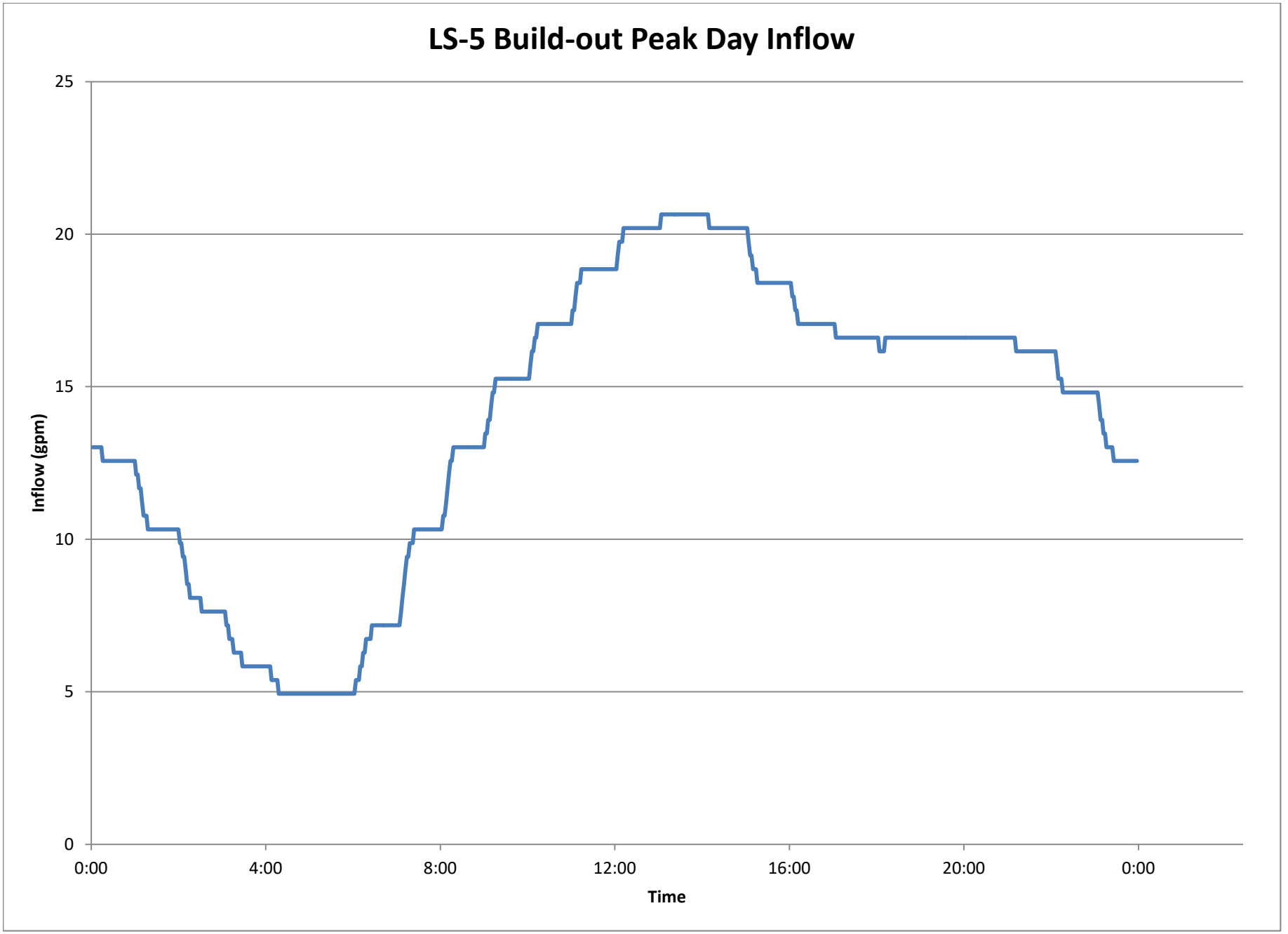
0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 15000

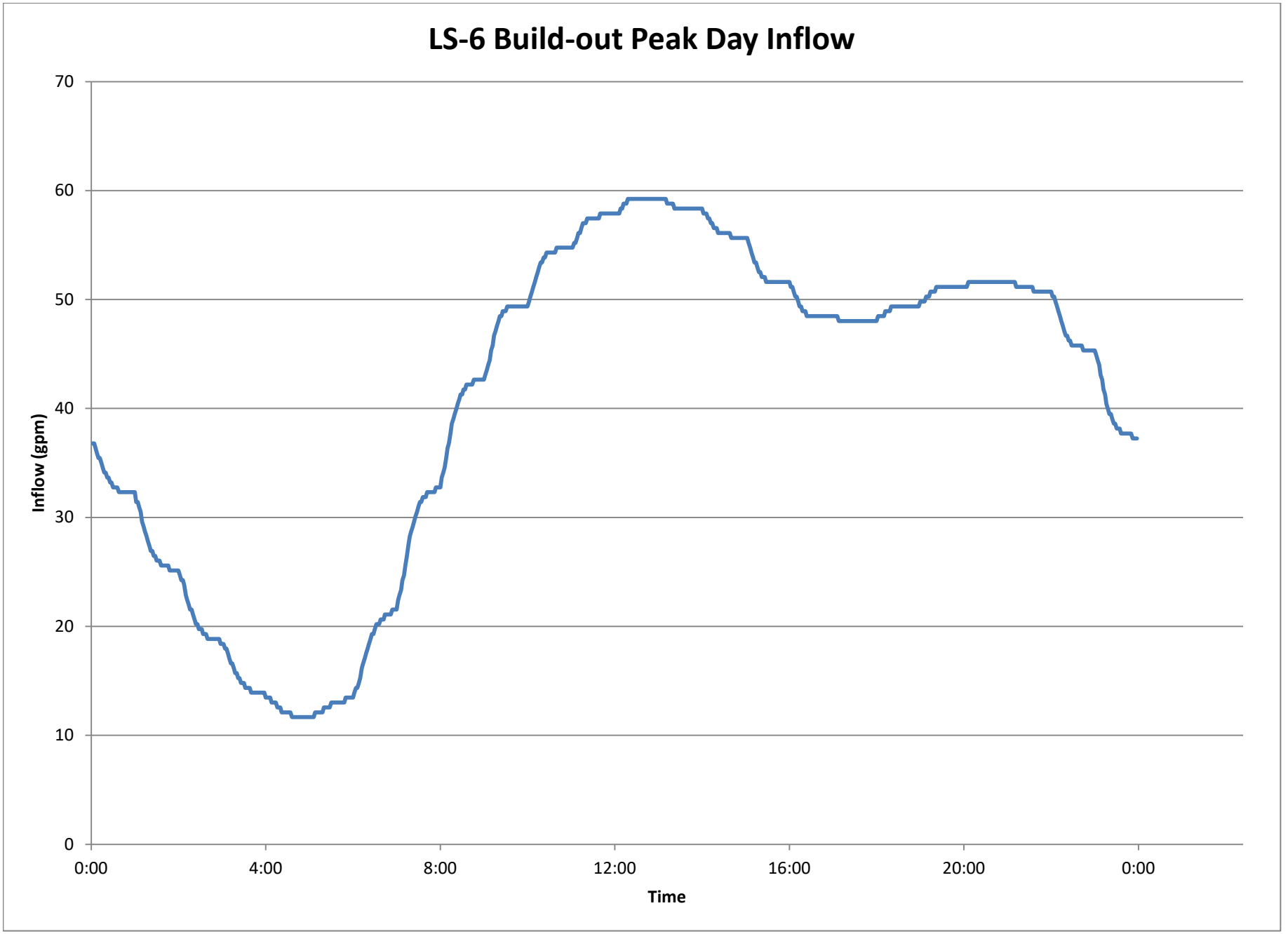
Distance (ft)

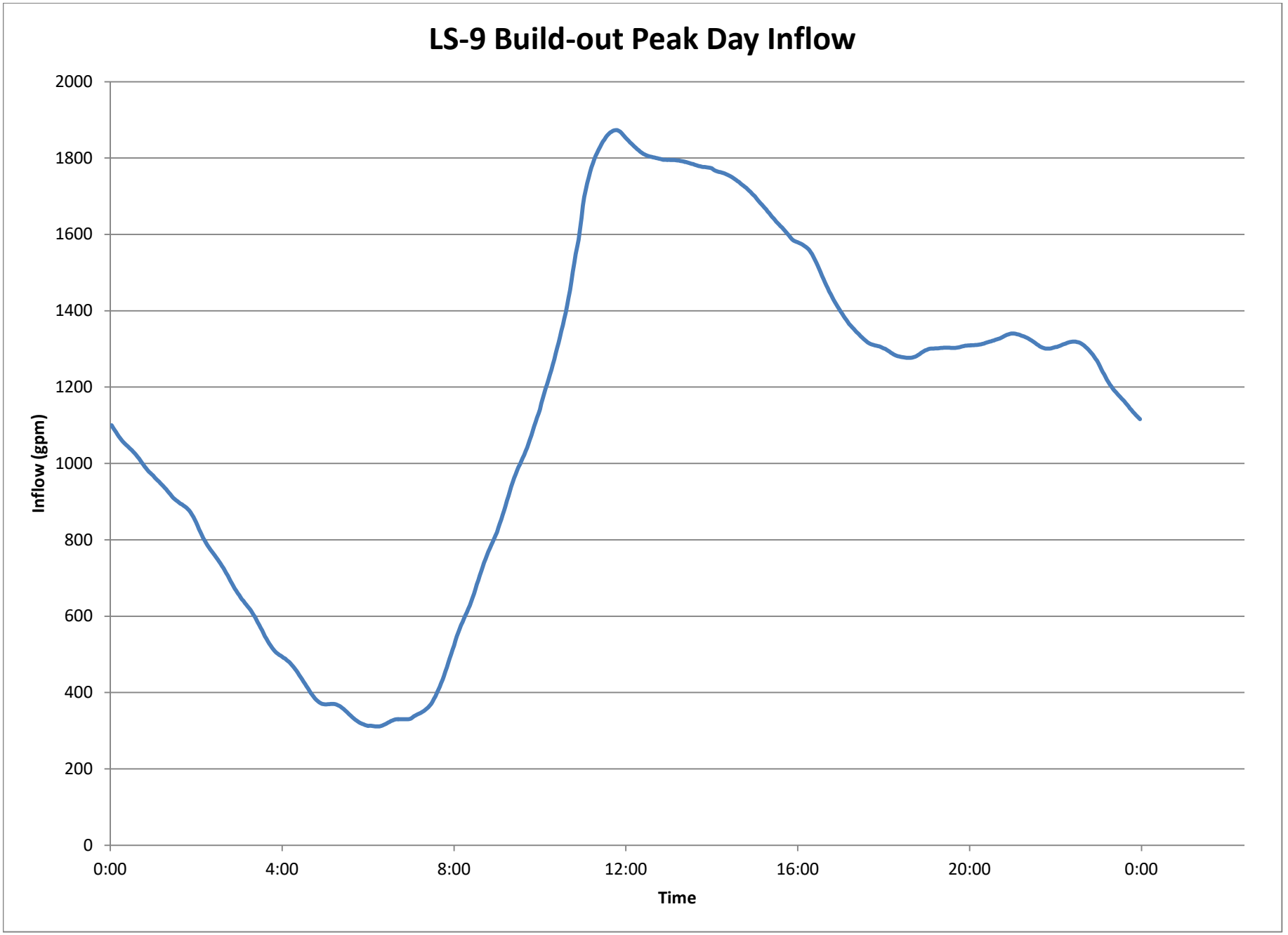
WGC01 WGF02 WGF501 WGU01 WGV02 WG401 WKD01 WKM01 WKW01 WK501 WL101 WL801 WPH01 WQM01 WQN01 WQX01 WQ302 Q7002 WTC01 WTF01 WTP01 WTX01 WTD01 WTC02 WYF01 WYL02 WYX02 WY601 W2C01 W2K01 W2T01 W2701 W7H01 W7R03 W7T02 W7702 5BA01 5BJ01 MH_5BR05 5GH02 5GU01 5GS01 5G801 5KJ02 5KK02 5KK01 5KL01 5KU01 5KX02 JCT-60 LS-09 LS-09A JCT-68

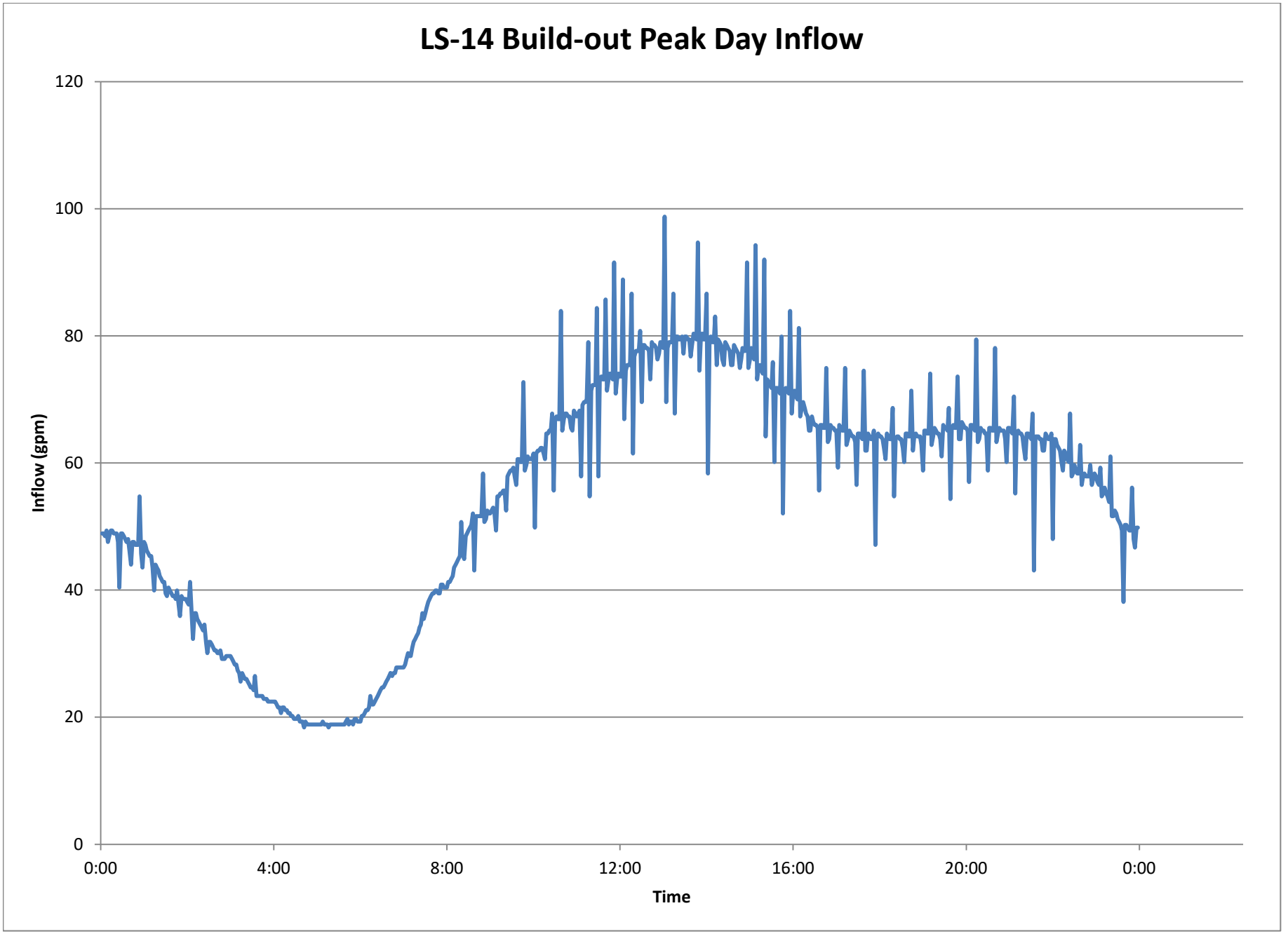
1198 1238 1189 4195 1188 1187 4223 4215 4225 4192 1198 1607 4254 1066 1065 1193 510 4277 1036 1427 1204 1304 1827 4307 1214 1215 1241 1609 4077 3556 3554 3555 3553 3472 1162 3671 1143 1145 1146

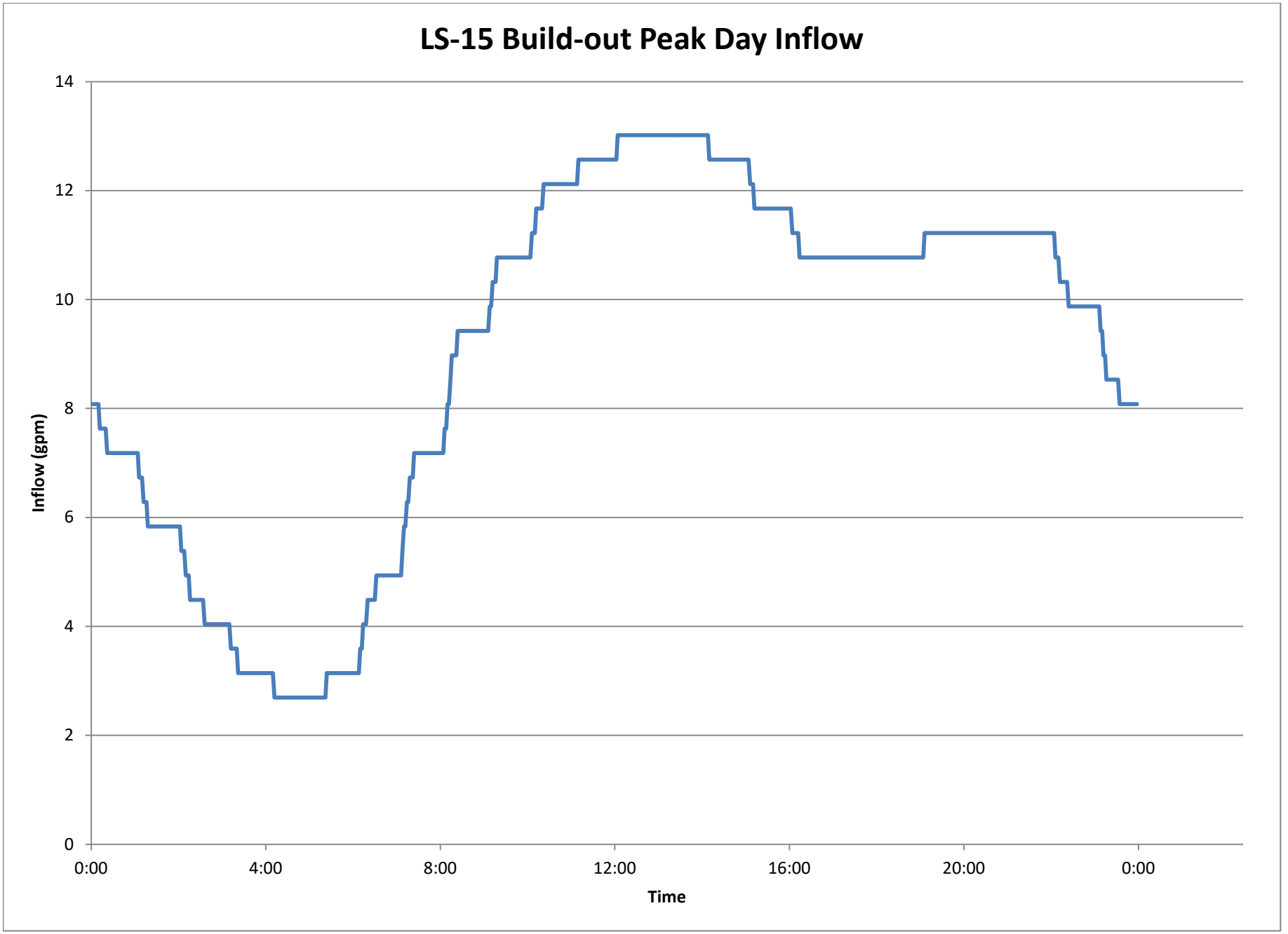

LS-4 Build-out Peak Day Inflow
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

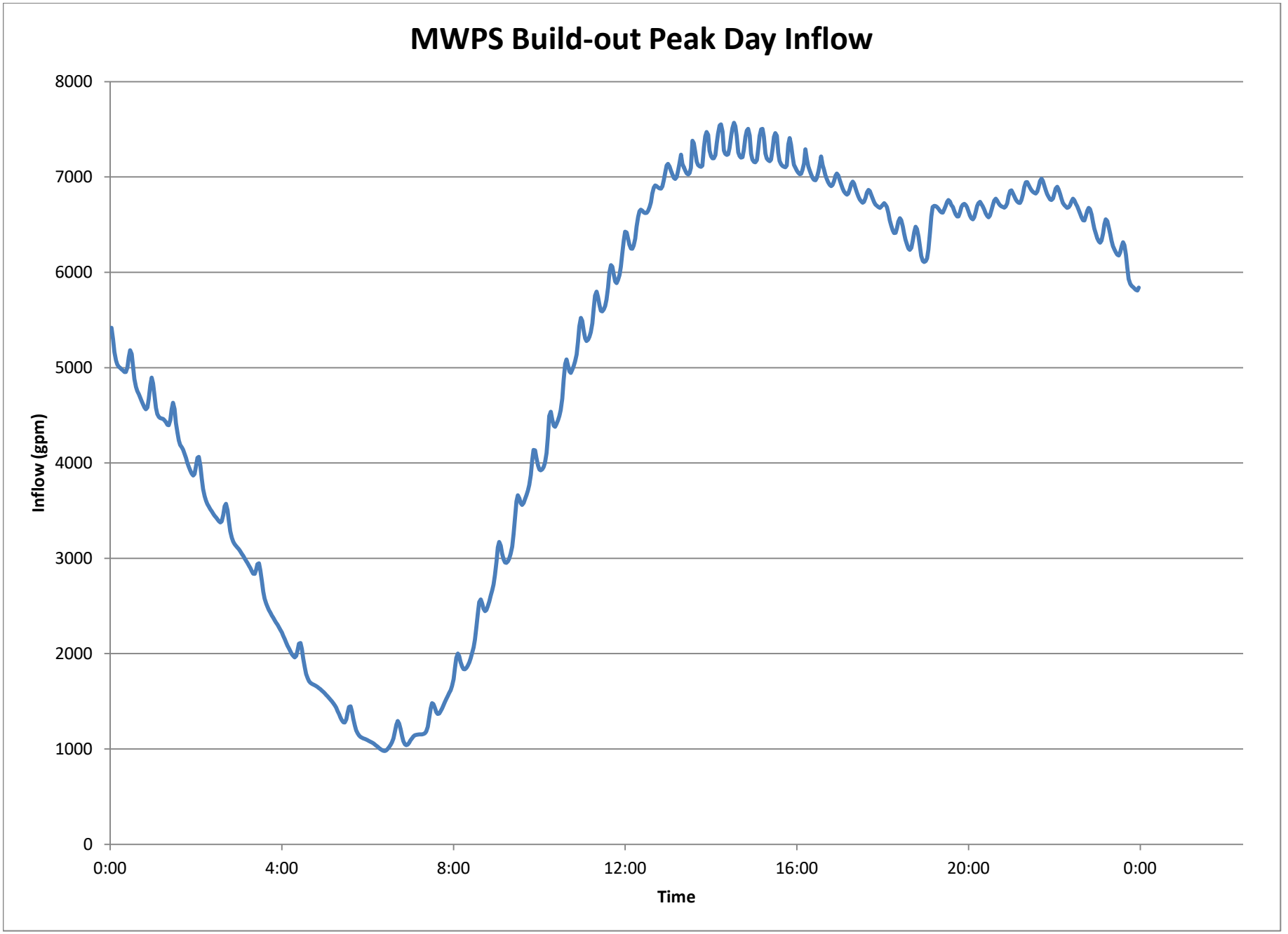

LS-5 Build-out Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

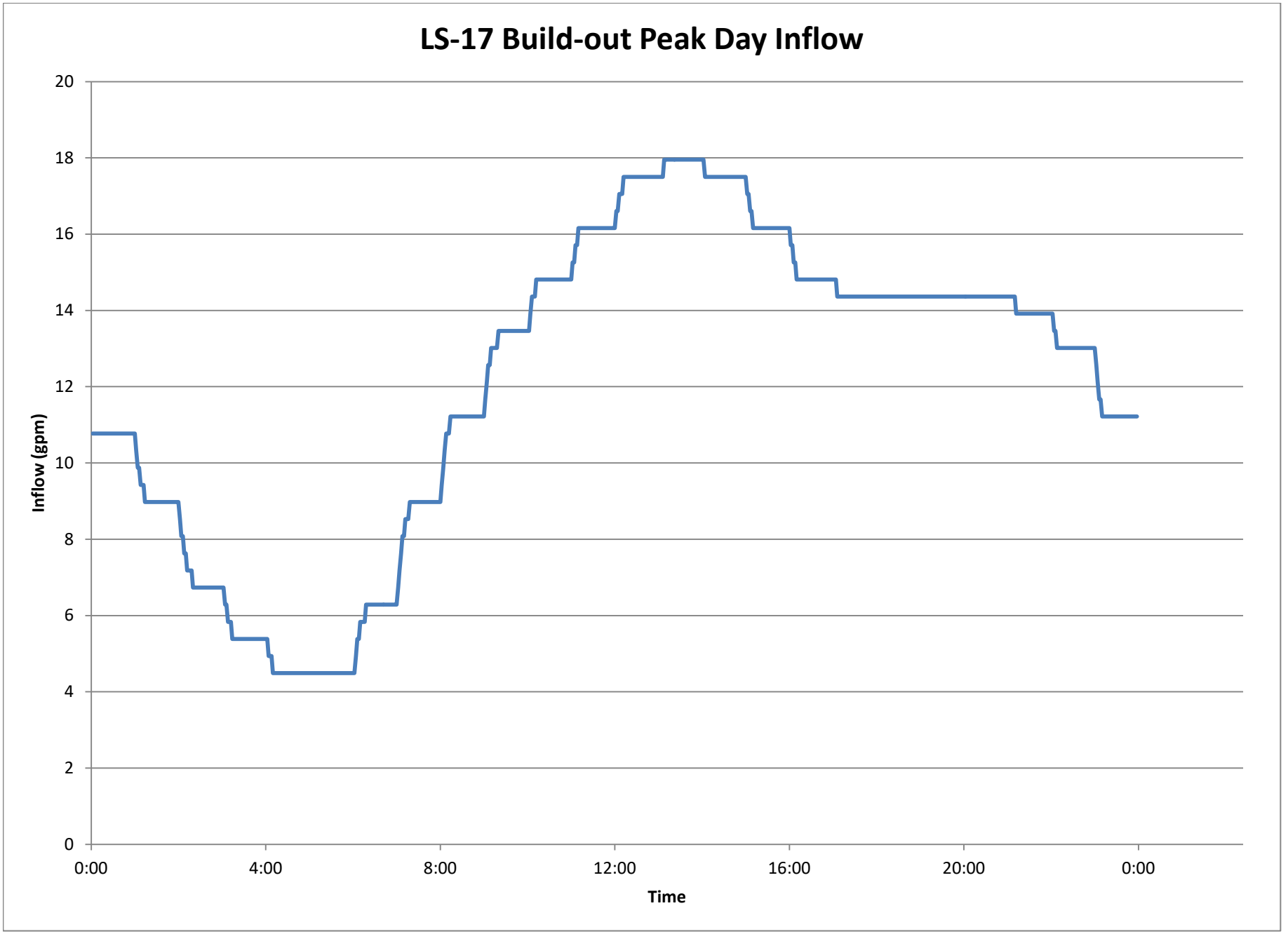

LS-6 Build-out Peak Day Inflow
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

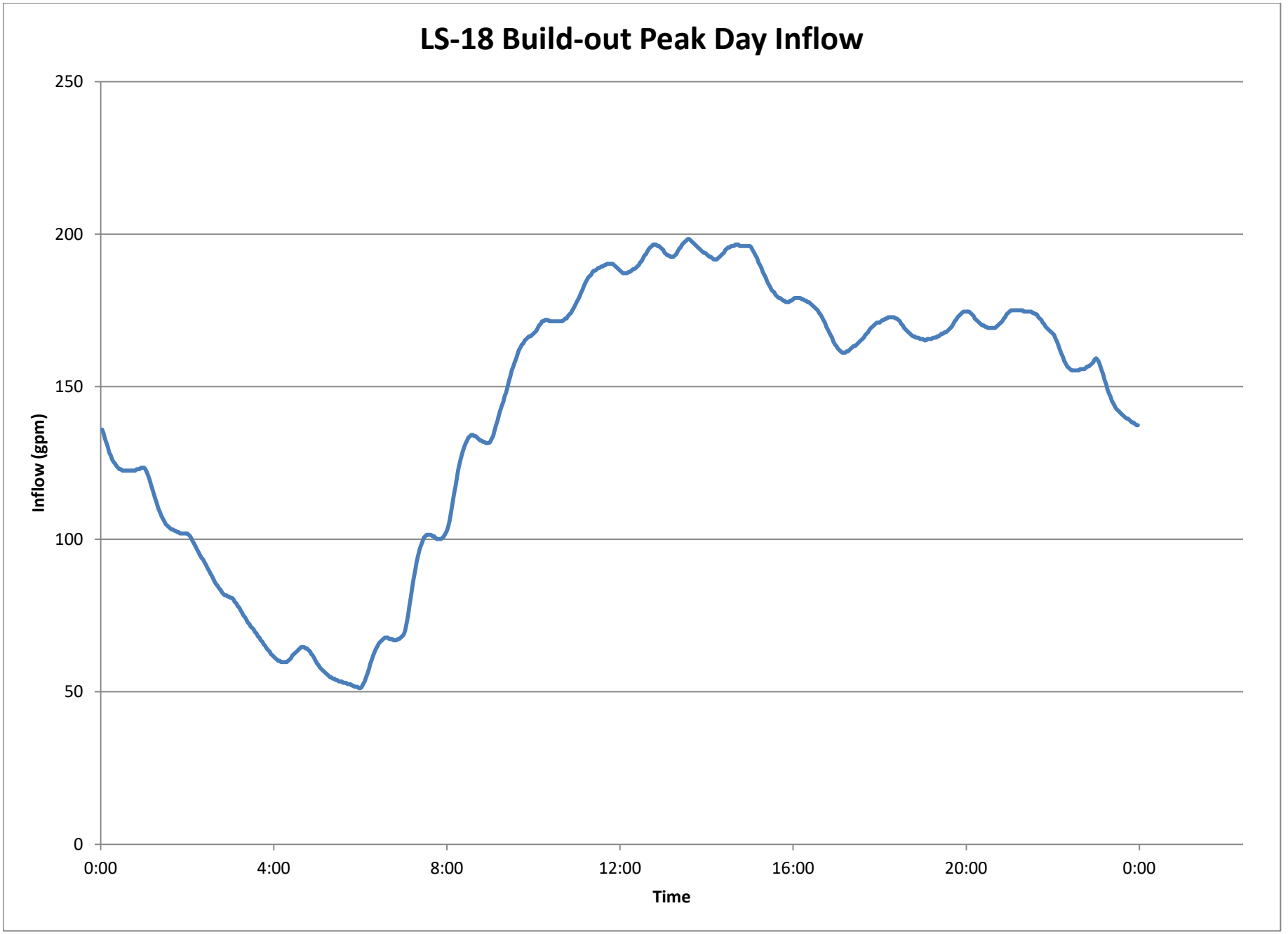

LS-9 Build-out Peak Day Inflow
Inflow (gpm)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

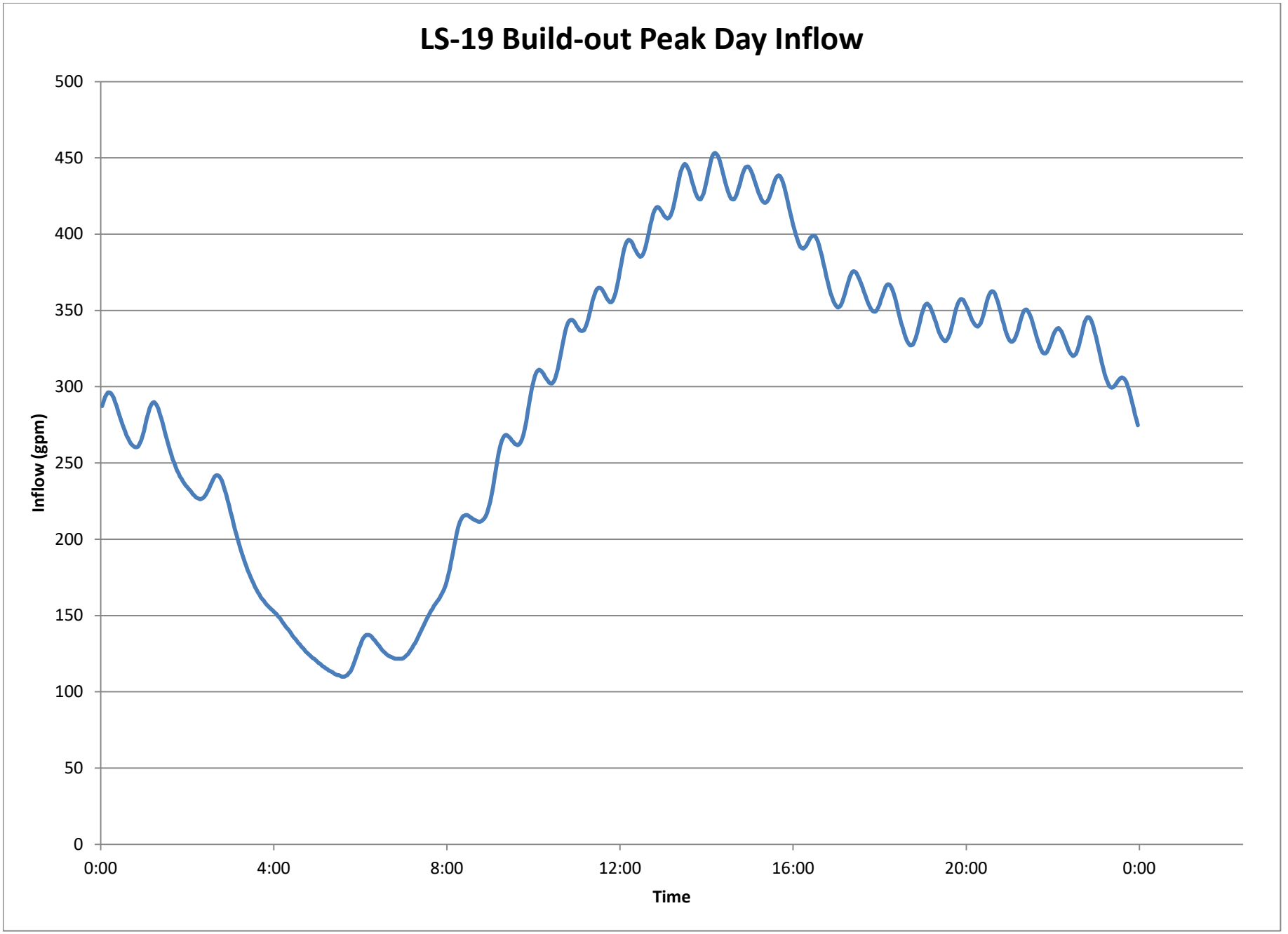

LS-14 Build-out Peak Day Inflow
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

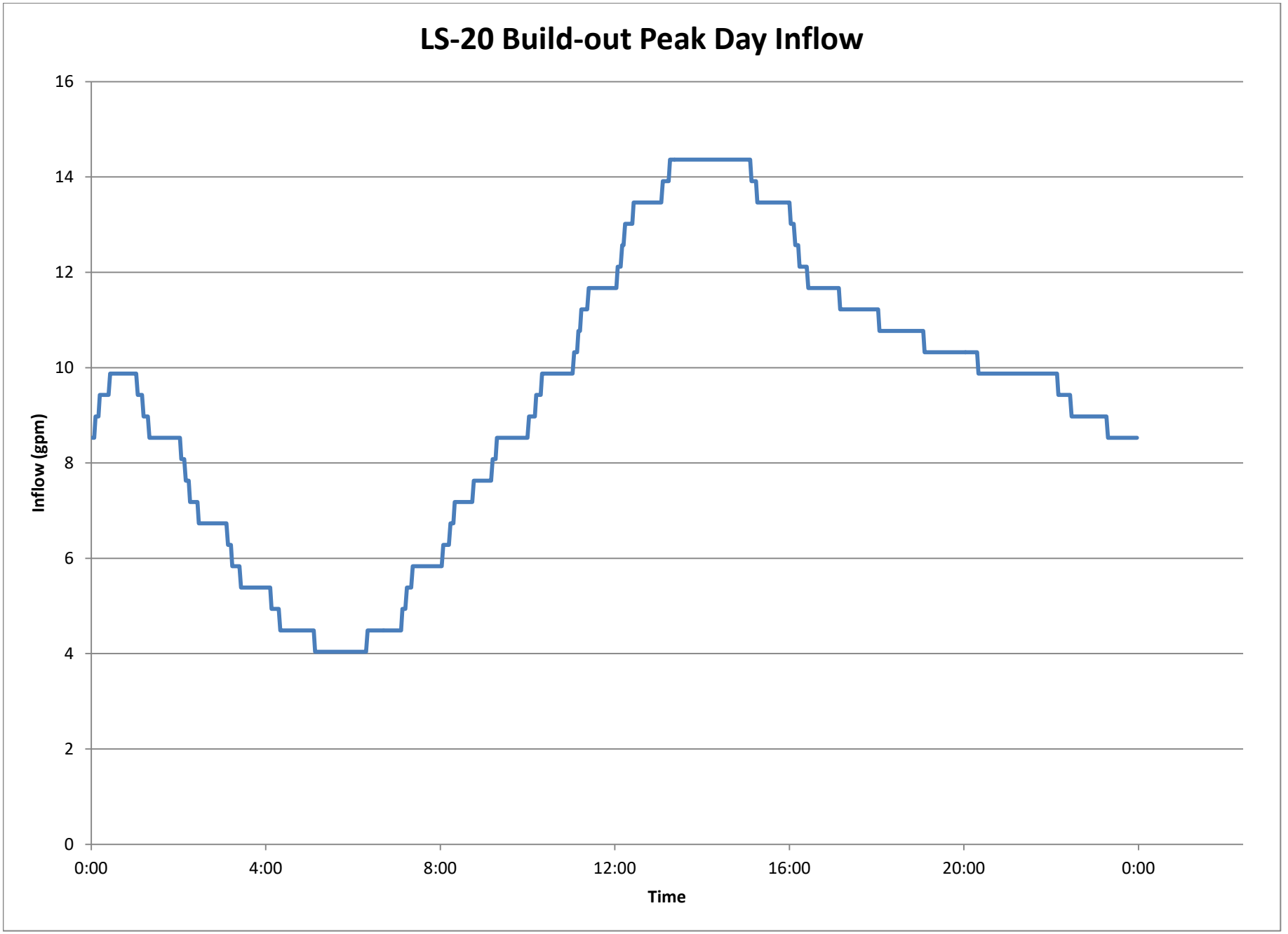

LS-15 Build-out Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

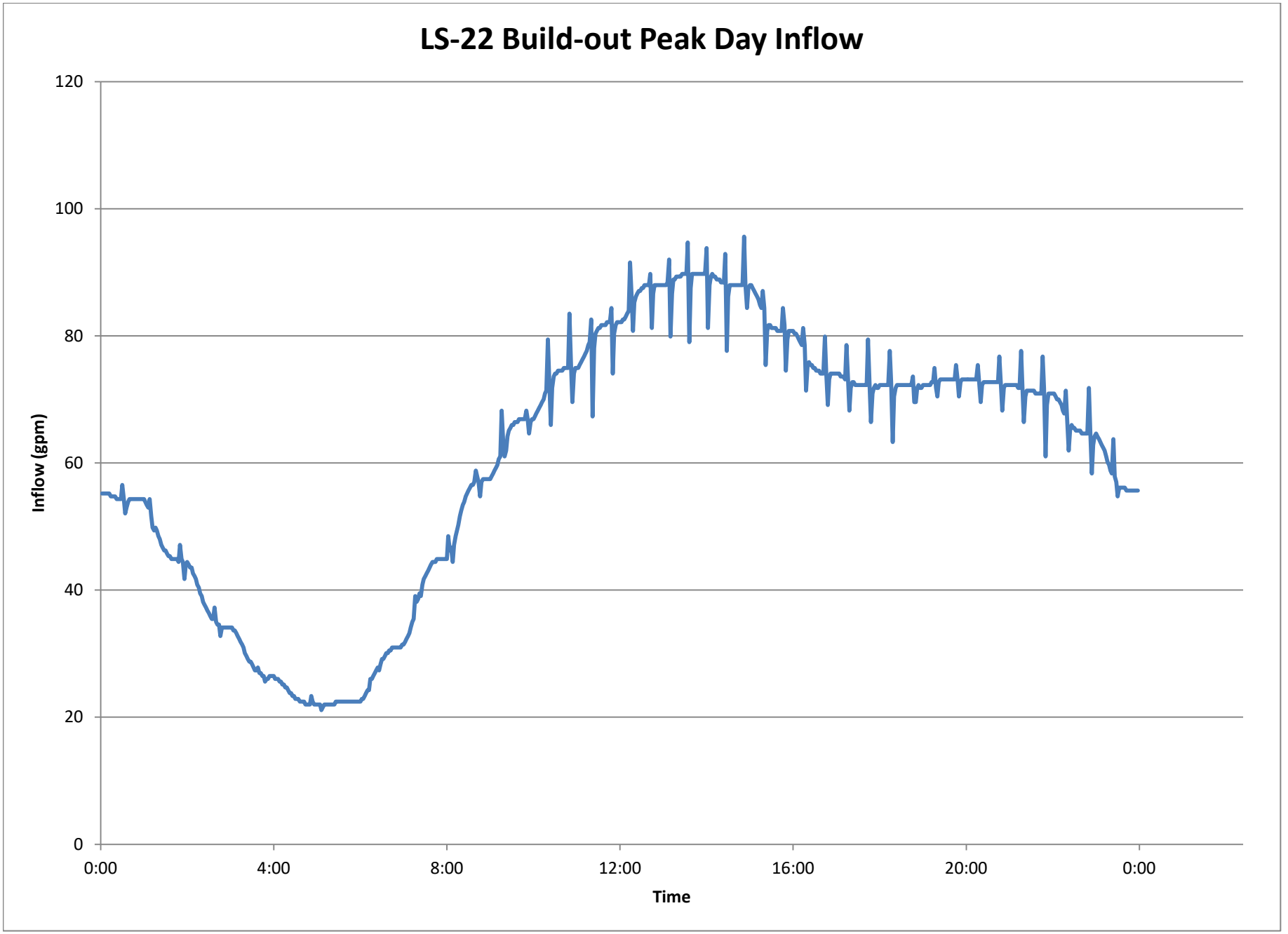

MWPS Build-out Peak Day Inflow
8000
7000
6000
5000
4000
3000
2000
1000
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

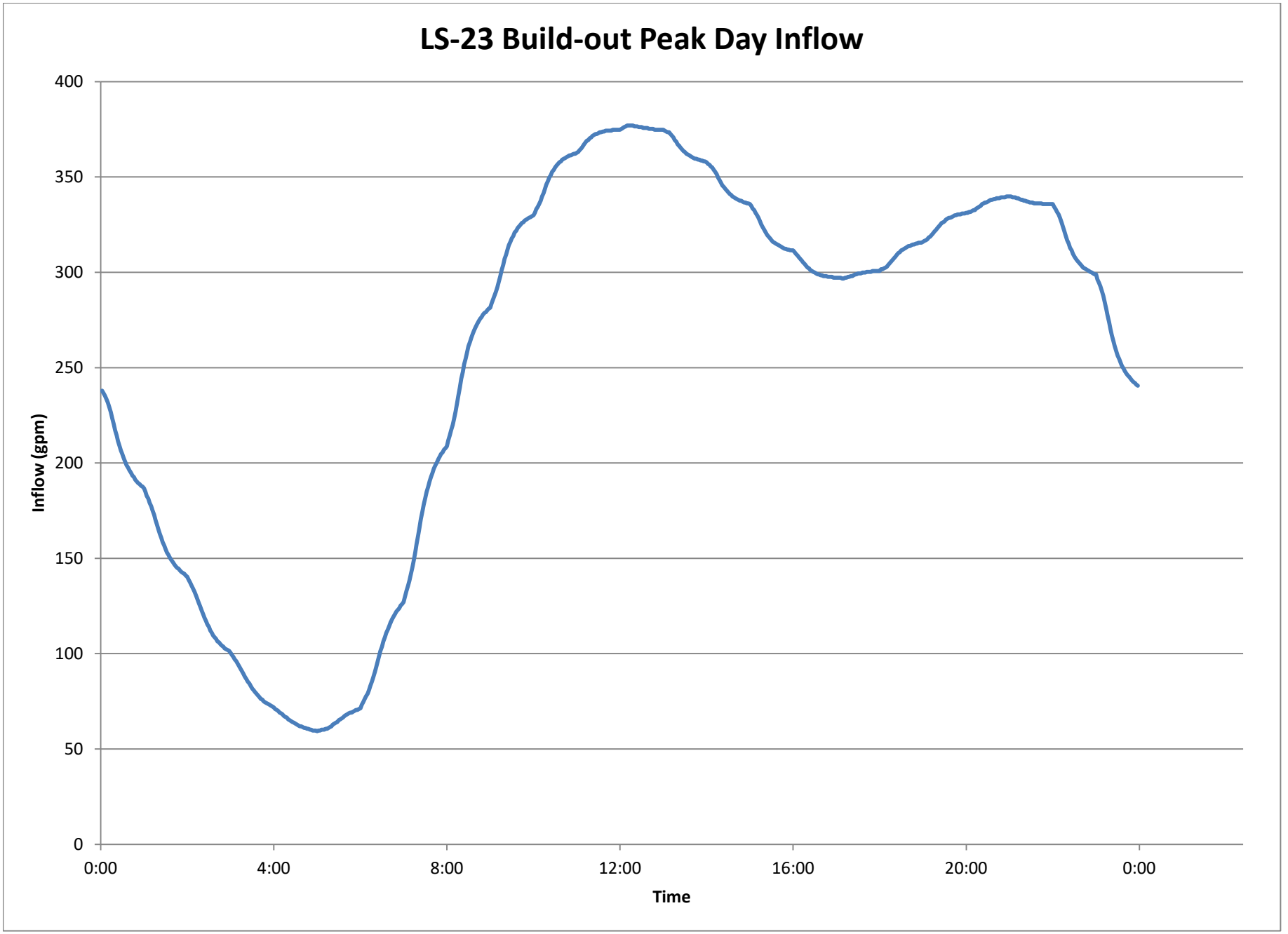

LS-17 Build-out Peak Day Inflow
Inflow (gpm)
20
18
16
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

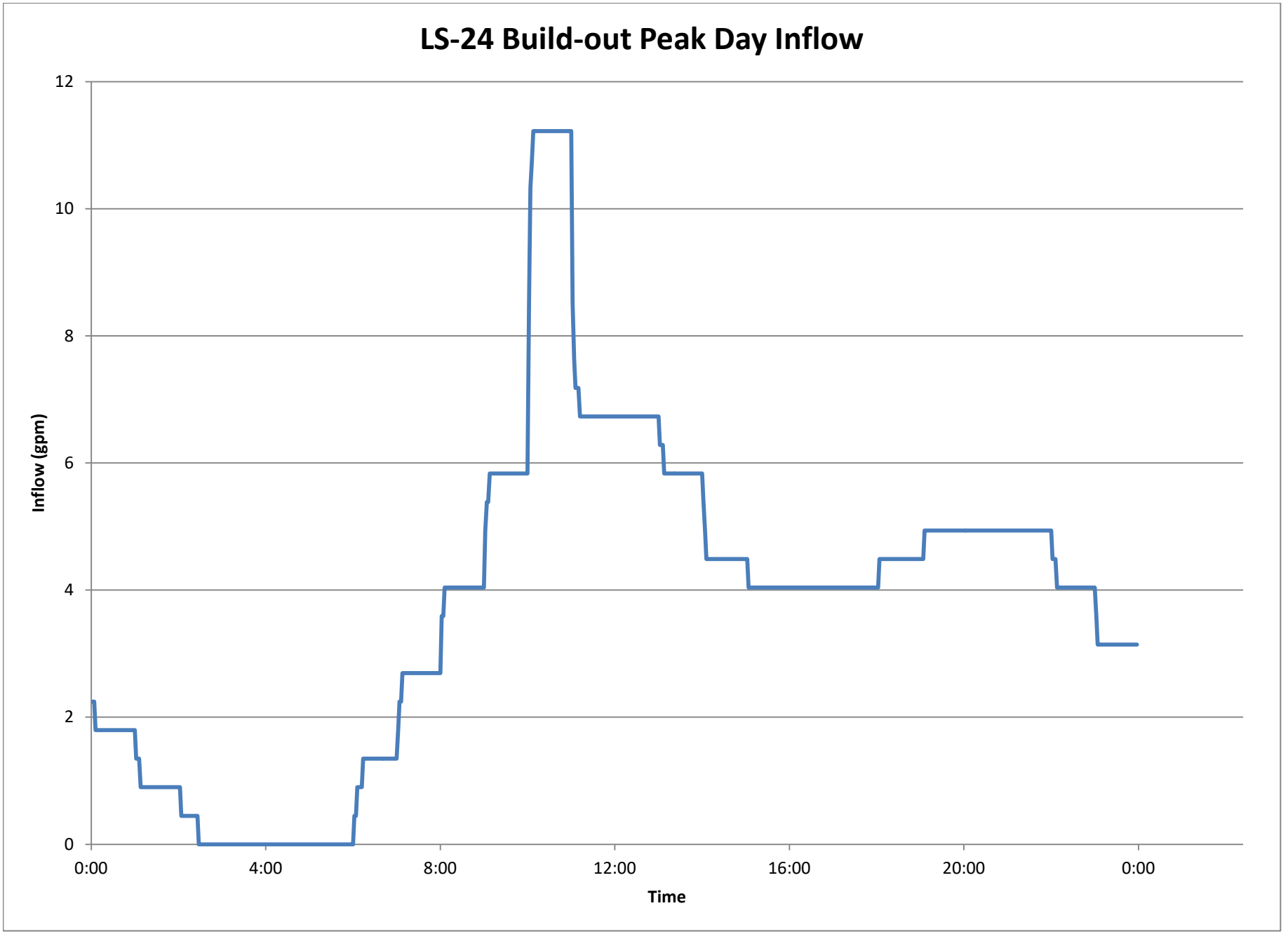

LS-18 Build-out Peak Day Inflow
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

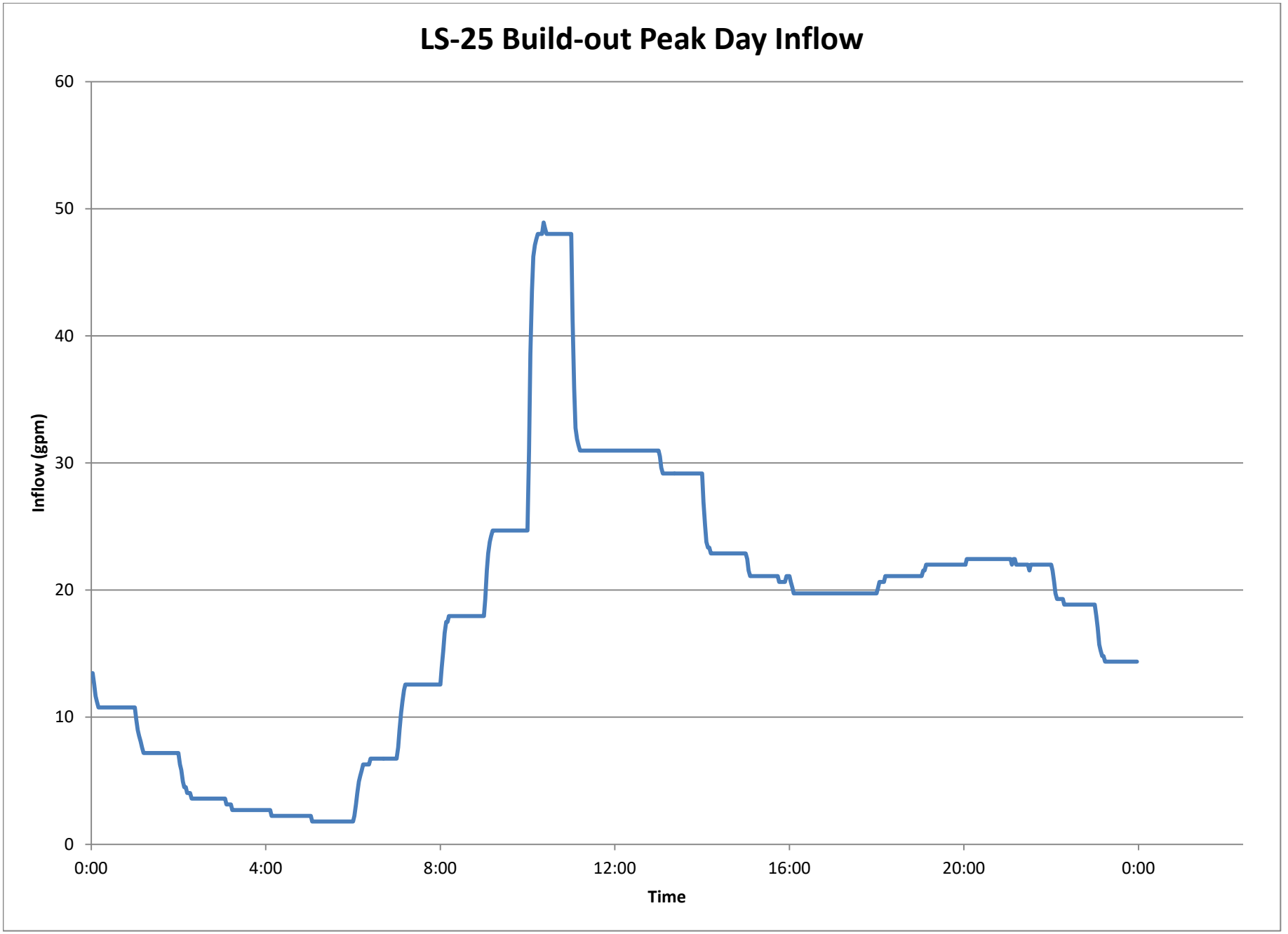

LS-19 Build-out Peak Day Inflow
Inflow (gpm)
500
450
400
350
300
250
200
150
100
50
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

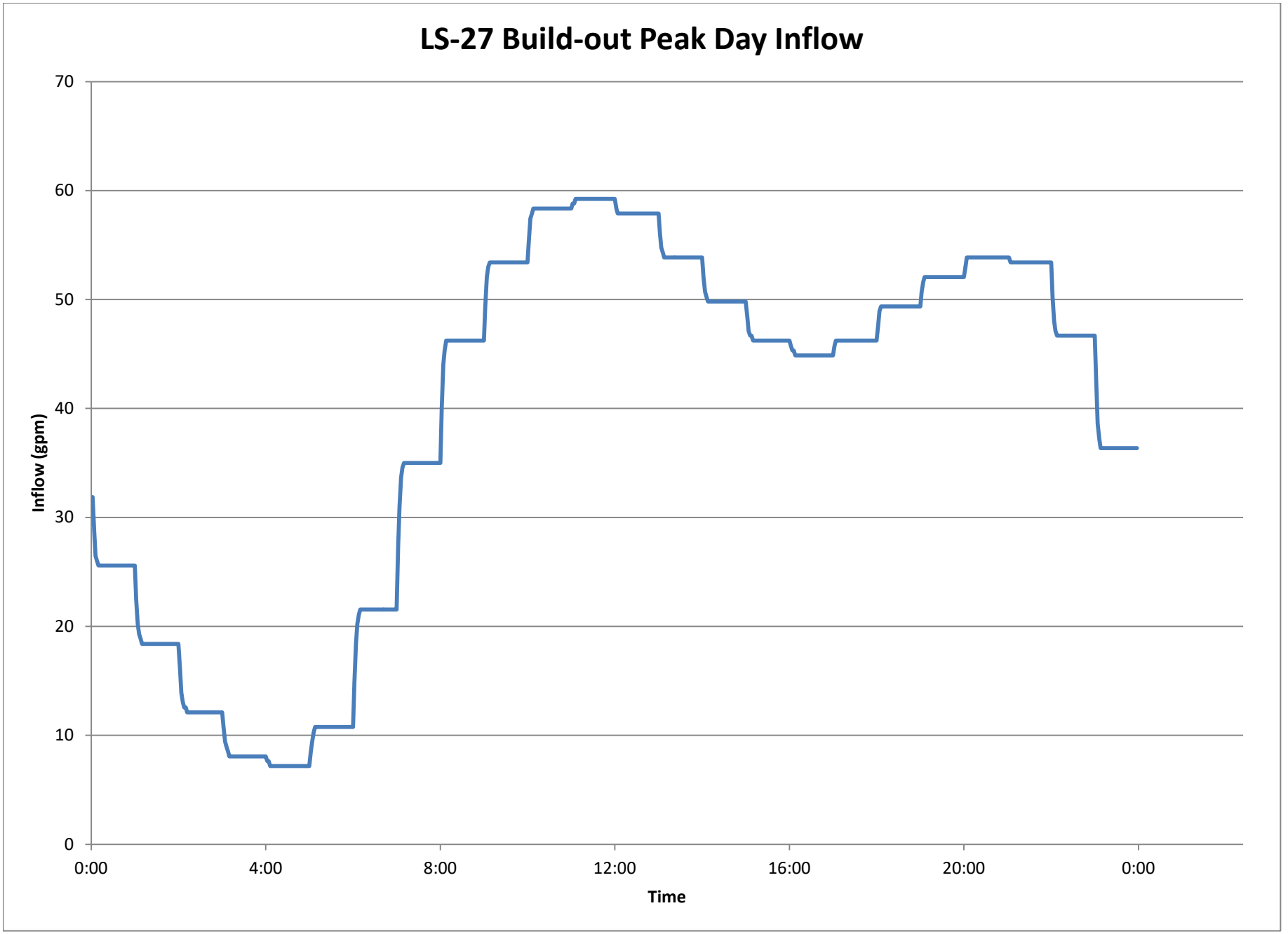

LS-20 Build-out Peak Day Inflow
16
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

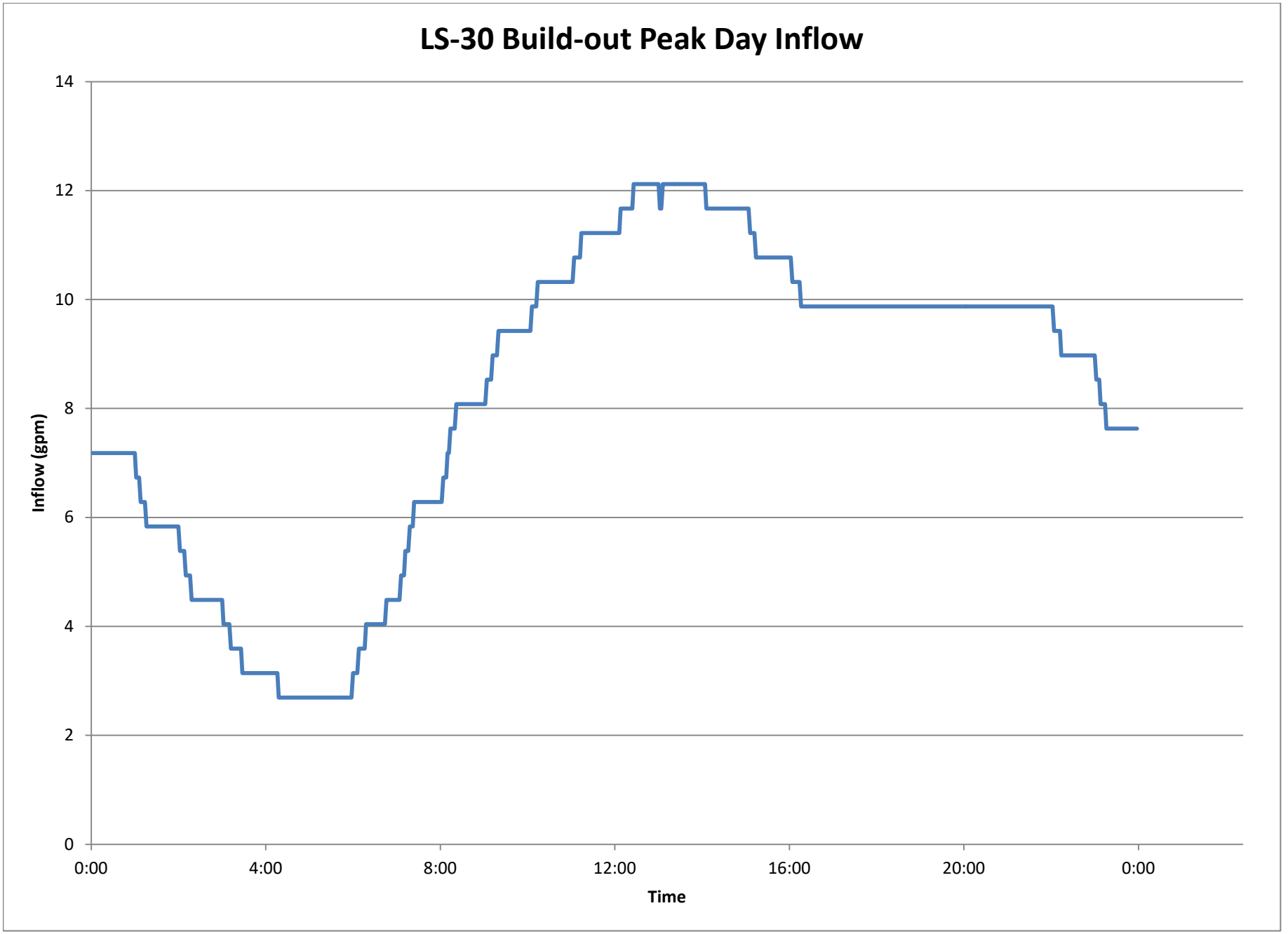

LS-22 Build-out Peak Day Inflow
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

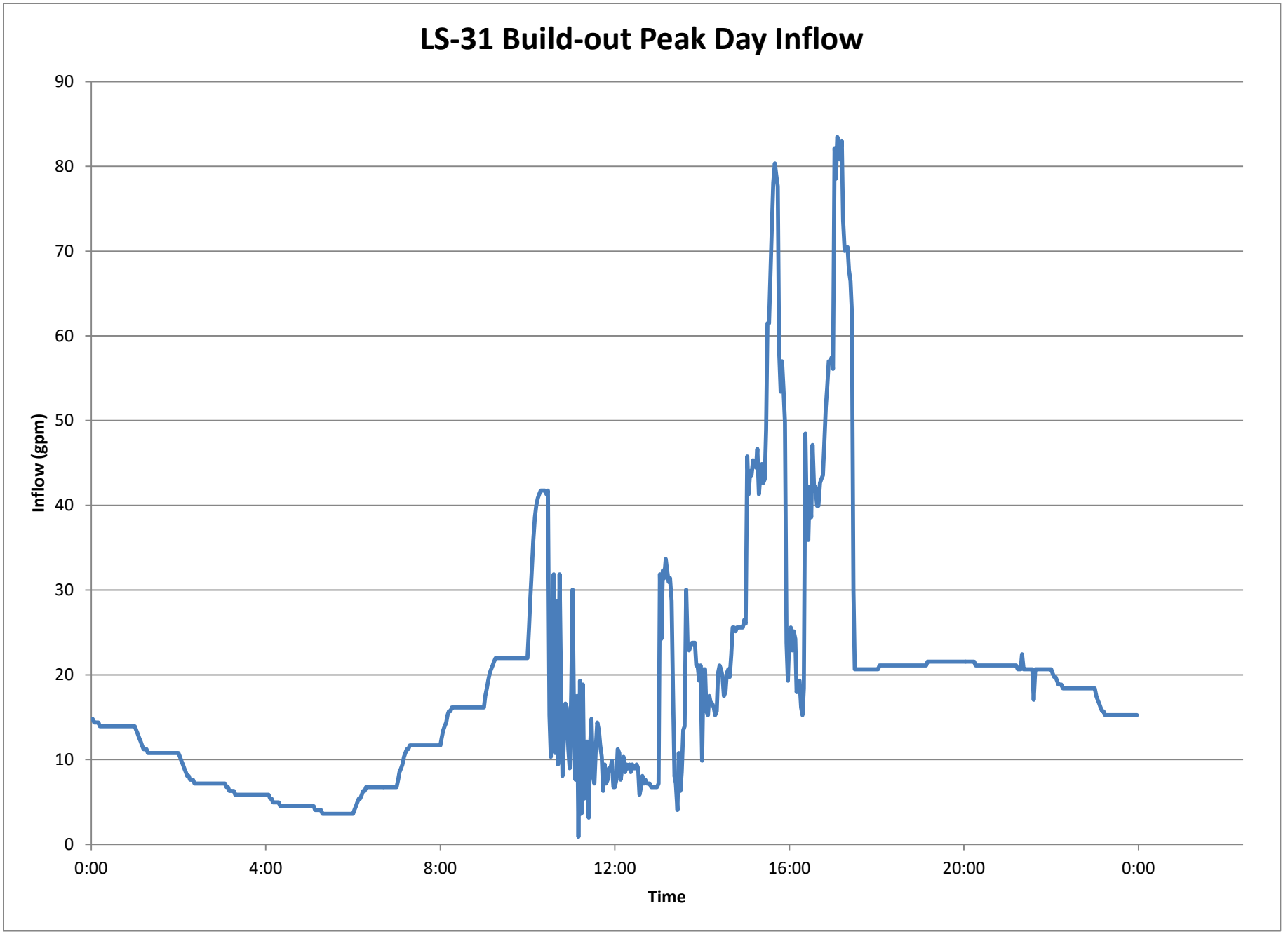

LS-23 Build-out Peak Day Inflow
400
350
300
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

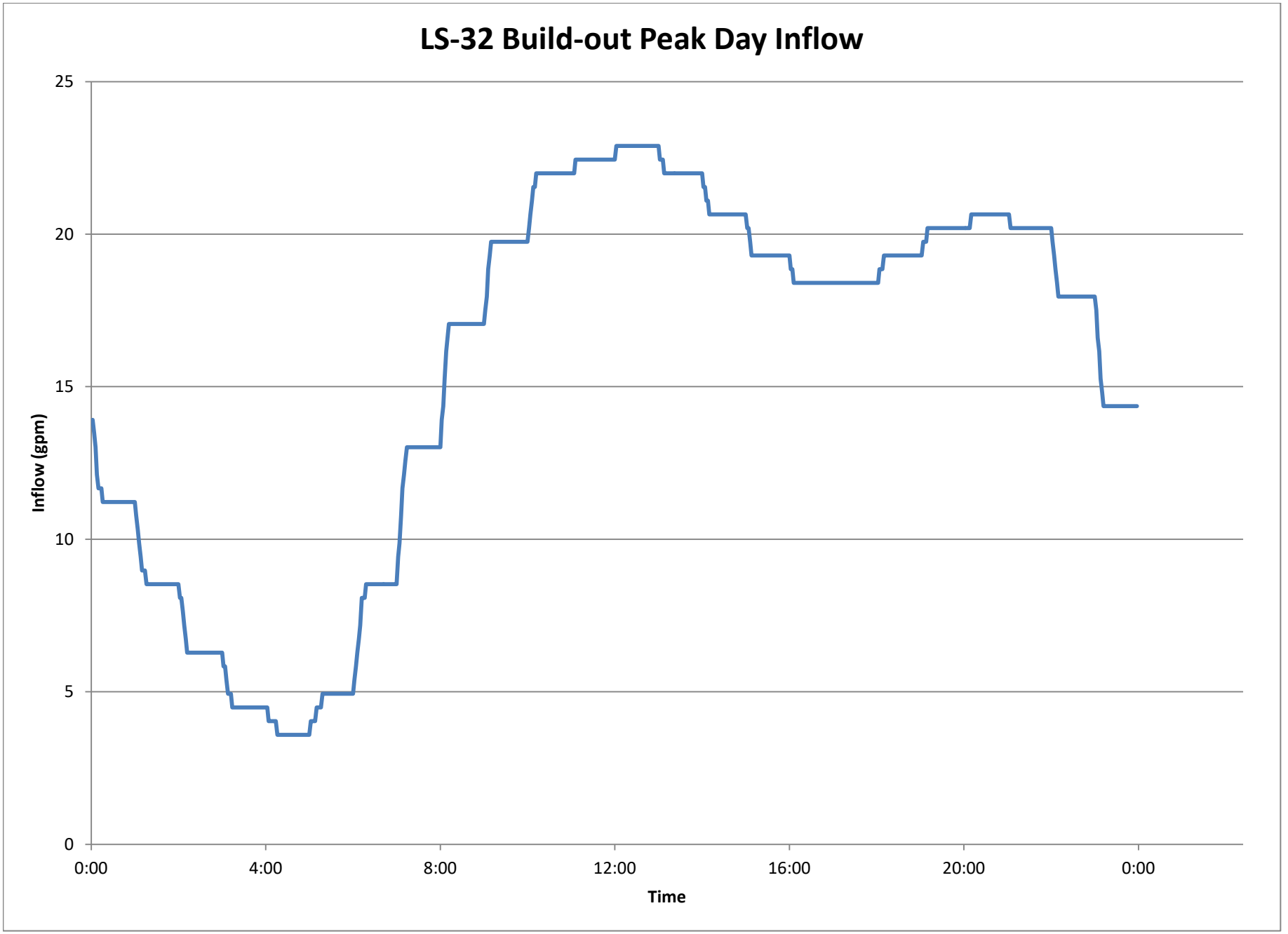

LS-24 Build-out Peak Day Inflow
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

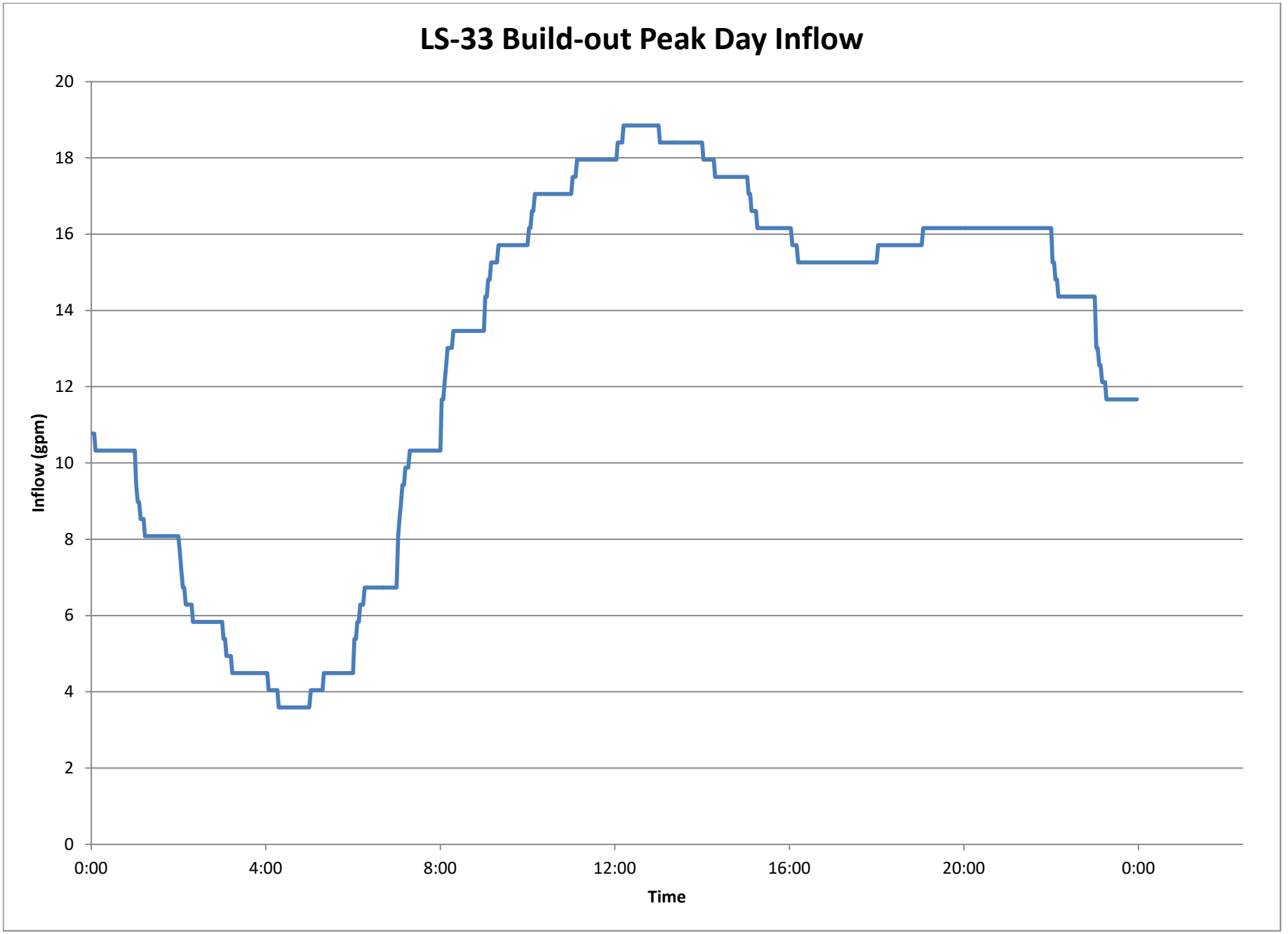

LS-25 Build-out Peak Day Inflow
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

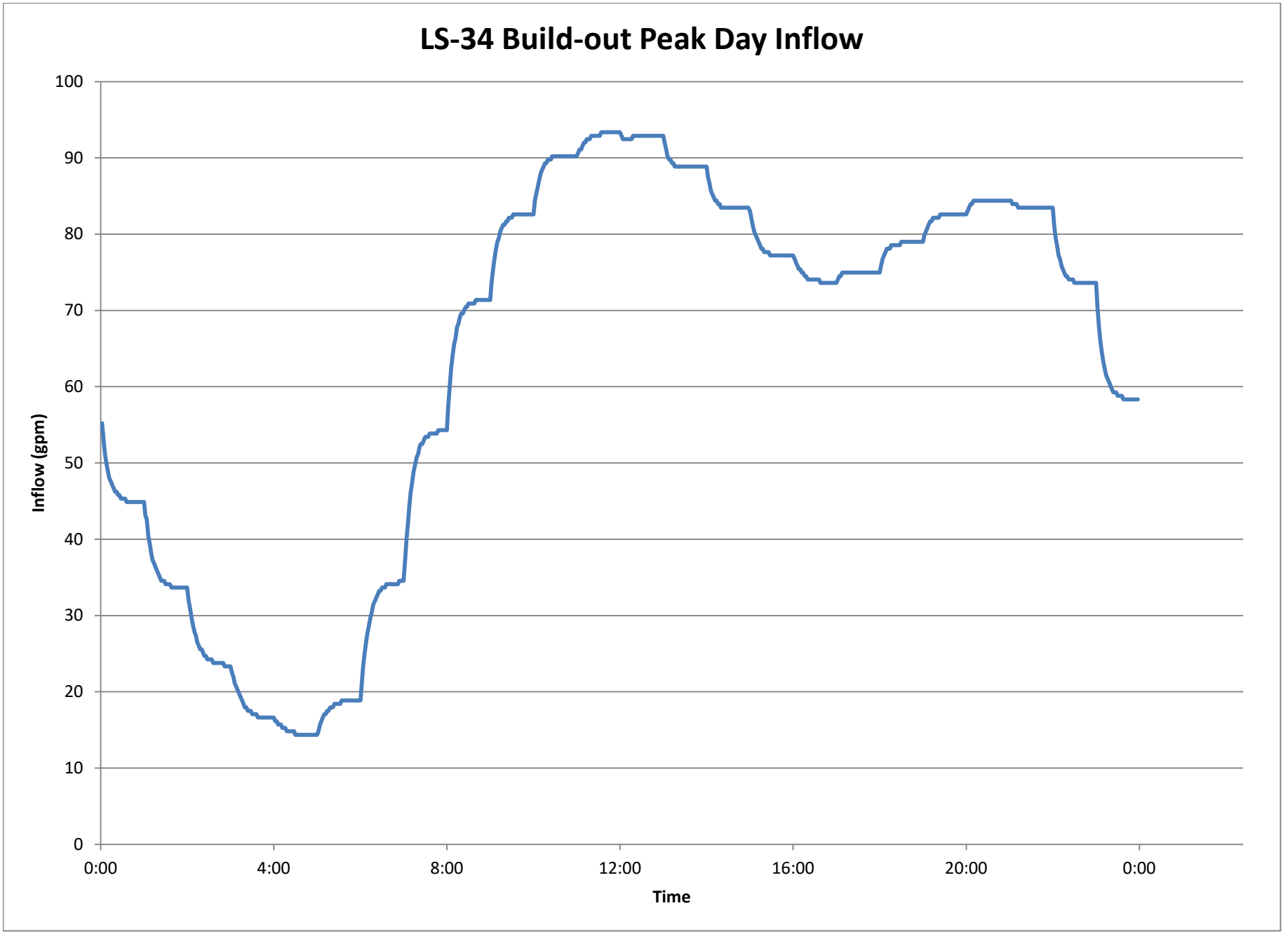

LS-27 Build-out Peak Day Inflow
70
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

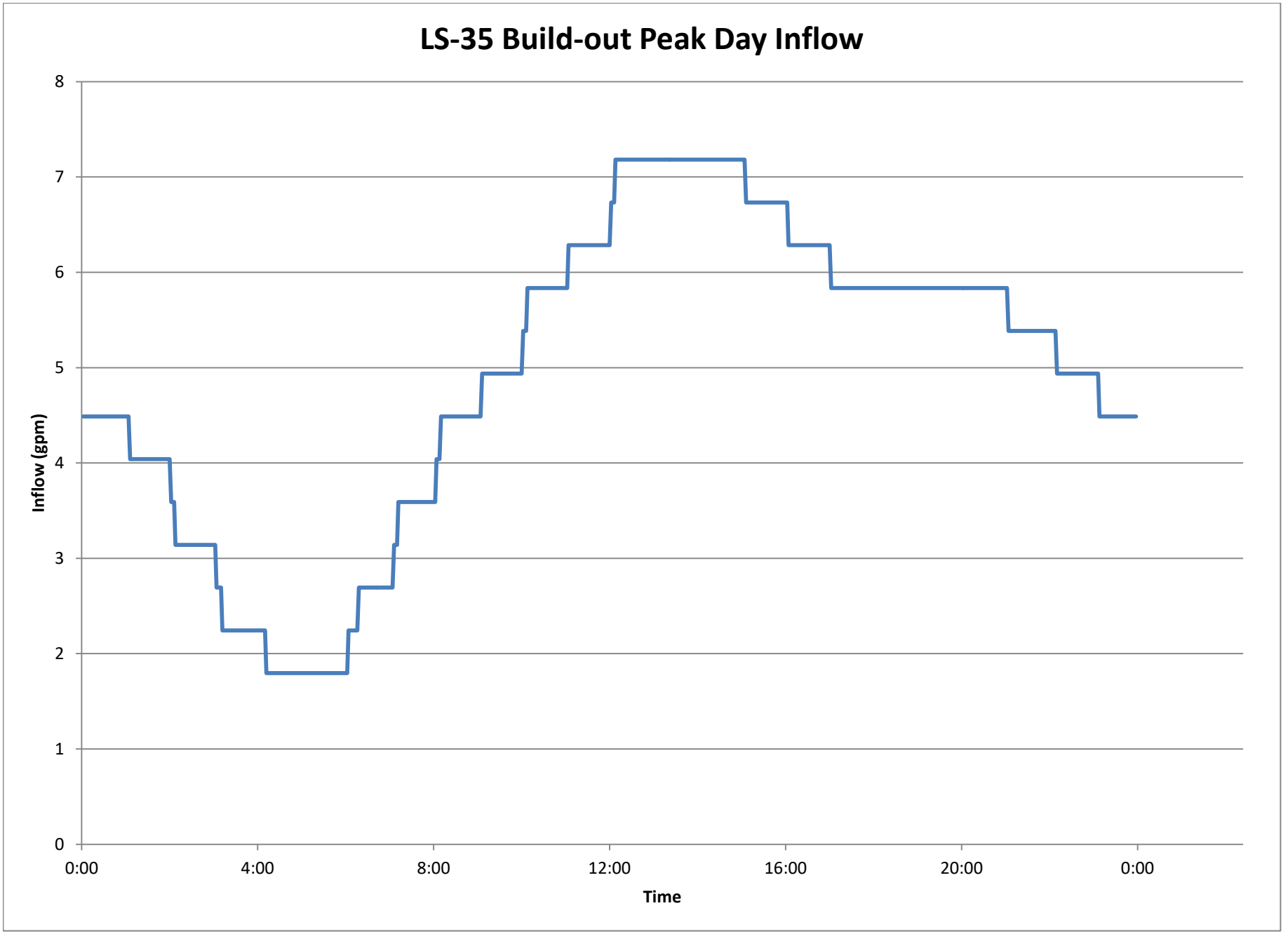

LS-30 Build-out Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

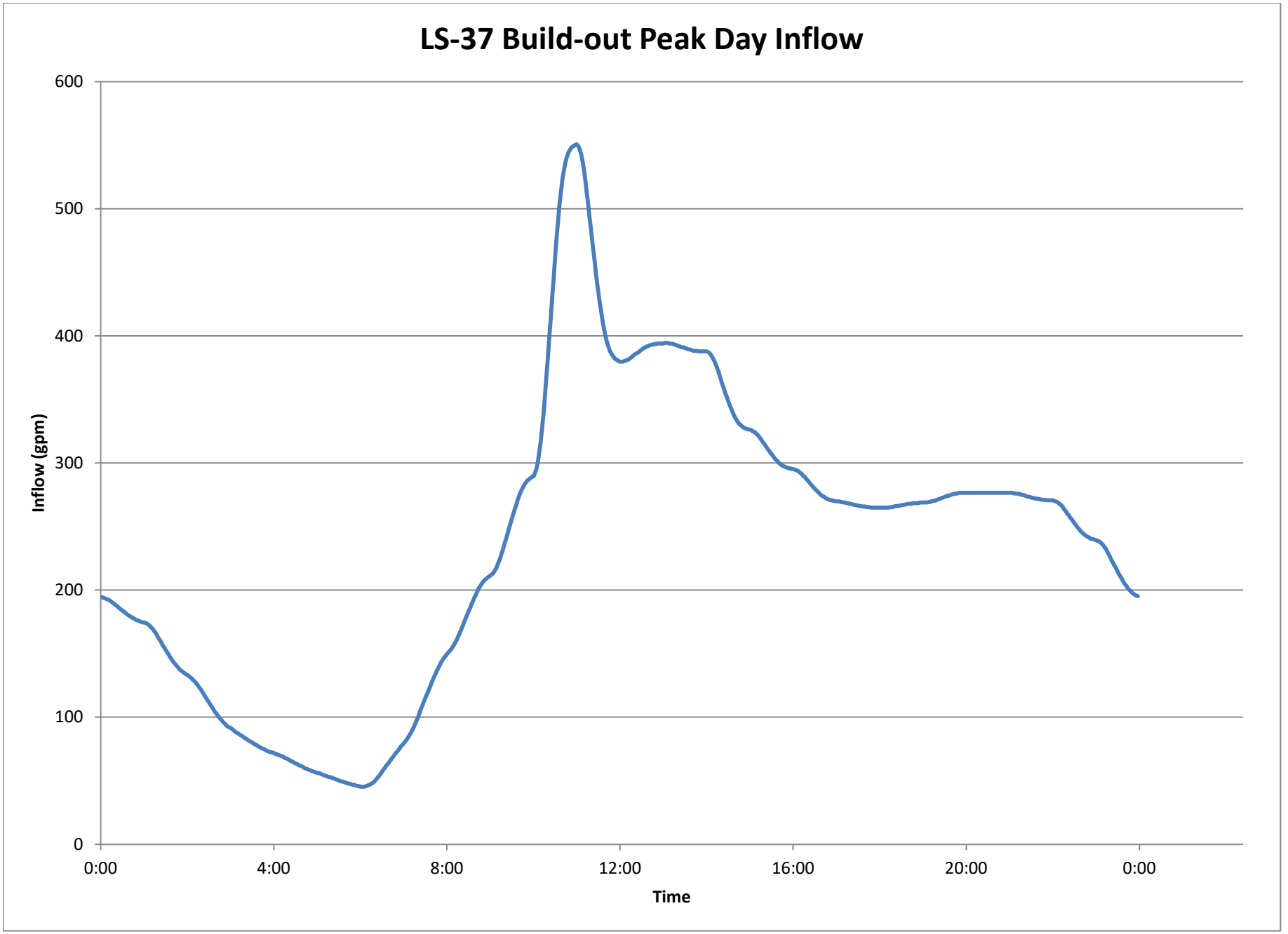

LS-31 Build-out Peak Day Inflow
Inflow (gpm)
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

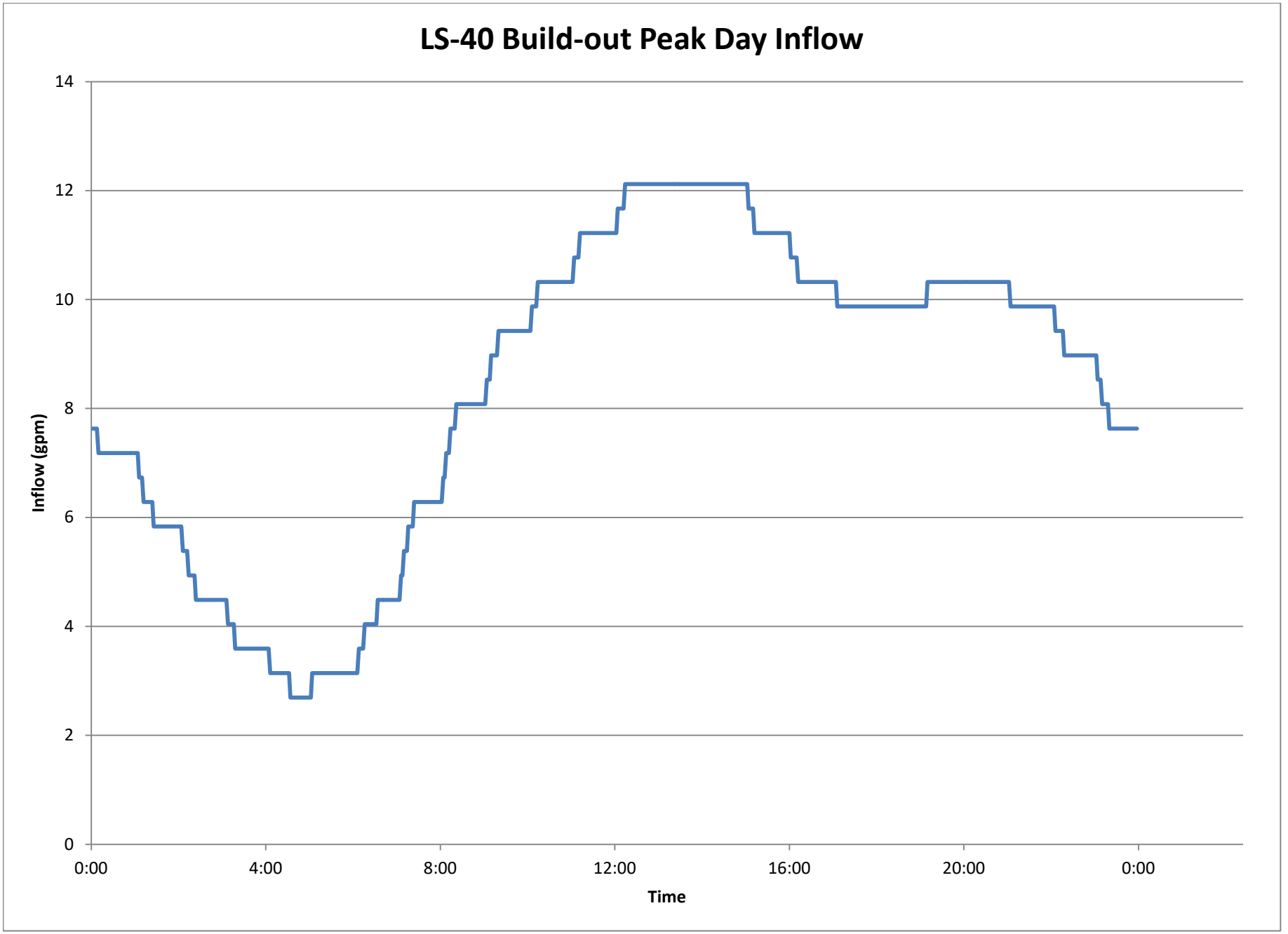

LS-32 Build-out Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

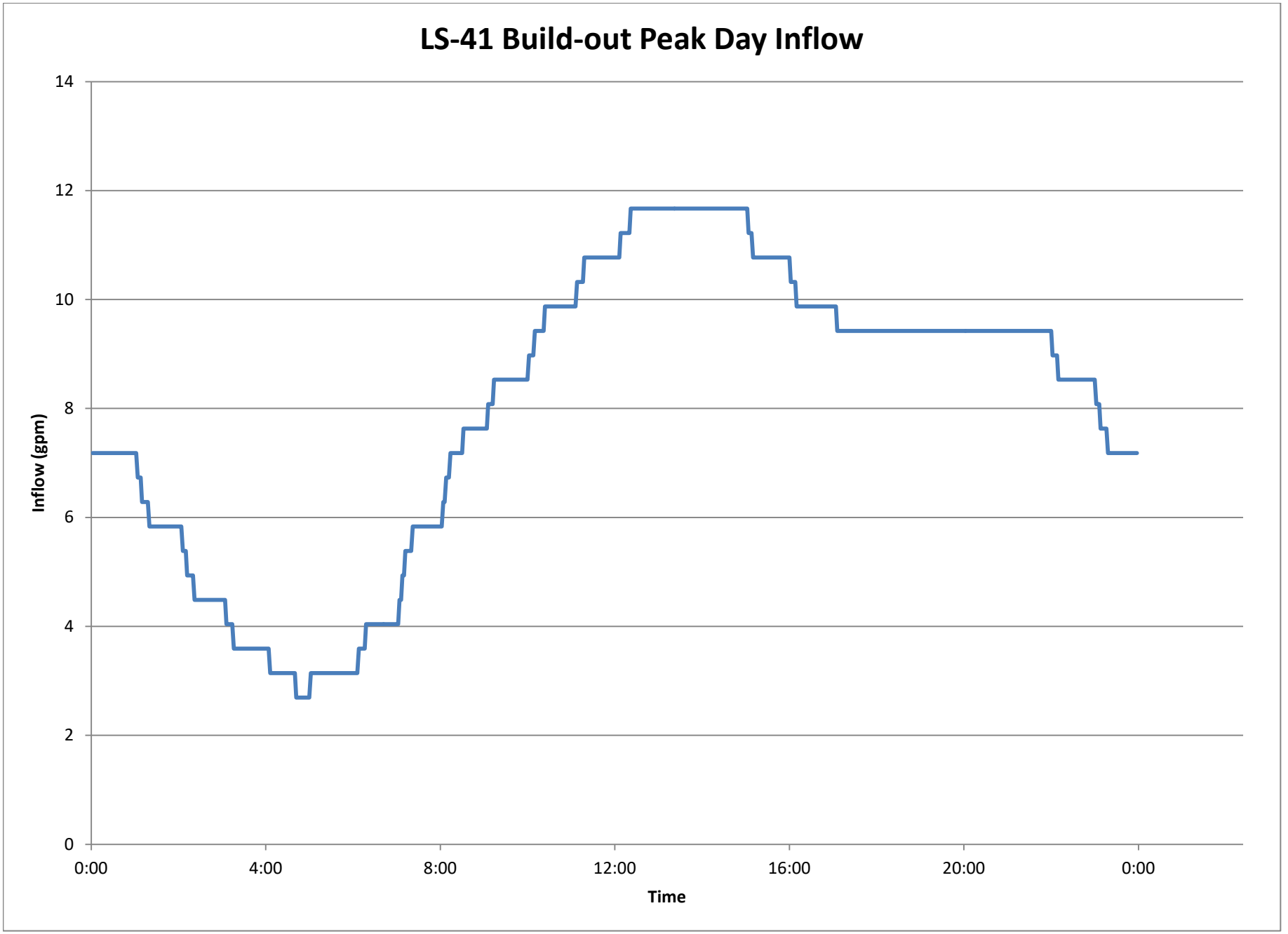

LS-33 Build-out Peak Day Inflow
Inflow (gpm)
20
18
16
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

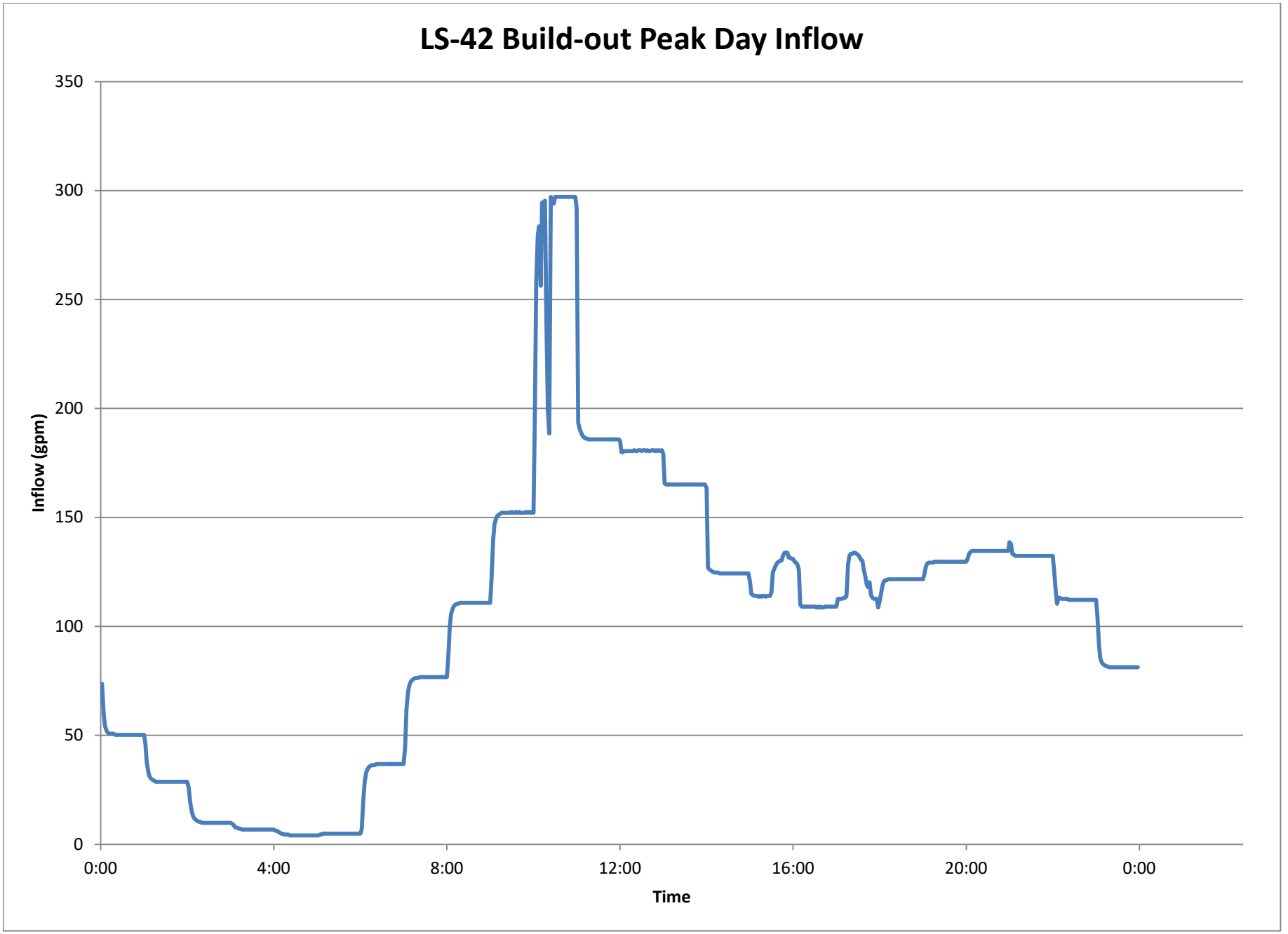

LS-34 Build-out Peak Day Inflow
Inflow (gpm)
100
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

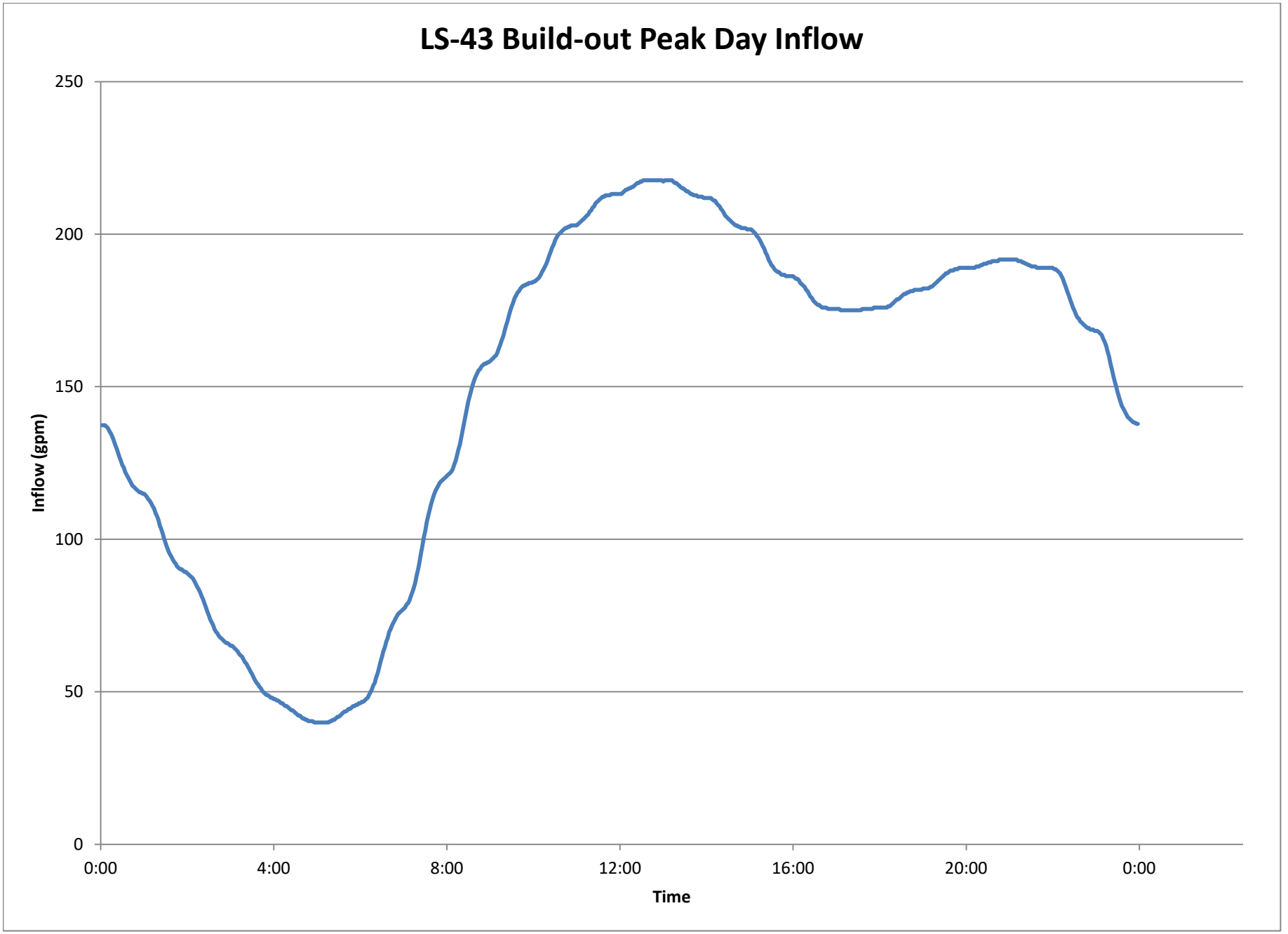

LS-35 Build-out Peak Day Inflow
Inflow (gpm)
8
7
6
5
4
3
2
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

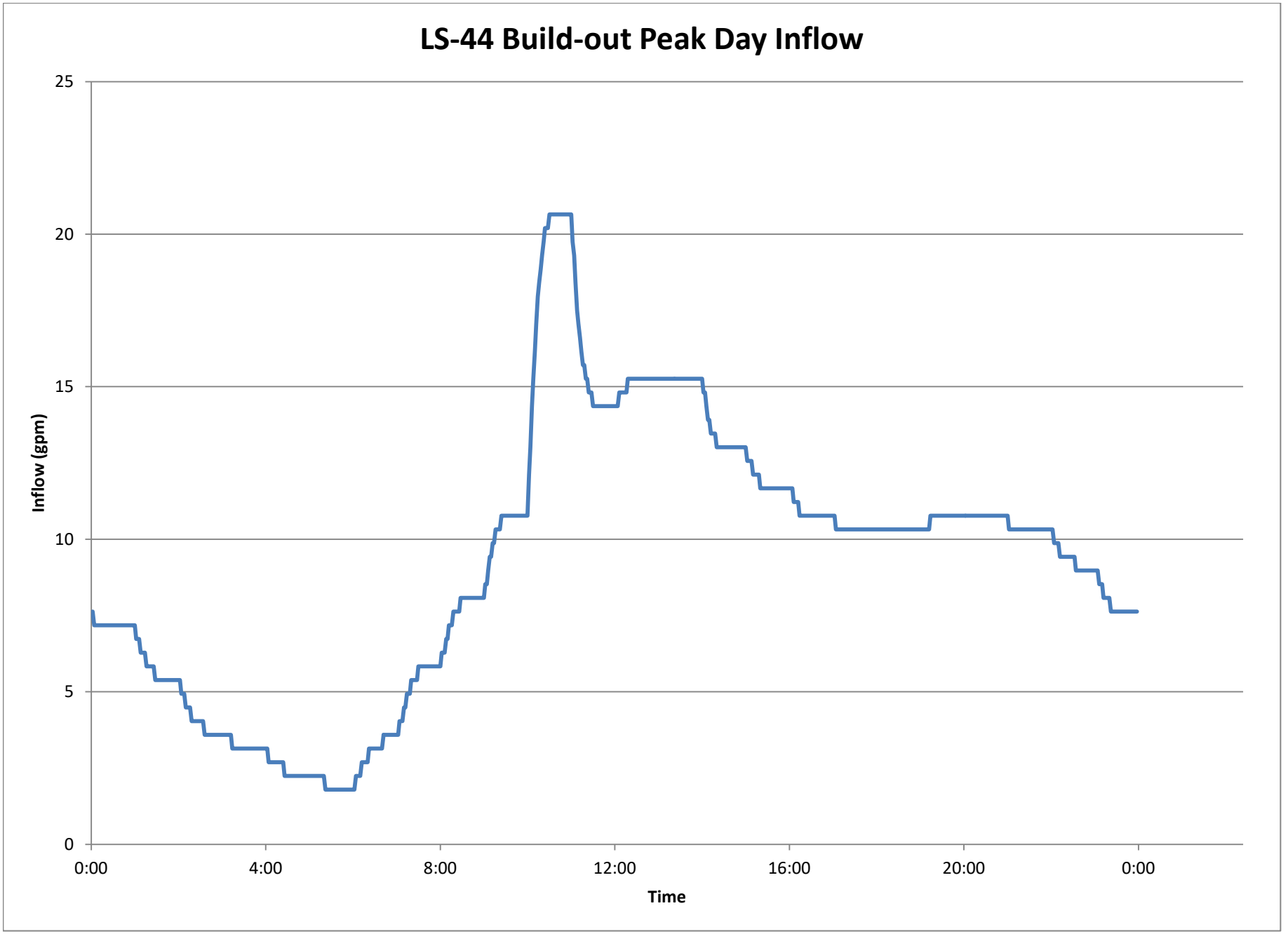

LS-37 Build-out Peak Day Inflow
600
500
400
300
200
100
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

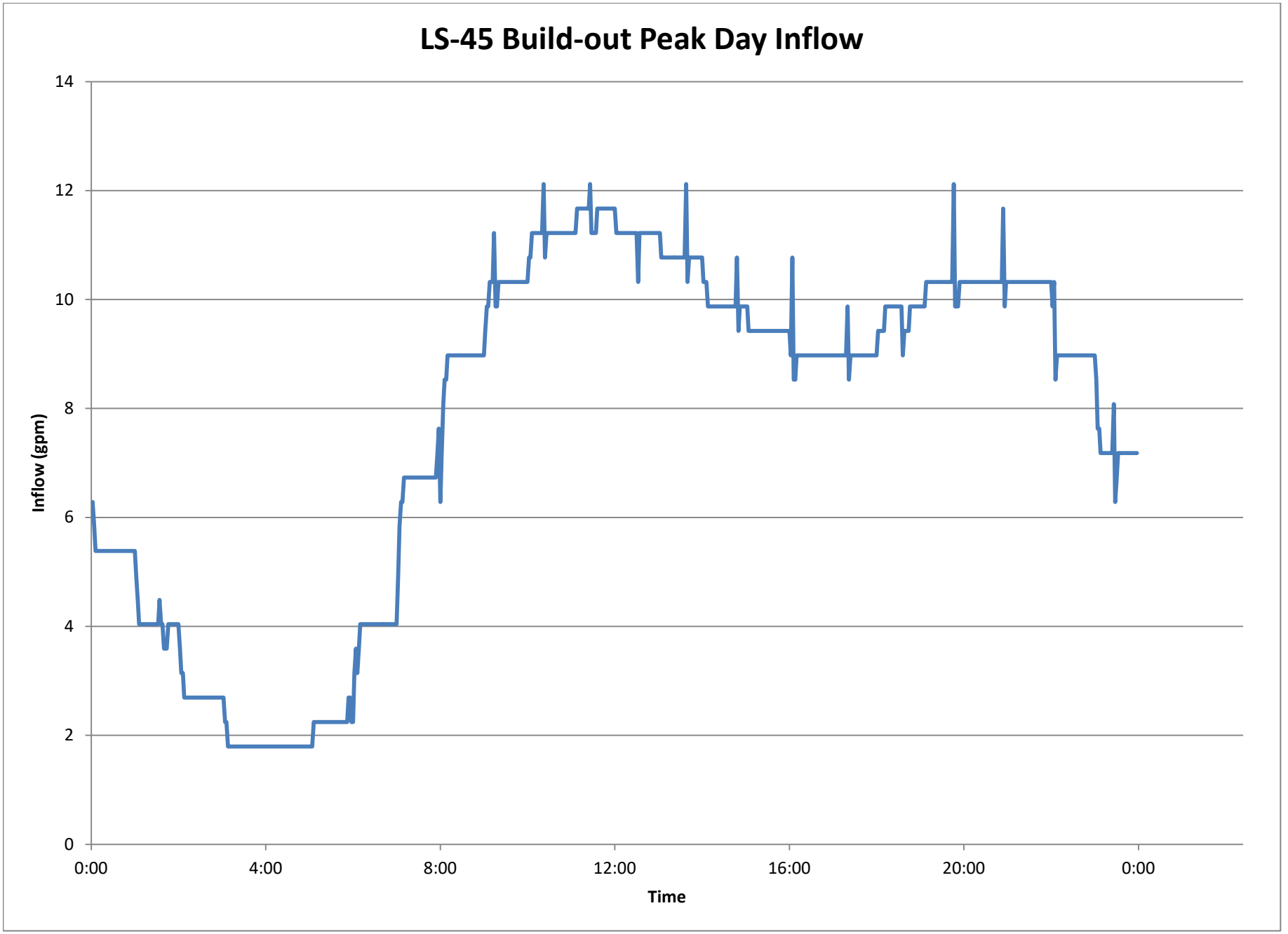

LS-40 Build-out Peak Day Inflow
14
12
10
8
6
4
2
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

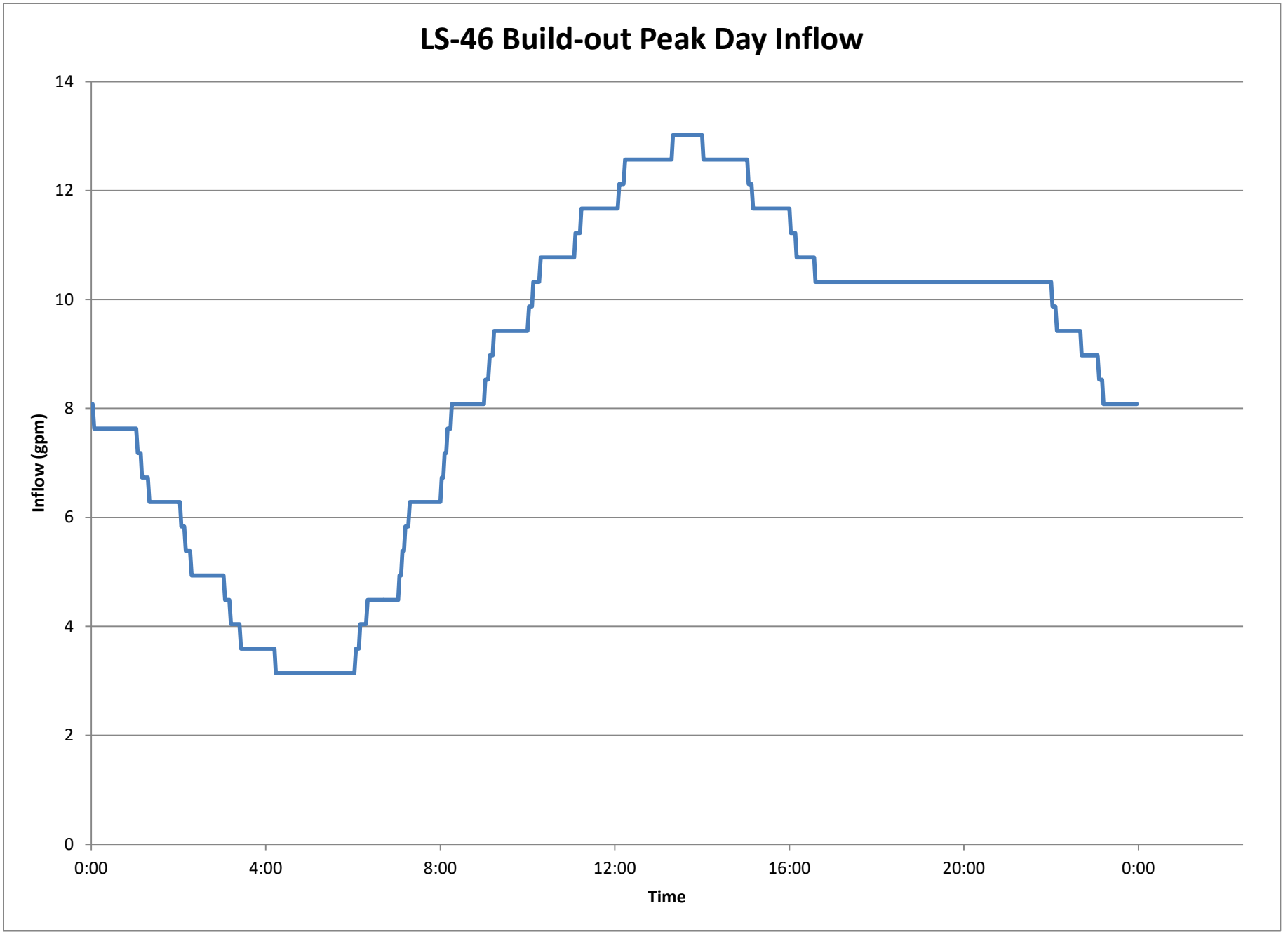

LS-41 Build-out Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

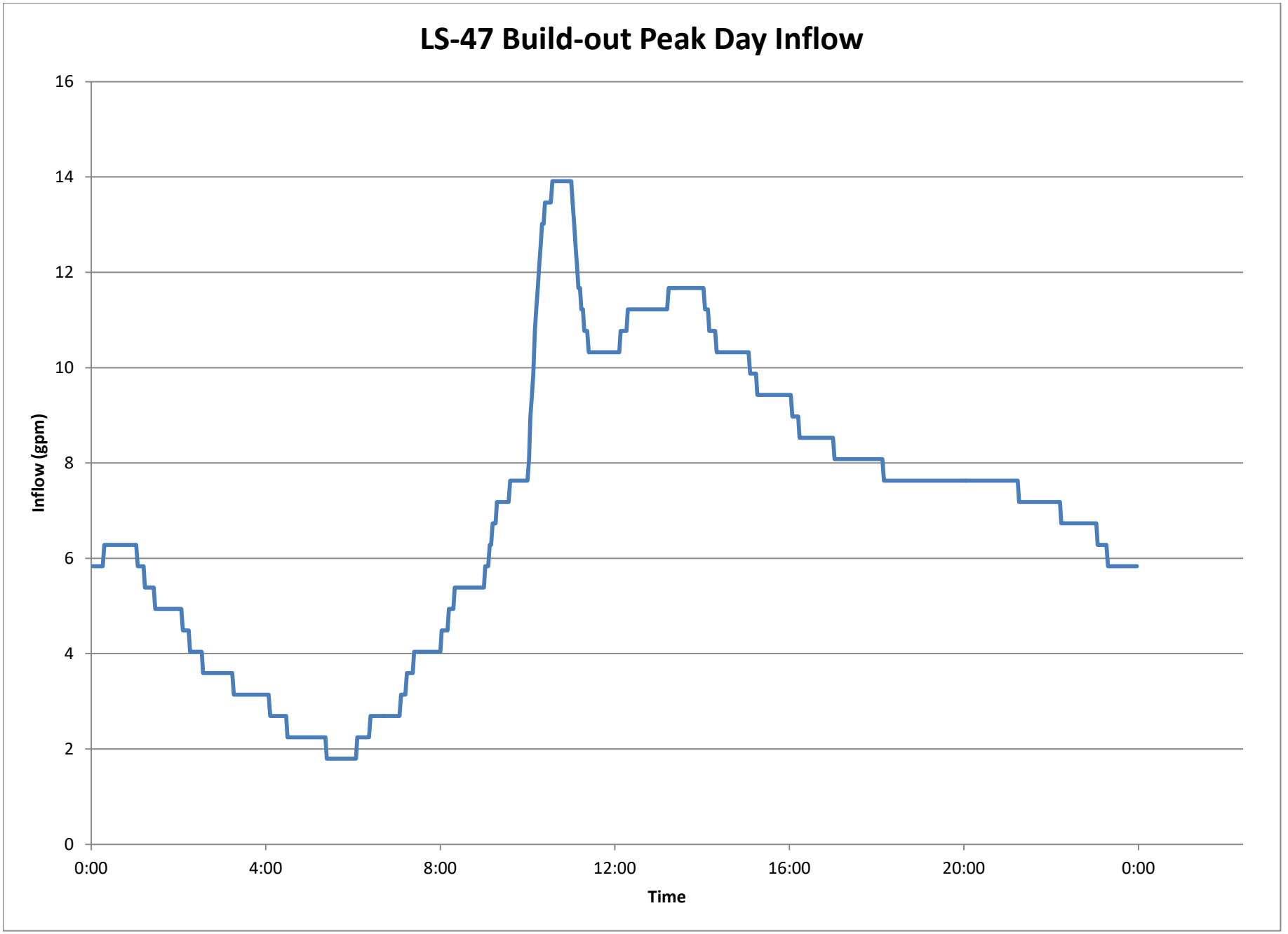

LS-42 Build-out Peak Day Inflow
350
300
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

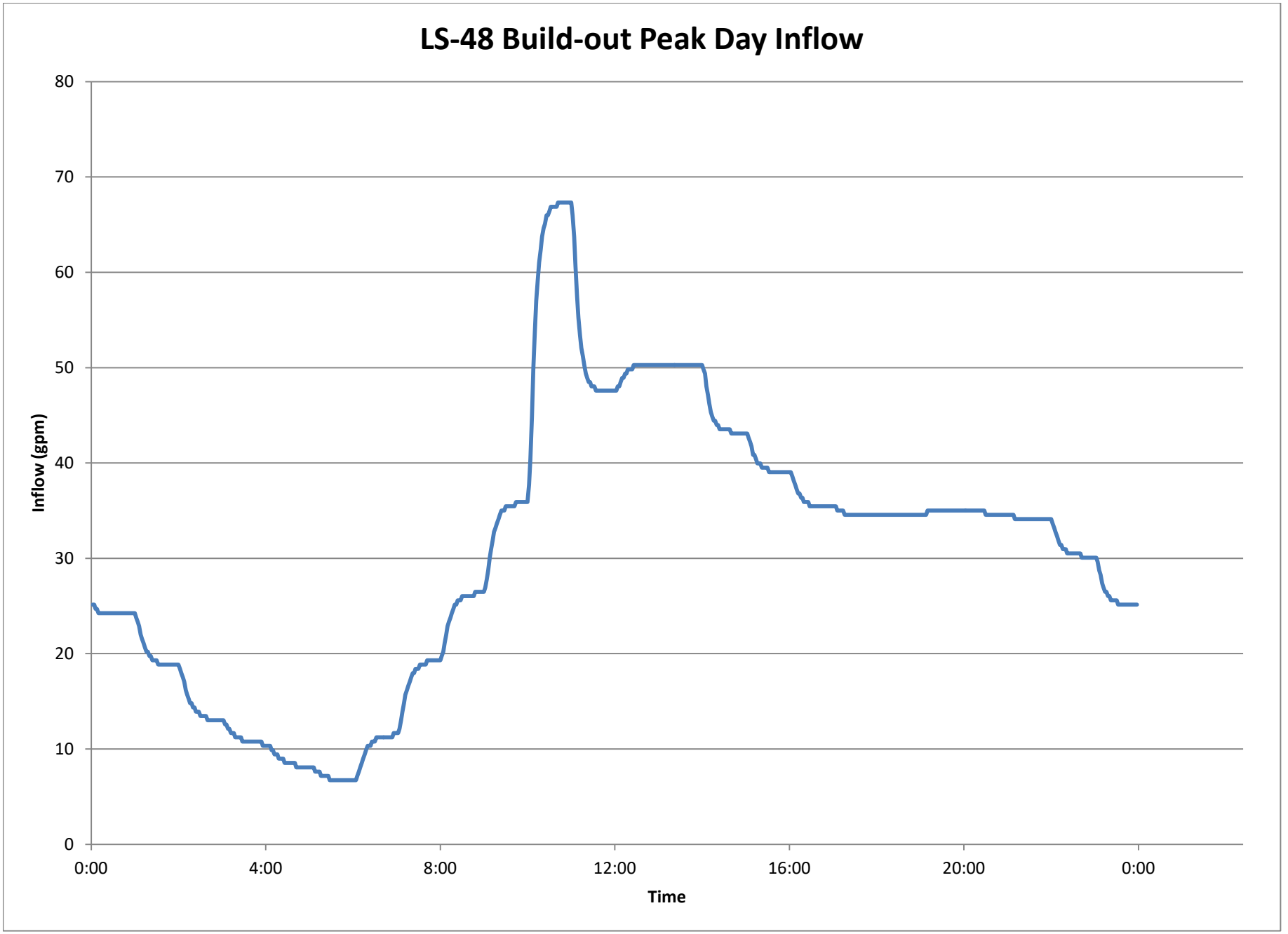

LS-43 Build-out Peak Day Inflow
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

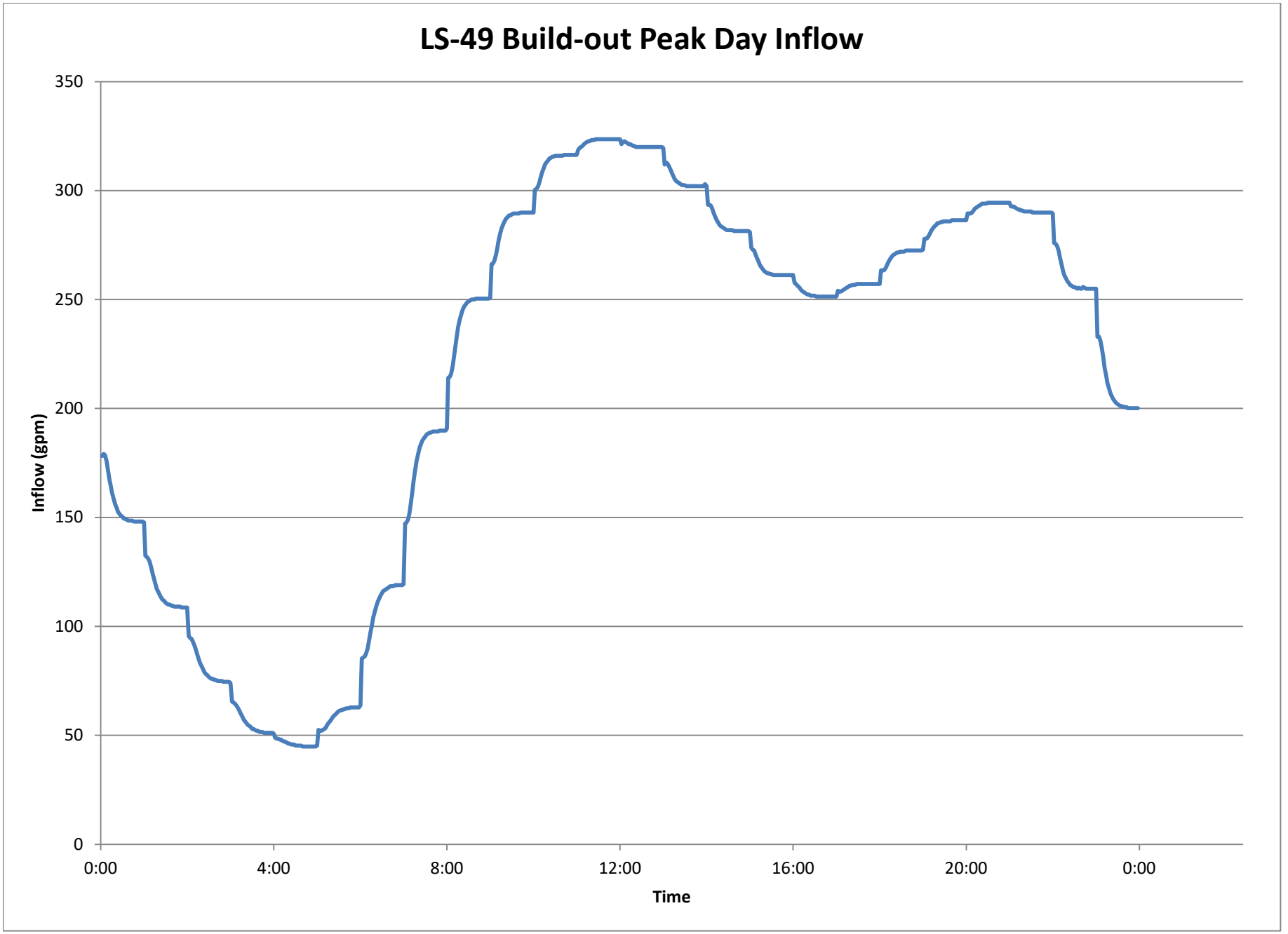

LS-44 Build-out Peak Day Inflow
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

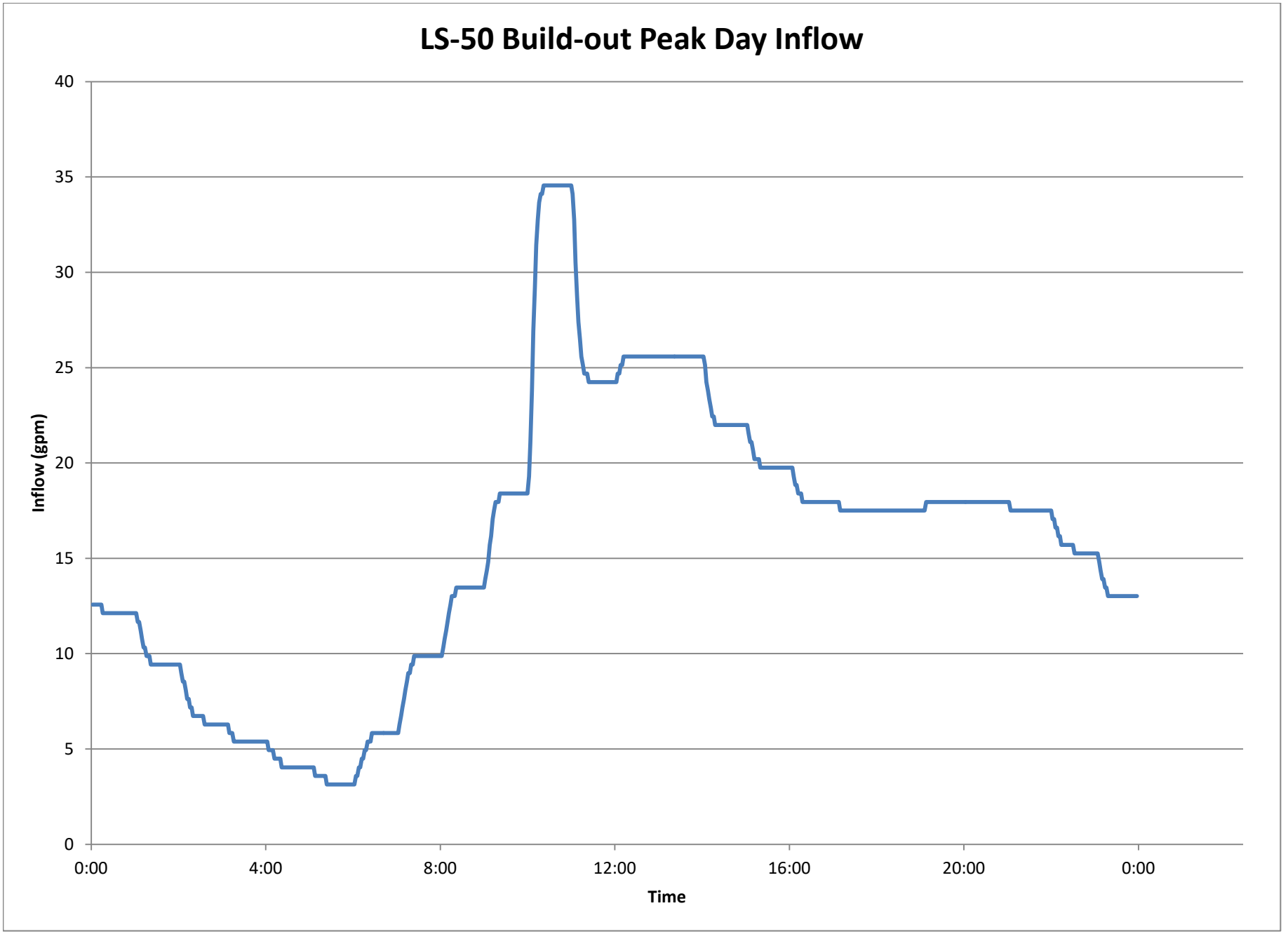

LS-45 Build-out Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

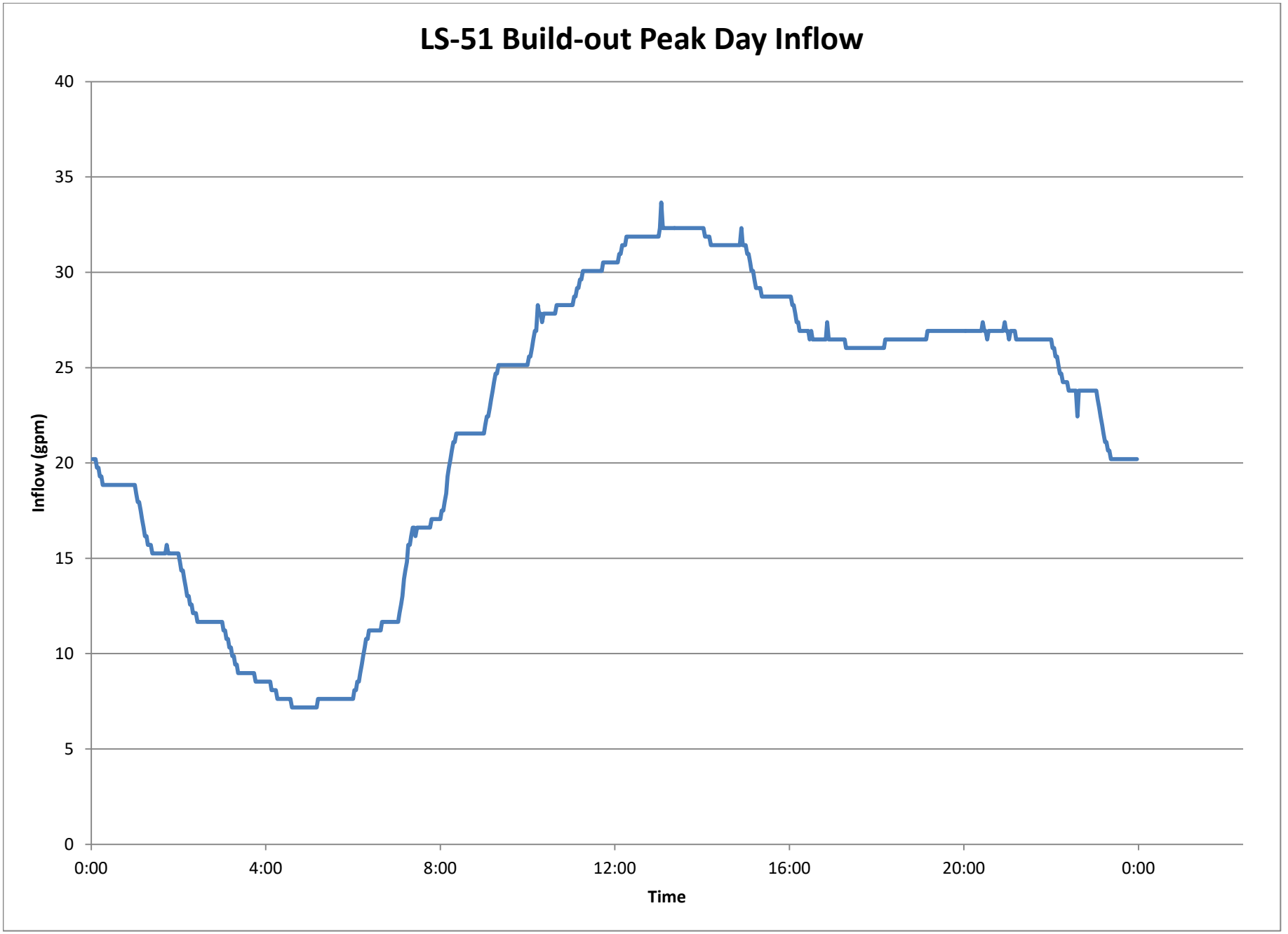

LS-46 Build-out Peak Day Inflow
Inflow (gpm)
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

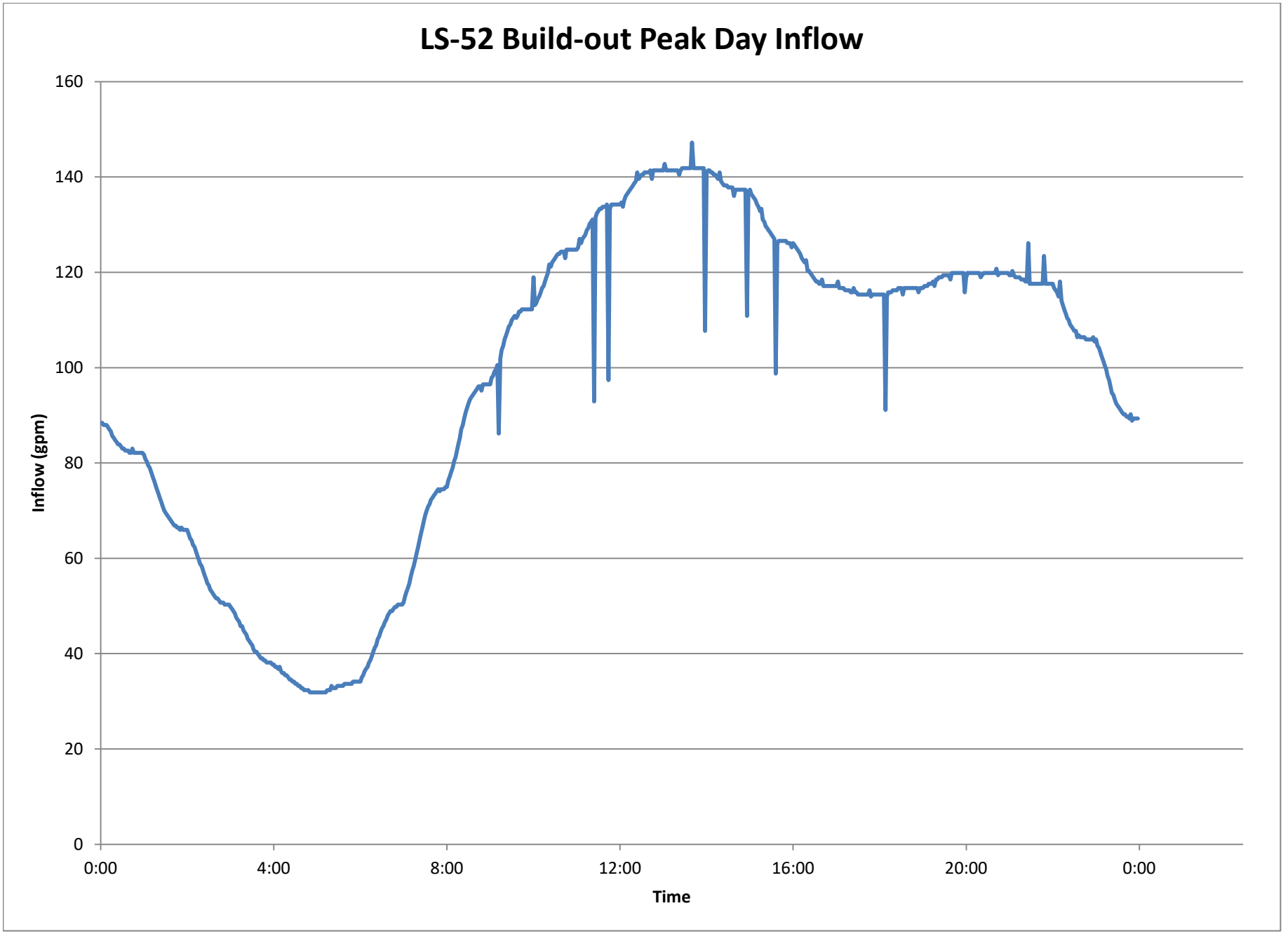

LS-47 Build-out Peak Day Inflow
Inflow (gpm)
16
14
12
10
8
6
4
2
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

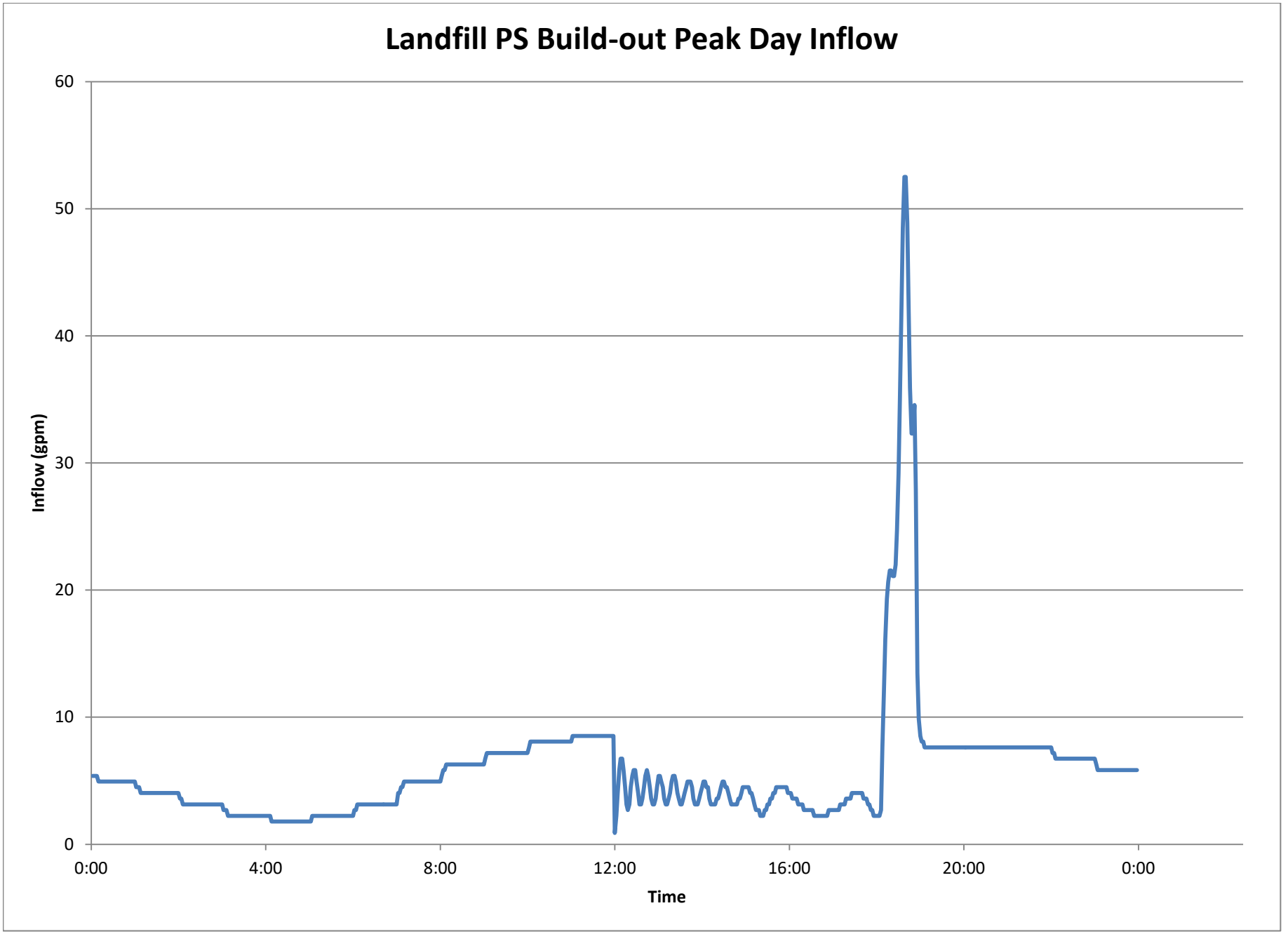

LS-48 Build-out Peak Day Inflow
Inflow (gpm)
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

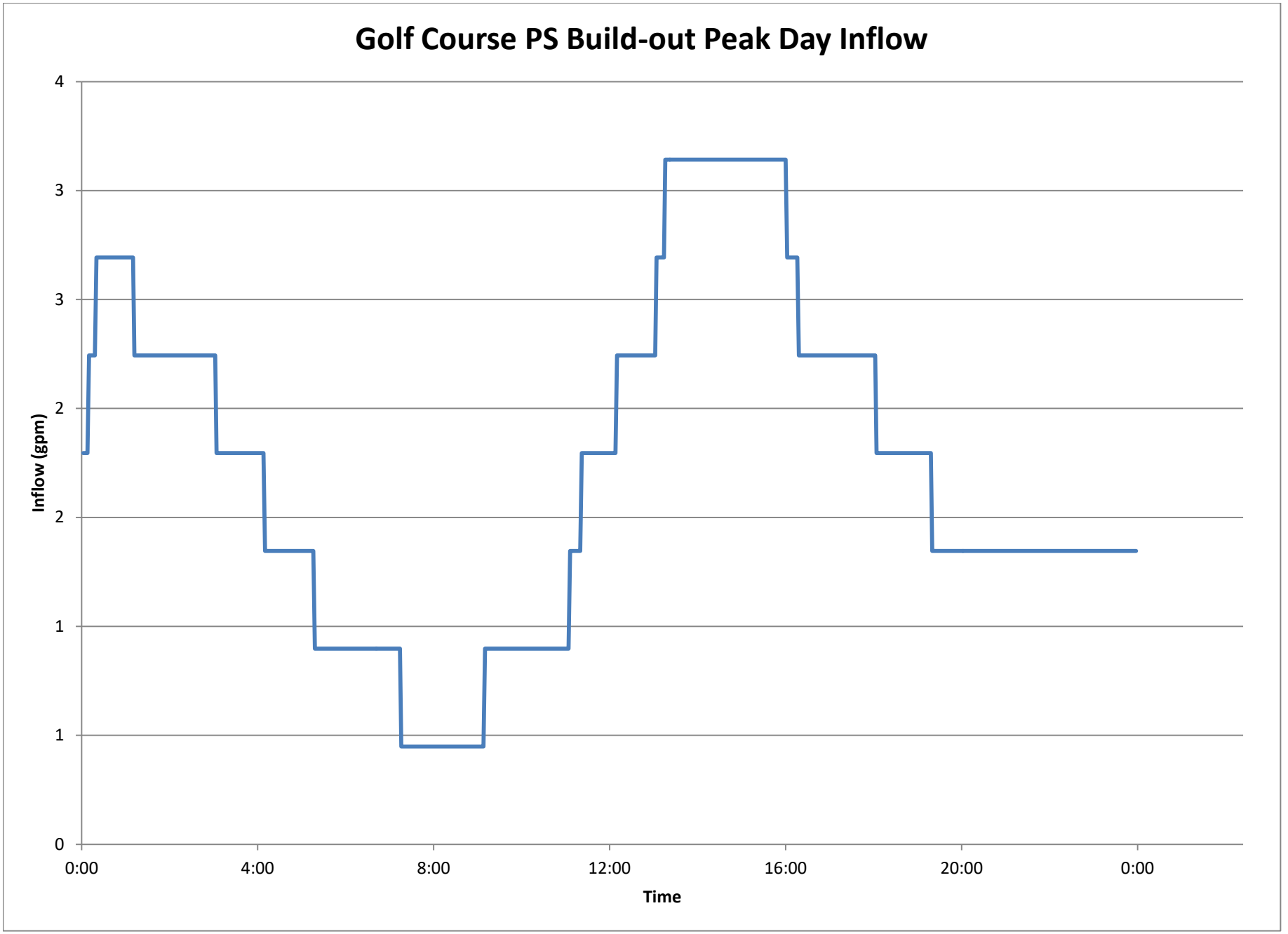

LS-49 Build-out Peak Day Inflow
350
300
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

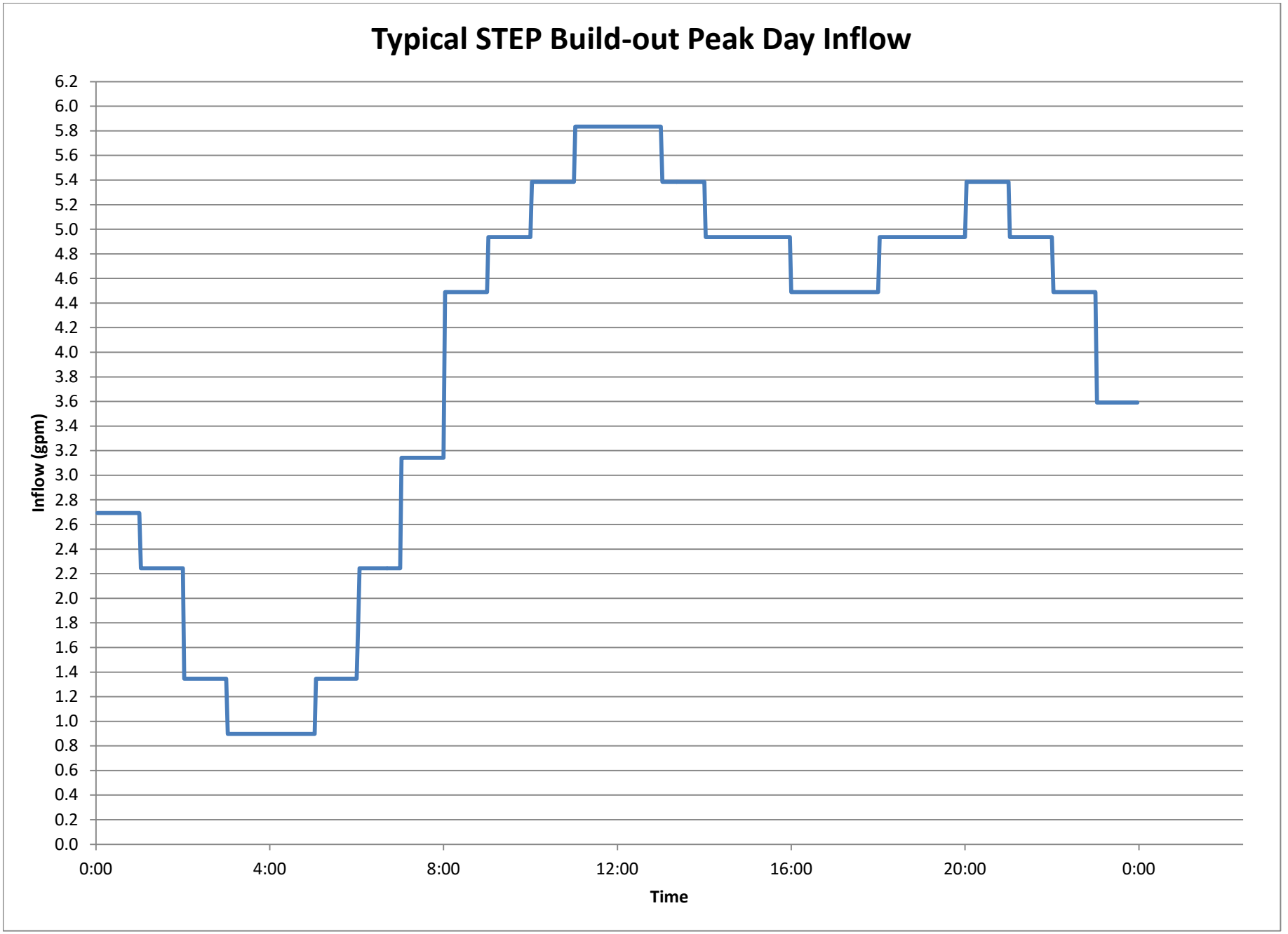

LS-50 Build-out Peak Day Inflow
Inflow (gpm)
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

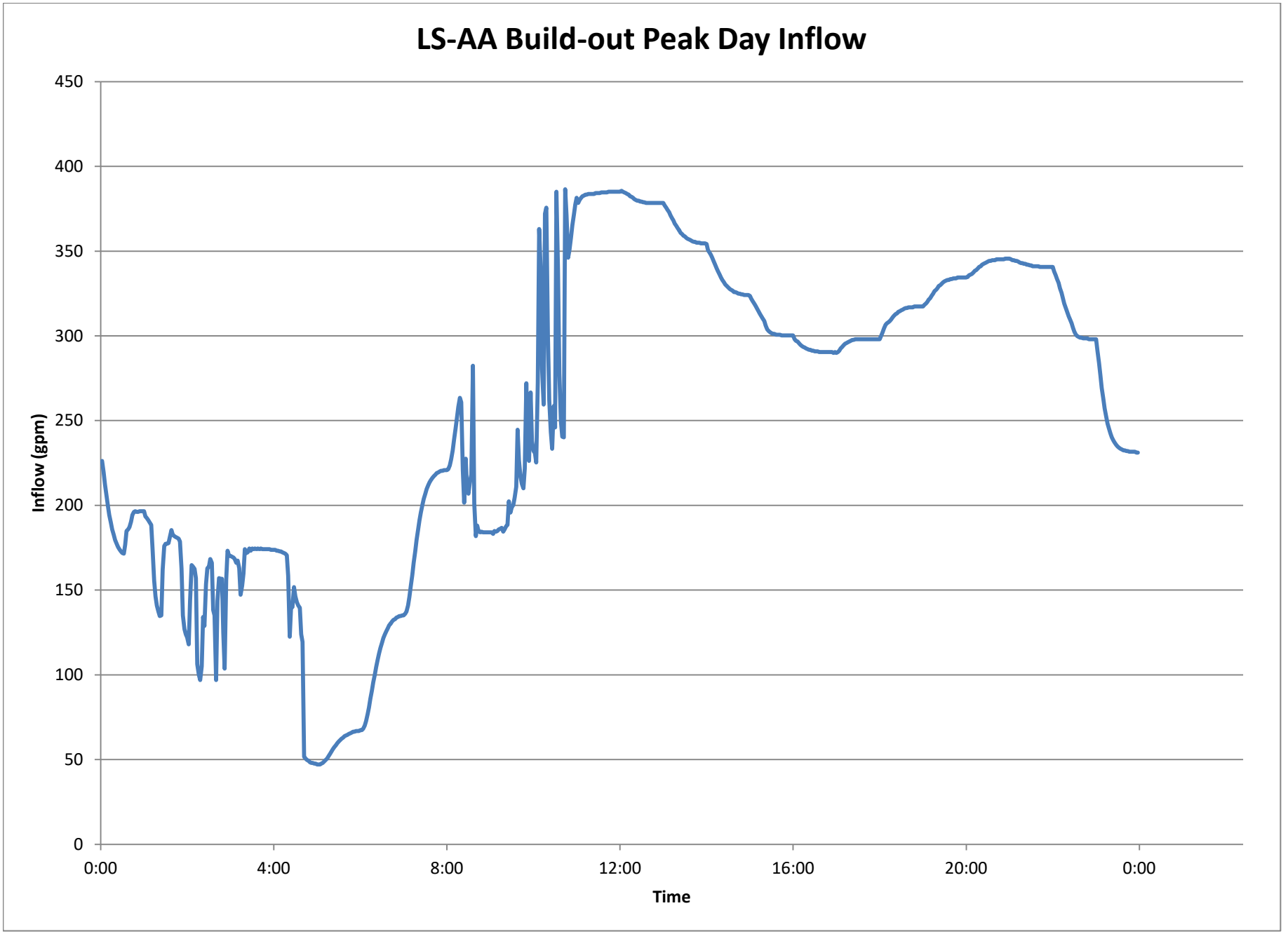

LS-51 Build-out Peak Day Inflow
Inflow (gpm)
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

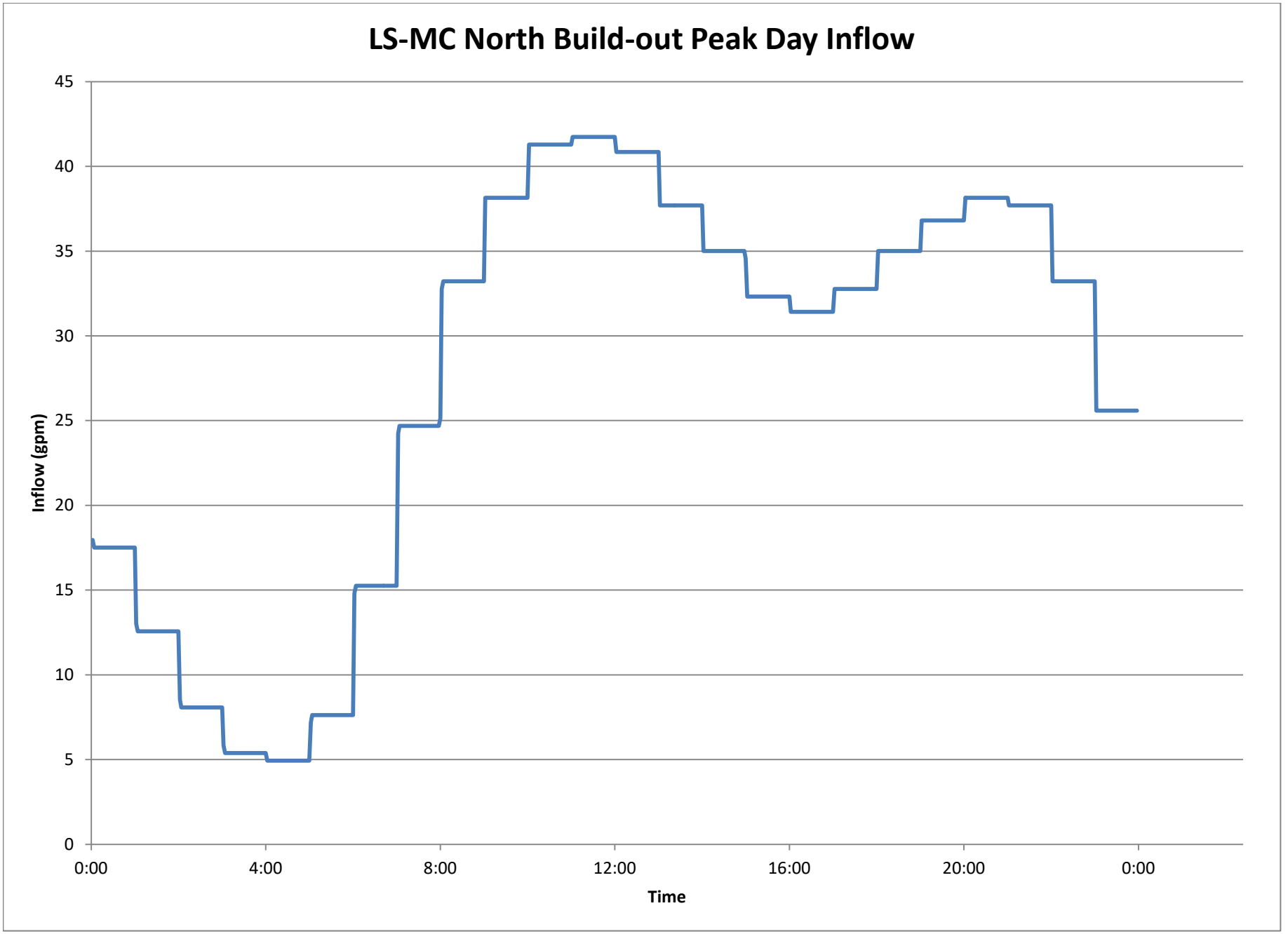

LS-52 Build-out Peak Day Inflow
160
140
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Landfill PS Build-out Peak Day Inflow
60
50
40
30
20
10
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Golf Course PS Build-out Peak Day Inflow
Inflow (gpm)
4
3
3
2
2
1
1
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


Typical STEP Build-out Peak Day Inflow
Inflow (gpm)
6.2
6.0
5.8
5.6
5.4
5.2
5.0
4.8
4.6
4.4
4.2
4.0
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

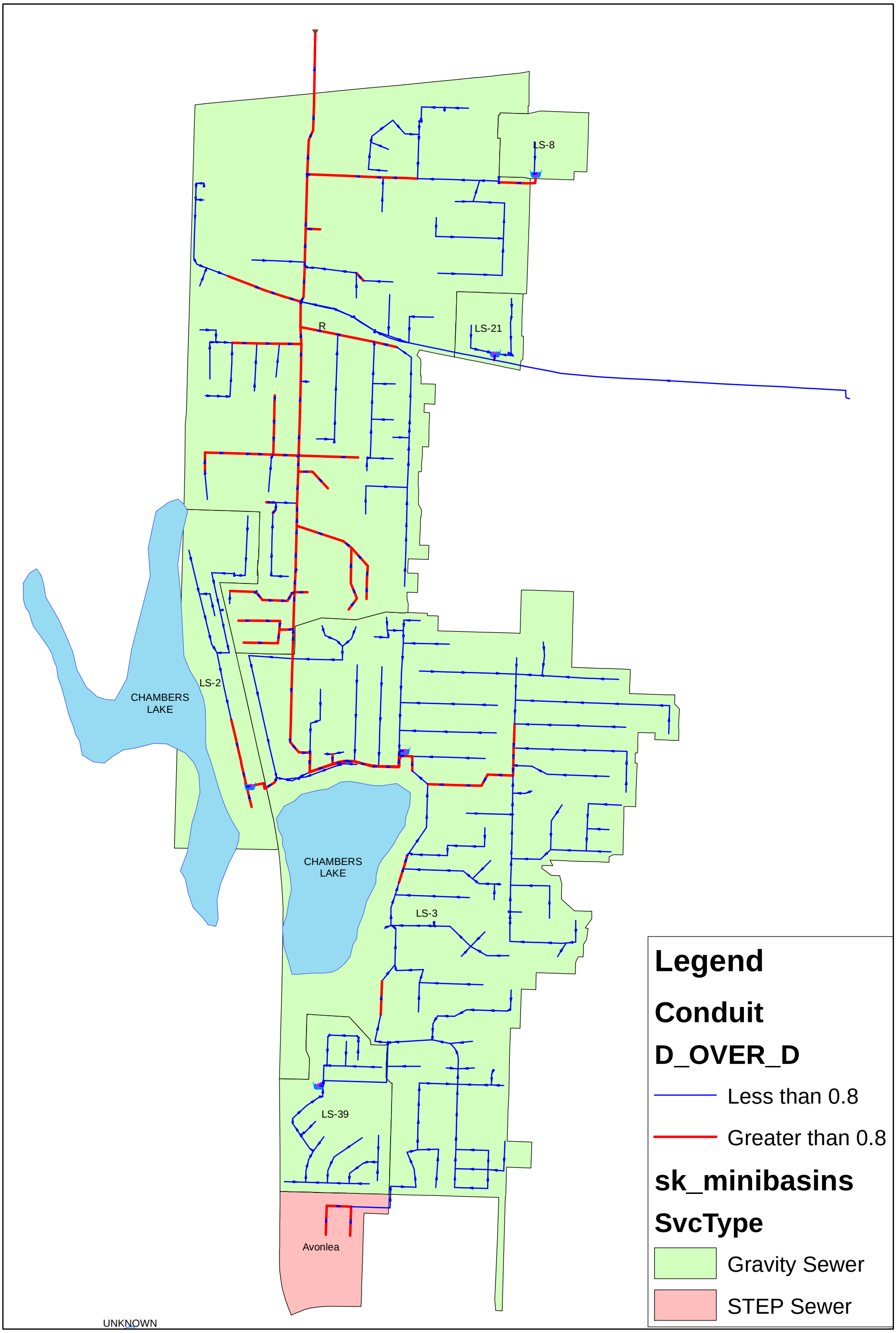

LS-AA Build-out Peak Day Inflow
Inflow (gpm)
450
400
350
300
250
200
150
100
50
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-MC North Build-out Peak Day Inflow
Inflow (gpm)
45
40
35
30
25
20
15
10
5
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

BUILD-OUT MODEL RESULTS

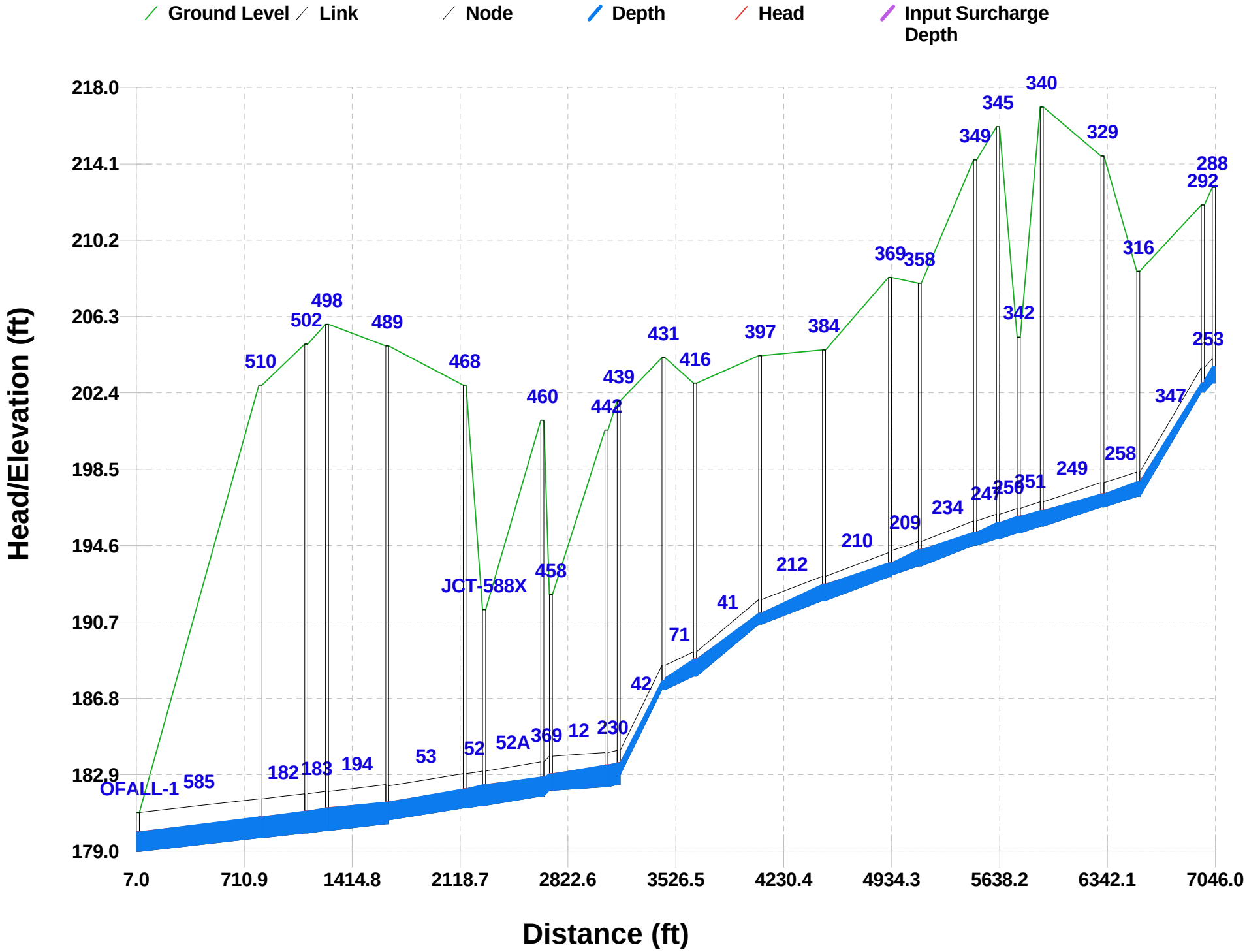
SLEATER KINNEY BASIN

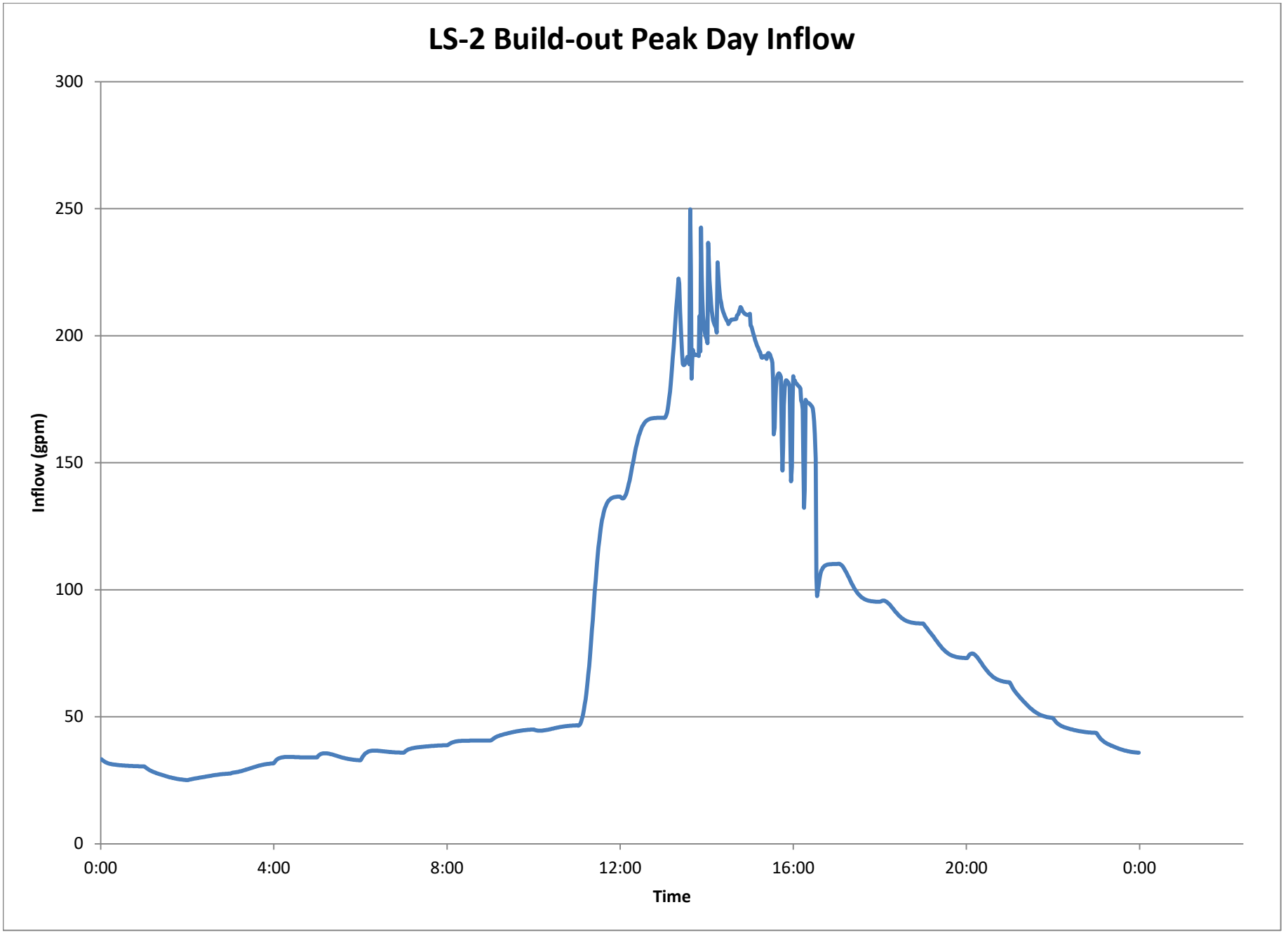
Lacey - Sleater Kinney Collection System Model
Build-Out Peak Day Surcharging
d/D Criteria = 0.80

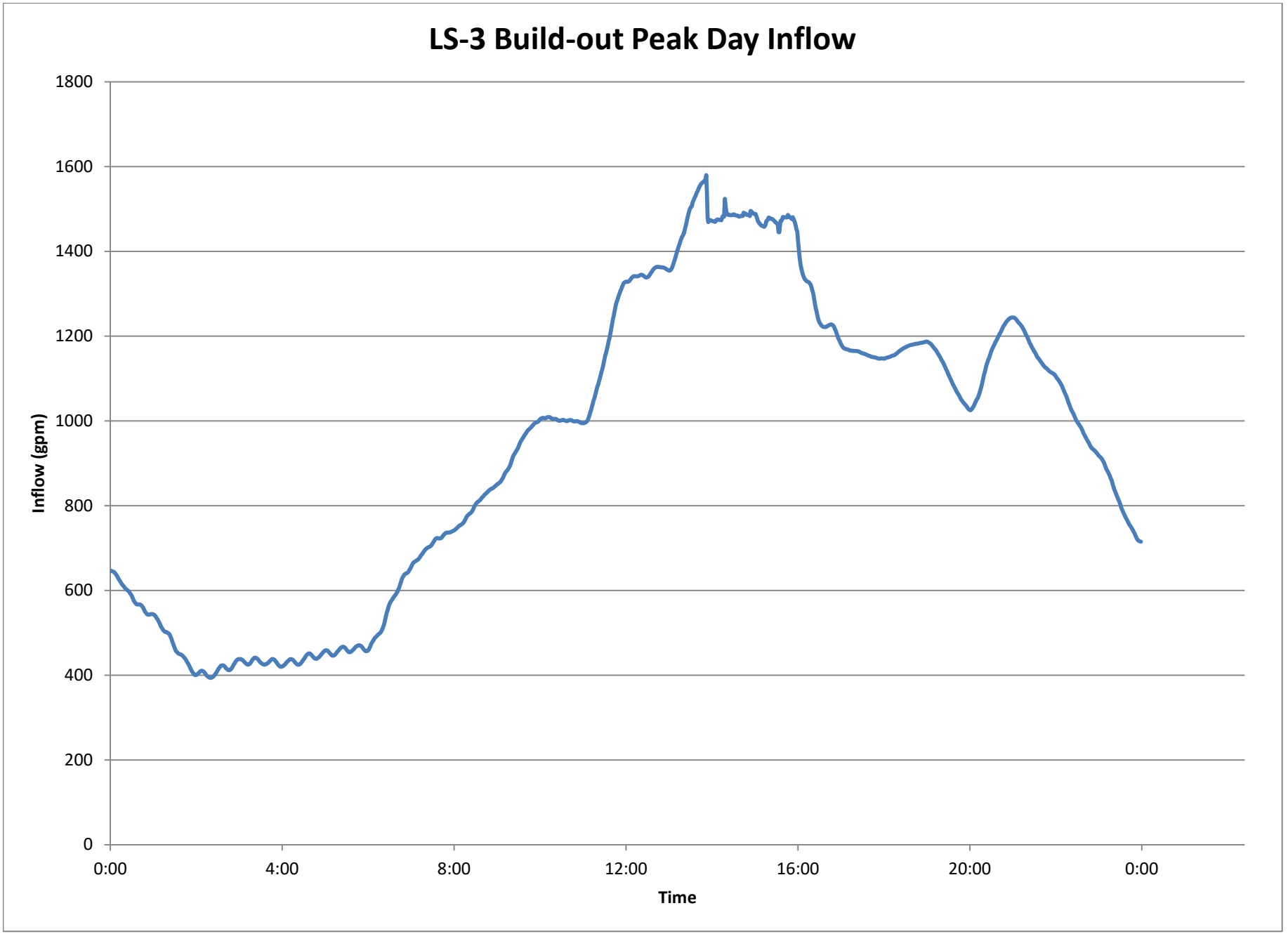


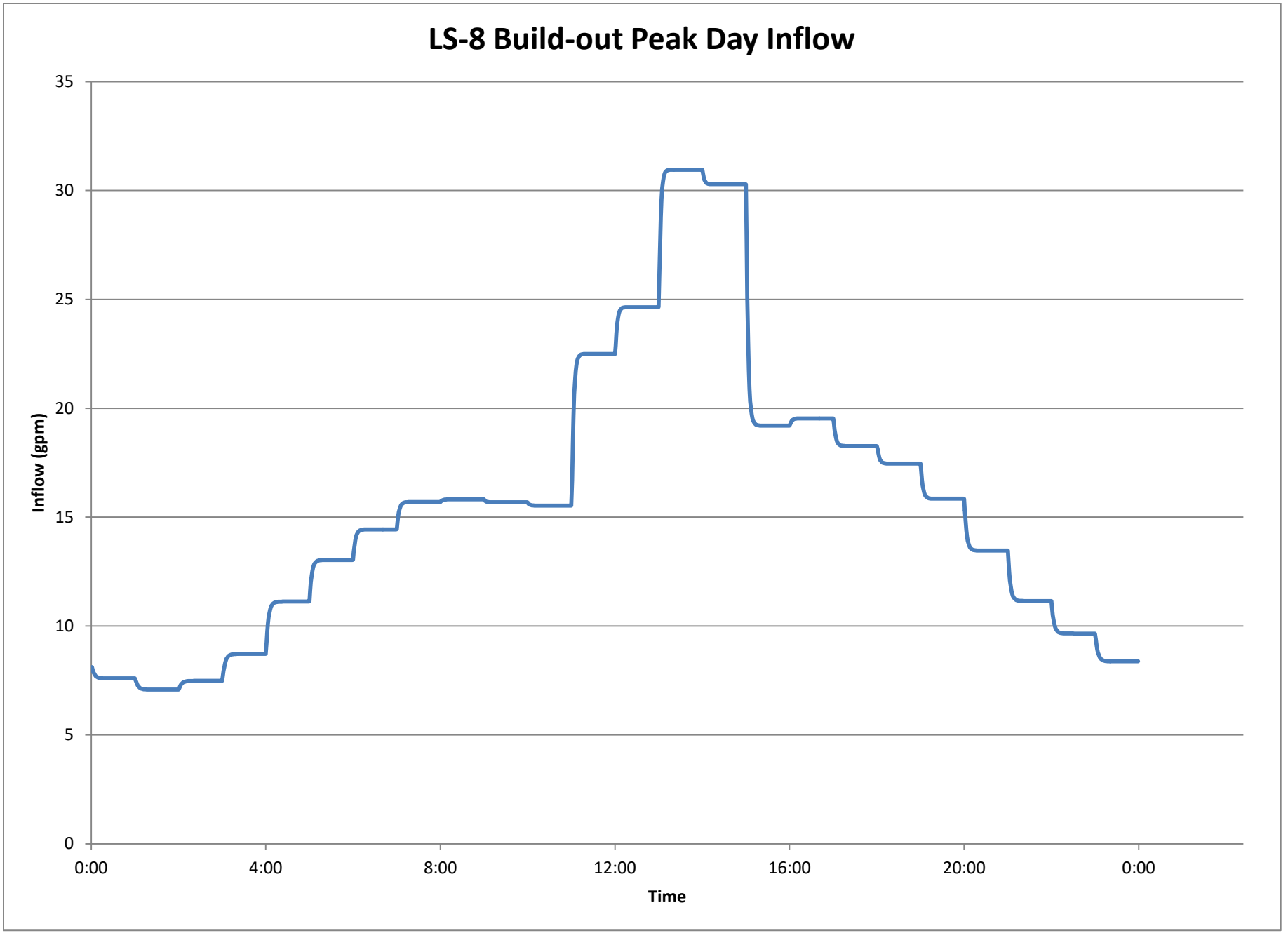
Note: Force mains and STEP mains are always full and are shown as always surcharging.

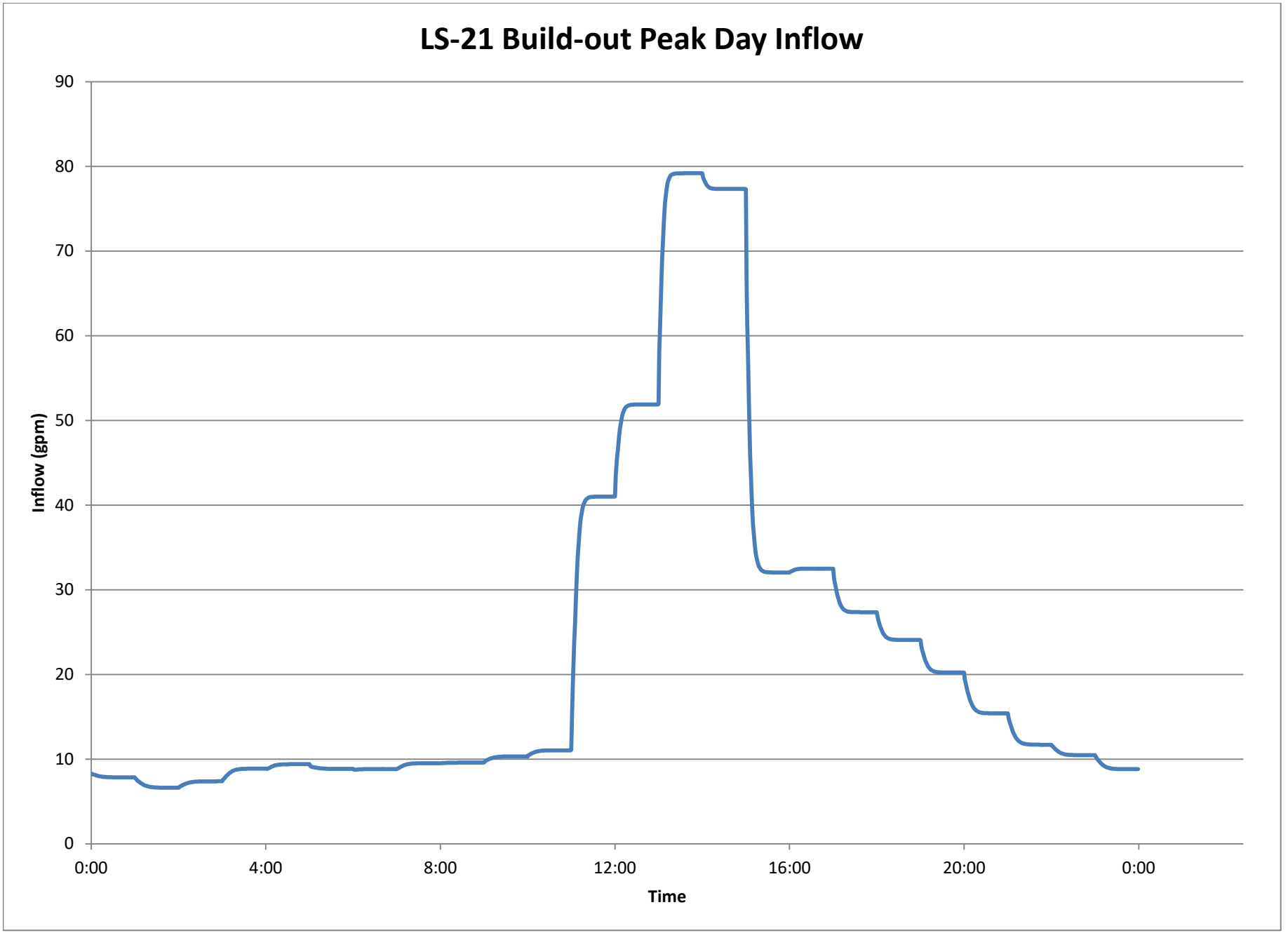
Sleater Kinney Alignment: Build-Out Peak HGL

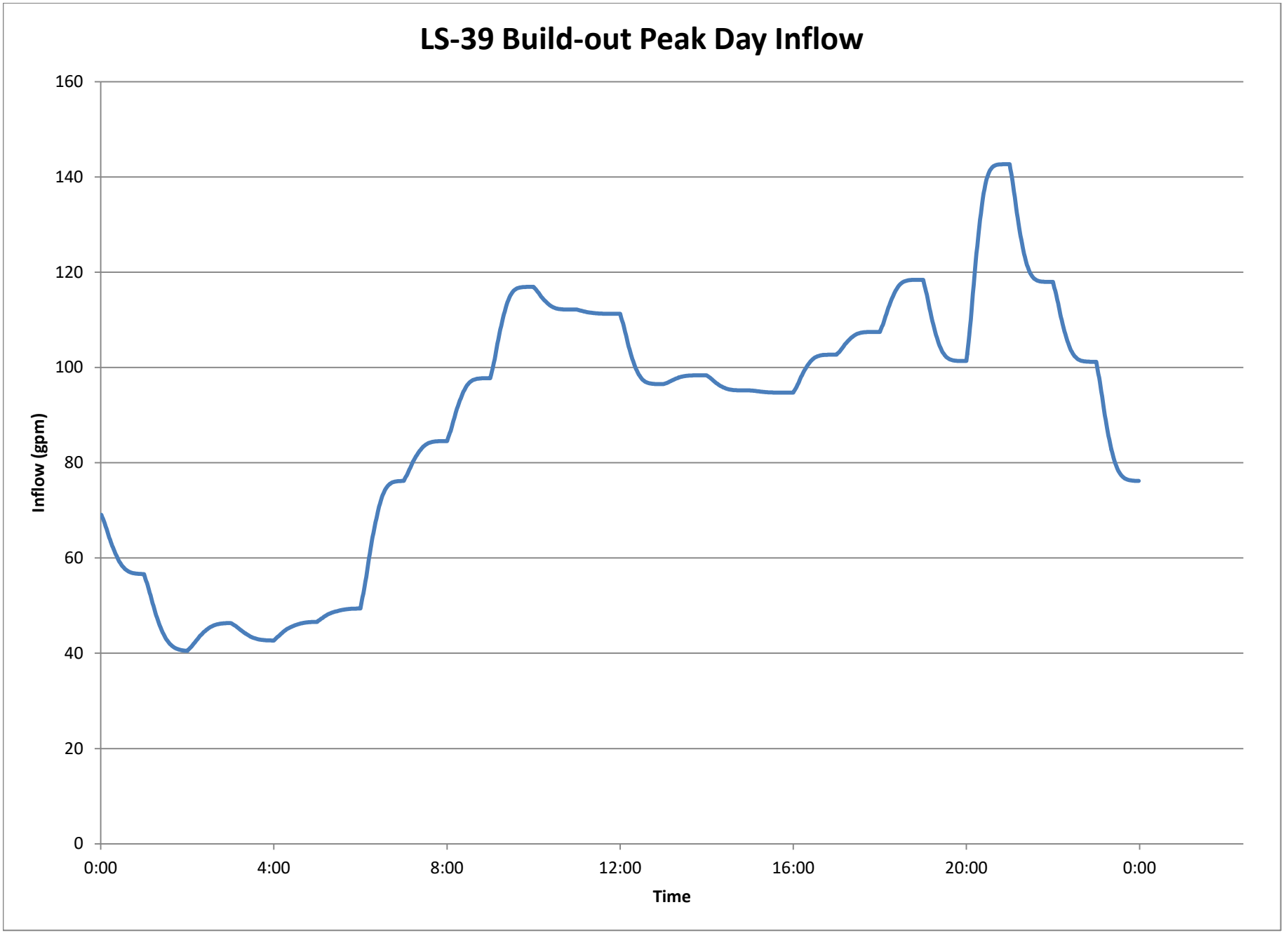



LS-2 Build-out Peak Day Inflow
300
250
200
150
100
50
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-3 Build-out Peak Day Inflow
Inflow (gpm)
1800
1600
1400
1200
1000
800
600
400
200
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-8 Build-out Peak Day Inflow
35
30
25
20
15
10
5
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-21 Build-out Peak Day Inflow
Inflow (gpm)
90
80
70
60
50
40
30
20
10
0
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time


LS-39 Build-out Peak Day Inflow
160
140
120
100
80
60
40
20
0
Inflow (gpm)
0:00
4:00
8:00
12:00
16:00
20:00
0:00
Time

Appendix E

Lift Station Inventory

Lift station Information

Lift Station	Location	Year On-Line	Station Type	Manufacturer	Pump Model	Number of Pumps	Capacity (GPM)	TDH (ft)	Motor Power (hp)	Voltage/Phase	Impeller Size (in)	Electrical Service	Generator	Debris Tank (gal)	Wet-Well ø (in)	Rim Elev. (ft)	Influent i.e. (ft)	Influent ø (in)	Bottom Elev. (ft)	Outfall Elevation (ft)
2	2408 Westlake Dr SE	1970	Submersible	Hydromatic	S4NX	2	140	23	3	230/1	6.29	120/240	25kw	None	60	200.37	186	8	180.49	197
3	2404 Golf Club Rd SE	1970/2000	Submersible	Hydromatic	S6AX	2	1100	56	25	460/3	9	230/460	45kw	None	96	198.5	185.8	15	180.19	207
4	5900 25th Ave SE	1974	Wet Pit/Dry Pit	Smith & Loveless	4B2A	2	175	32	5	120/240/1	8.75	120/240	**Port.30kw**	None	72	180.96	166.41	8	157.69	185
5	3607 Ryan St SE	1973	Wet Pit/Dry Pit	Smith & Loveless	4B2A	2	150	39	5	120/240/1	9.625	120/240	**Port.30kw**	None	48	180.09	163.59	8	158.59	189.73
6	5611 32nd Ct SE	1974	Wet Pit/Dry Pit	Smith & Loveless	4B2A	2	210	40	5	120/240/1	9.875	120/240	35kw	None	48	169.41	164.51	8	158.51	183.66
8	590 College St SE	1978	Wet Well Mounted	Smith & Loveless	4B2B	2	100	25	2	240/3	7.875	120/208	**Port.30kw**	None	48	190.33	177.65	8	173.33	189
9	4901 Ruddell Rd SE	1979/1999	Submersible	Flygt	3201.091	**3**	1285	48	35	460/3	10.875	230/460	150kw	None	144	184.75	171.87	18	161.87	193
11	6480 Glen Ct SE	1980	Wet Well Mounted	Smith & Loveless	4B3B	2	100	49	5	208/3	10.375	120/208	**Port.30kw**	None	48	124.86	119.04	8	114.48	162.1
12	6317 5th Ct SE	1980	Wet Well Mounted	Smith & Loveless	4B2B	2	100	26	2	208/3	8	120/208	**Port.30kw**	None	48	168.22	158.03	8	152.93	174.1
14	1807 Diamond Lp SE	1986/2012	Submersible	ABS	XFP100E CB1 PE90/4	2	200	75	12	480/3	8.6	277/480	50kw	None	72	161.98	146.47	10	141	180.5
15	1243 Marvin Rd NE	1988	Wet Well Mounted	Hydronix/Hydromatic	183-T	2	130	20	3	208/3	9 5/32	120/208	N/A	None	72	198.85	188.31	8	181.88	195.08
17	480 College St NE	1992	Wet Well Mounted	Hydronix/Cornell	241-T	2	165	120	25	480/3	10.75	277/480	**Port.60kw**	None	72	125.36	109.86	10	99.64	200.28
18	4730 Yelm Hwy SE	1991/2015	Submersible	Vaughan	SE4K	2	200	26	7.5	480/3	8.9	277/480	25kw	None	72	188.66	171.26	8	166.41	183.79
19	2691 Willamette Dr SE	1990	Wet Pit/Dry Pit	Cornell	4NNT	2	340	38	15	480/3	7	277/480	75kw	None	96	215.26	197.31	12	190.02	212.13
20	5011 47th Ave SE	1993	Submersible	Hydromatic	S4NX500JC	2	100	36	5	208/3	6.9	120/208	**Port.60kw**	None	72	207.23	192.21	8	188.23	200.2
21	4526 Pacific Ave SE	1994	Wet Well Mounted	Paco	495	2	300	26	5	480/3	8.75	277/480	**Port.60kw**	None	72	192.31	183.5	8	176.16	196
22	4401 45th Ave SE	1996/2009	Submersible	Hydromatic	S4NX750FC	2	360	46	7.5	480/3	8	277/480	**Port.60kw**	None	96	207.8	196.27	8	189.7	221.4
23	1922 Abernathy NE	1997	Submersible	Flygt	3512.091	2	180	163	23	480/3	268	277/480	**Port.60kw**	None	96	125.01	115.83	12	110.22	200.28
24	7612 19Th Ave SE	1999	Step/Submersible	Orenco	P503032 8 Stages	2	56	122	3	208/3	Aceta	120/208	**Port.30kw**	15,874	60	159.2	158.3	8	148.9	182
25	1450 Marvin Rd SE	2001	Step/Submersible	Hydromatic	S4PX	2	300	40	5	240/3	7.5	120/208	35kw	2-20,000	72	185.2	181.12	8	170.12	182
26	8917 Steilacoom Rd SE	2002	Step/Submersible	Orenco	P301012	2	28	115	1	230/1	Aceta	120/240	15kw	12,000	60	206.3	197.3	8	191.55	182
27	951 College Ln NE	2002	Step/Submersible	Orenco	P301512	2	30	191	1.5	230/1	Aceta	120/208	**Port.30kw**	10,000	60	142.17	139.21	8	132.17	200.28
28	800 Pine Crest Dr SE	2003	Step/Submersible	Orenco	P501512	2	34	115	1.5	230/1	Aceta	120/208	15kw	22,000	72	193.12	190.05	8	181.12	182
29	8502 8th Ct SE	2003	Step/Submersible	Orenco	P501012	2	50	62	1	230/1	Aceta	120/208	15kw	20,000	72	226.9	220.95	8	215.2	182
30	8500 55th Ct SE	2003	Step/Submersible	Orenco	P5030	2	50	53	3	230/1	Aceta	120/208	15kw	30,000	60	215.5	207.65	8	200	182
31	8519 Sweetbrier Lp SE	2003	Step/Submersible	Homa	AM 434 200	2	238	49	7.5	208/3	200mm	120/208	35kw	2-30,000	72	189.47	178.65	8	168.8	182
32	9300 Martin Way NE	2003	Submersible	Homa	AM 434 180	2	240	36	5.5	208/3	180mm	120/208	25kw	None	72	216.04	206.54	8	199.88	226.18
33	4901 Mullen Heights Dr SE	2004	Step/Submersible	Orenco	P5030	2	34	82	3	120/240	Aceta	120/208	15kw	40,000	72	199	193.15	8	184.65	182
34	800 Torden Ln SE	2004	Submersible	Hydromatic	H4HX	2	225	99	15	208/3	10	120/208	75kw	None	96	219.18	202.74	8	197.13	224.68
35	9420 Fagan Ct NE	2004	Submersible	Vaughan	SE3L1-075X180TY	2	98	25	3	208/3	5.81	120/208	40kw	None	72	225.86	209.6	8	206.52	226.65
36	836 Rowland Dr SE	2004	Step/Submersible	Orenco	P5030	2	50	62	3	230/1	Aceta	120/208	15kw	25,000	72	204	193.15	8	188	182
37	7400 Lintel Ln SE	2005/2010	Submersible	ABS	AFP1501ME520	2	1264	105	69.7	460/3	4-44.6	277/480	125kw	None	96	190.78	172.58	15	160.58	182.63
38	8341 Steilacoom Rd SE	2005	Step/Submersible	Orenco	P5050	2	59	165	5	480/3	Aceta	277/480	**Port.60kw**	40,000	72	229.1	220.2	8	214.58	182
39	4251 37th Ave SE	2006	Submersible	Hydromatic	S4NX 750DC	2	300	41	7.5	208/3	7.5	277/480	40kw	None	96	201.12	187.12	8	186.82	202.1
40	8237 54th Ave SE	2006	Step/Submersible	Orenco	P5050	2	50	85	3	230/1	Aceta	120/240	30kw	35,000	96	205	199.24	8	191.25	182
41	5610 55th Lp SE	2006	Step/Submersible	Orenco	P5030	2	50	85	3	230/1	Aceta	120/240	30kw	35,000	72	199.5	190.57	8	182.57	182
42	8524 28th Ave SE	2006	Step/Submersible	Orenco	P5015	2	63	72	1.5	230/1	Aceta	120/240	20kw	50,000	96	232.5	225.85	8	218.3	182
43	8320 Vashon Dr NE	2006	Submersible	Flygt	CP 3152 454	2	550	84	20	460/3	454mm	277/480	40kw	None	96	207.13	188.63	10	178.37	242.83
44	2410 Pleasanton Ct SE	2007	Step/Submersible	Orenco	P5030	2	50	157	3	208/3	Aceta	120/208	30kw	50,000	96	173	163.5	8	153	182
45	4630 carpenter Rd SE	2007	Step/Submersible	Orenco	P3015	**3**	30	135	1.5	480/3	Aceta	277/480	25kw	50,000	96	186.2	180	8	177.9	182
46	5321 Caleb Ct SE	2007	Step/Submersible	Orenco	P5030	2	35	174	3	240/1	Aceta	120/240	25kw	40,000	120	215.74	208.35	8	198.76	182
47	8438 15th Ave SE	2008	Step/Submersible	Orenco	P5007	2	50	69	0.75	230/1	Aceta	120/240	20kw	20,000	120	221	213	8	203	182
48	8626 Farina Loop SE	2008	Step/Submersible	Orenco	P5015	**4**	50	97	1.5	208/3	Aceta	120/208	20kw	50,000	138	192.25	182.98	8	175	182
49	2365 Shady Glen Ct NE	2010	Submersible	Flygt	3202.09	2	780	123	60	480/3	354mm	277/480	250kw	None	10'/40'/20'	85.88	65.66	36	66.08	193.35
50	8825 28th Way SE	2010	Step/Submersible	Orenco	P5015	2	50	63	1.5	240/1	Aceta	120/240	20kw	50,000	96	258.5	248.17	8	240.62	182
51	7000 32nd Ave NE	2012	Submersible	Flygt	NP 3127 489	2	134	57	7.5	480/3	195mm	277/480	60 kw	None	96	191.61	173.28	15	171.05	219.68
52	6035 7th Ave SE	2012	Submersible	ABS	XFP100E CB1 PE105/4	2	395	63	14	460/3	9.45	230/460	80 kw	None	96	155.87	134.7	21	131.58	174.8
53	9255 46th AveNE	2014	Submersible	Flygt	NP 3153 275	2	185	142	23	460/3	167mm	230/460	60 kw	None	96	205	192.5	15	188.85	252.41

Water/Wastewater Section
Auxiliary Generator Resource List

Site: Manf: Date in Service:		KW	Fuel	Site Access
LS# 02 / KatoLight	9/03	25 KW	Diesel	Open
LS# 03 / Onan	10/01	45 KW	Nat-G	Open
LS# 06 / KatoLight	7/03	35 KW	Diesel	Open
LS# #9 / Simi Power	1/99	150 KW	Diesel	Lock
LS#14 / KatoLight	4/04	50 KW	Diesel	Open
LS# 18 / KatoLight	7/03	25 KW	Diesel	Open
LS# 19 / KatoLight	7/03	75 KW	Diesel	Fenced
LS# 25 / Onan	4/01	35 KW	Nat-G	Open
LS# 27 / KatoLight	1/02	15 KW	Nat-G	Fenced
LS# 28 / KatoLight	5/03	15 KW	Diesel	Fenced
LS# 29 / KatoLight	5/03	15 KW	Diesel	Fenced
LS# 30 / KatoLight	6/03	15 KW	Diesel	Fenced
LS# 31 / KatoLight	9/03	35KW	Diesel	Fenced
LS# 32 / KatoLight	12/03	25 KW	Diesel	Fenced
LS# 33 / KatoLight	2/04	15 KW	Diesel	Fenced
LS# 34 / KatoLight	3/04	75 KW	Diesel	Fenced
LS# 35 / KatoLight	3/04	40 KW	Diesel	Fenced
LS# 36 / KatoLight	11/04	15 KW	Diesel	Fenced
LS# 37 / Onan	7/05	125 KW	Diesel	Fenced
LS# 39 / KatoLight	1/06	40KW	Diesel	Fenced
LS# 40 / KatoLight	5/06	30KW	Diesel	Fenced
LS# 41 / KatoLight	5/06	30KW	Diesel	Fenced
LS# 42 / KatoLight	9/06	20KW	Diesel	Fenced
LS# 43 / Onan	10/06	40KW	Diesel	Fenced
LS# 44 / KatoLight	03/07	30KW	Diesel	Fenced
LS# 45 / KatoLight	2007	25KW	Diesel	Fenced
LS# 46 / KatoLight	2007	25KW	Diesel	Fenced
LS# 47 / KatoLight	2008	20KW	Diesel	Fenced
LS# 48 / KatoLight	2008	20KW	Diesel	Fenced
LS# 49 / KatoLight	2010	250KW	Diesel	Fenced
LS# 50 / KatoLight	2010	20KW	Diesel	Fenced
LS# 51 / Kohler	01/12	60KW	Diesel	Fenced
LS# 52 / Kohler	06/12	80KW	Diesel	Fenced

Lift Station #53 Kohler 02/14	60KW	Diesel	Fenced
Hawks Prairie Water Treatment Plant / KatoLight 06/2008	500 KW	Diesel	Fenced
City Hall / KatoLight 2008	550 KW	Diesel	Open
Maintenance Service Center KatoLight 2009	375KW	Diesel	Fenced
Maintenance Shop Build Onan	15 KW	Diesel	Fenced
Animal Services Kohler 01/12	125 KW	Nat-G	Open
Portable 1- #204 Onan	60 KW	Diesel	Fenced
Portable 2- #229 Onan	60 KW	Diesel	Fenced
Portable 3- #240 Onan	125 KW	Diesel	Fenced
Portable 4- #241 Onan	500 KW	Diesel	Fenced
Portable 5- # 69 Eng,Gen,Systems	30 KW	Propa	Fenced

Appendix F

LOTT Report

LOTT Clean Water Alliance

Flows and Loadings Report 2010

Analyzes Population Projections

2010 Flows and Loadings Report

October 2010

Prepared By:
Adam Klein, Brown & Caldwell
Tyle Zuchowski, LOTT Alliance

PREFACE

The Flows and Loadings Report is one of three related documents that are part of the annual process to monitor and evaluate capacity in the entire LOTT system. The intent, under LOTT's Wastewater Resource Management Plan (also known as the Highly Managed Plan), is to assure that needed new capacity is brought on-line "just in time" to meet system needs. Capacity needs evaluated include wastewater treatment, Budd Inlet discharge, reclaimed water use/recharge, and conveyance capacity in the entire LOTT system. These three reports are prepared annually, and are used to help identify capital projects for inclusion in the annual Capital Improvements Plan.

Flows and Loadings Report
This report analyzes residential and employment population projections within the urban growth boundary, and estimates the impact on wastewater flows and loading within the LOTT wastewater system.

Inflow & Infiltration and Flow Monitoring Report
The Inflow & Infiltration and Flow Monitoring Report uses dry and wet weather sewer flow monitoring results to quantify the amount of unwanted surface stormwater (inflow) and subsurface groundwater (infiltration) entering the sewer system, and to prioritize sewer line rehabilitation projects.

Capacity Assessment Report
Using flows, loadings, inflow, and infiltration data, the Capacity Assessment Report analyzes system components (i.e. treatment, discharge/use, and conveyance) to determine when limitations will occur and provides a timeline for new system components and upgrades.

As each report is published, it will be posted in the "Library" on LOTT's website – www.lottcleanwater.org.

Table of Contents

Executive Summary

In accordance with the Highly Managed Plan, LOTT is continuously planning to ensure it maintains adequate operational capacity to meet the community needs. The primary goal of the annual Flows and Loadings Report is to define the current and projected wastewater characteristics of the LOTT service area in terms of both wastewater flows and pollutant constituents (loads). The information in this report was used to develop the 2010 Capacity Assessment Report and the 2011 Capital Improvements Plan.

Data elements incorporated into this analysis include the following: 1) current population forecasts provided by the Thurston Regional Planning Council; 2) additional flow monitoring data collected as part of LOTT's inflow and infiltration evaluation program; 3) pump run time data collected by the City of Olympia at each of its sewer pump stations; 4) timelines for sewering of non-sewered areas provided by each of the jurisdictions (Lacey, Olympia, and Tumwater); and 5) sewer line maps.

This report also includes a drinking water evaluation using calendar year 2009 drinking water consumption data obtained from the jurisdictions. This analysis was used to recalibrate wastewater generation rate profiles for each of the jurisdictions.

The updated flow projections through 2030 are similar to those developed for the 2008 and 2009 Flows and Loadings Reports. Employment estimates from 2030 to 2053 are lower than previous estimates due to a change in the projection methodology. The Thurston Regional Planning Council does not provide employment projects past 2030. In previous reports, employment growth was tied to population growth proportionally on a basin-by-basin level. This resulted in an overestimation of employment population of the 2030 to 2053 time period. In order to reduce the dependence of the projection on individual basins, the analysis was revised to consider the service area as a whole. For the 2010 report, the employment population projection at build-out (2053) was 67,000 less than the 2009 report.

1. Introduction

1.1 Purpose

Accurate projections of future wastewater flows and loadings are essential in planning for new treatment capacity. In accordance with the Wastewater Resource Management Plan, also known as the Highly Managed Plan, LOTT is continuously monitoring and planning to assure adequate new wastewater treatment capacity "just in time." The primary goal of the annual Flows and Loadings Report is to define the current and projected wastewater characteristics of the LOTT service area in terms of both wastewater flows and pollutant constituents (loads). Flows and loadings projections cover the 43-year planning cycle (2010-2053) and will be used to evaluate the existing LOTT Capital Improvements Plan and develop recommendations for the timing of capacity related projects.

1.2 Data Elements

Data used for the development of this report included flow data, sewered and non-sewered population projections, existing sewer lines, planned developments, estimated timelines for sewering of non-sewered areas within the overall Urban Growth Area (UGA), and 2009 drinking water consumption. Flow data was collected at the Budd Inlet Treatment Plant and at various flow monitoring locations throughout the collection system. Population projections were obtained from the Thurston Regional Planning Council (TRPC) in the form of projected residential and employment populations per parcel. Residential projections include the following years: 2010, 2015, 2020, 2025, and 2030. Employment projections were available for the years 2003 and 2030. The estimated sewering timelines, drinking water consumption, and existing collection system piping were obtained from each of the jurisdictions (Lacey, Olympia, and Tumwater).

1.3 Modeling Software

To develop flow and loading projections, the data listed above were entered into the Capacity Assurance Planning Environment (CAPE) application, a tool developed by Brown & Caldwell. CAPE is an integrated set of software tools designed to process geographical and tabular data and provide flow, loading, and population projections.

1.4 Changes From Previous Reports

The CAPE model was updated in 2010 with the following information: 1) 2009 drinking water consumption analysis; 2) updated wastewater generation rates; and 3) updated flow monitoring data.

After 2030, the method for projecting employment has changed. Because the Thurston Regional Planning Council (TRPC) does not provide employment estimates for 2053, the rate of increase from 2030 to 2053 has been tied to the rate of population increase. In the past, this analysis has been performed at the basin level. That is, for each specific basin, the rate of population increase from 2030 to 2053 was applied to the employment. When employment from all basins was summed, this led to a disproportionate increase in employment.

In the 2009 Flows and Loadings Report, the service area employment increased by 82% from 2030 to 2053, while the residential population increased by 37%. By conducting the analysis at the basin level, the analysis became subject to skew caused by the ratio of population to employment in each basin. For example, basin 44 is a small area located in downtown Olympia along Plum Street. By 2030, the residential population in this basin is projected to be 354. The 2030 employment in this basin is projected to be 1,831 (the basin houses a number of large office buildings). TRPC projects the residential population in this basin to increase to 1,996 by 2053, with the addition of some high density residential developments. That equates to an increase of 464%. When this is applied to the employment, it leads to an employment projection of 12,770, which is unrealistic given the size of the basin.

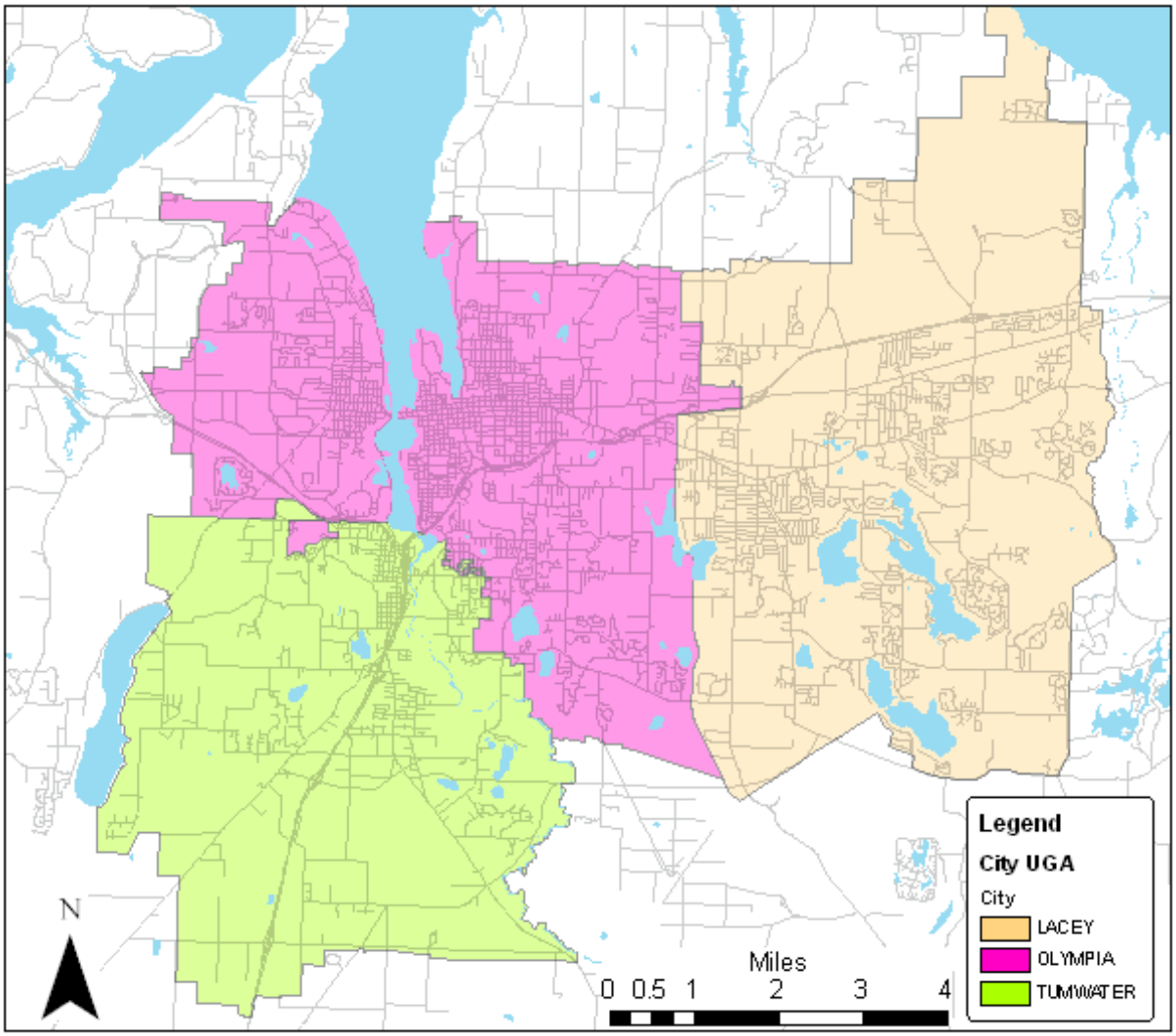
In order to reduce the dependence of the projection on individual basins, the analysis was revised to consider the service area as a whole. In this year's report, the total employment projects to increase by the same rate as population (37%). The increase was fractioned out to individual basins based upon the 2030 employment.

2. Study Area

2.1 Service Area

The LOTT Service area includes the UGAs for Lacey, Olympia, and Tumwater. The combined UGA encompasses approximately 53,000 acres with a current residential population of 160,227 and an employment population of 111,042.

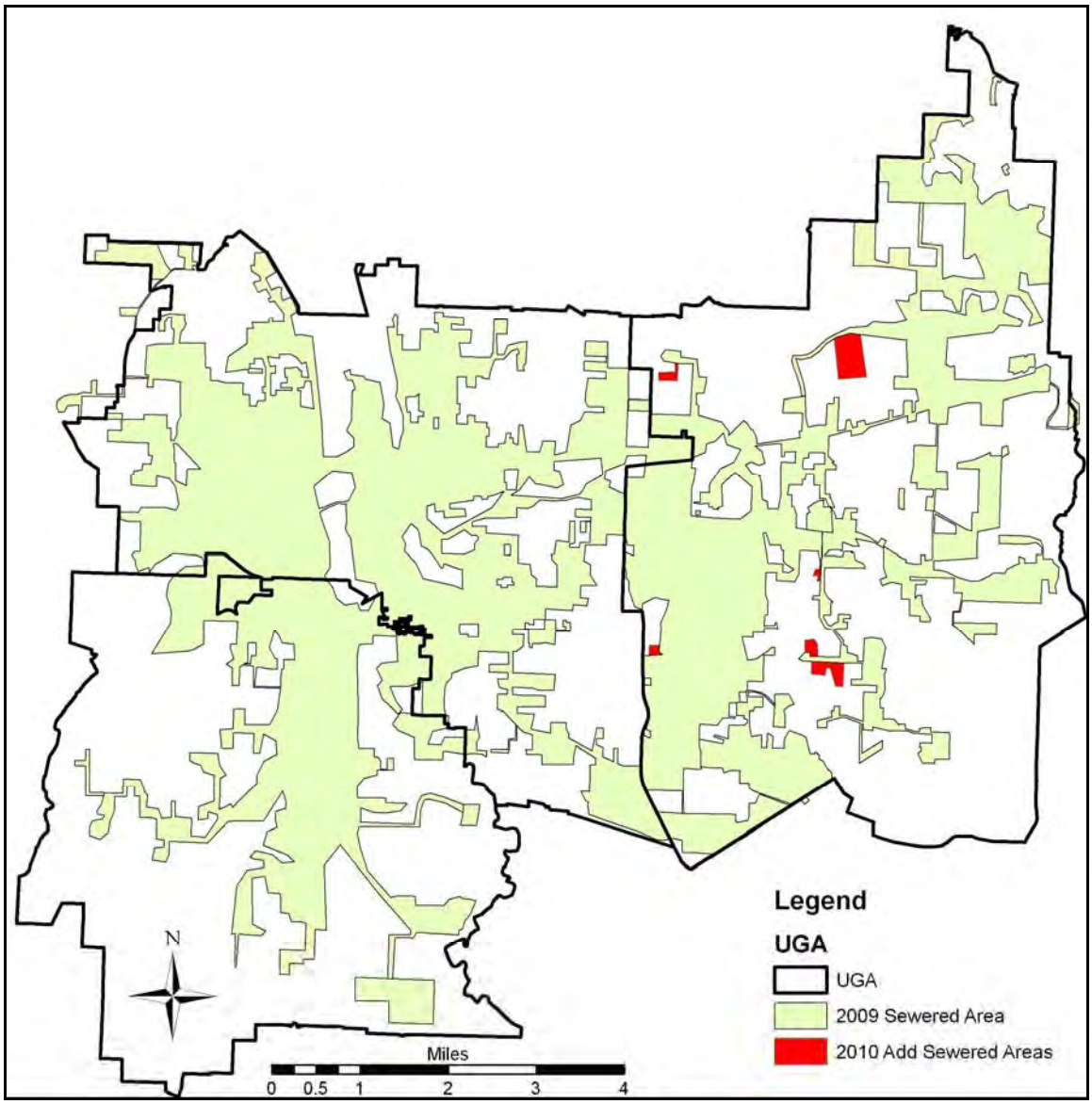
Figure 1. LOTT Service Area by Jurisdiction



2.2 Current Sewered Area

Within the LOTT service area, approximately 21,341 acres are sewered, serving a residential population of 93,911 and an employment population of 87,044. An additional 180 acres (red) were added to the sewered area since the 2009 Flows and Loadings Report.

Figure 2. Current Sewered Area

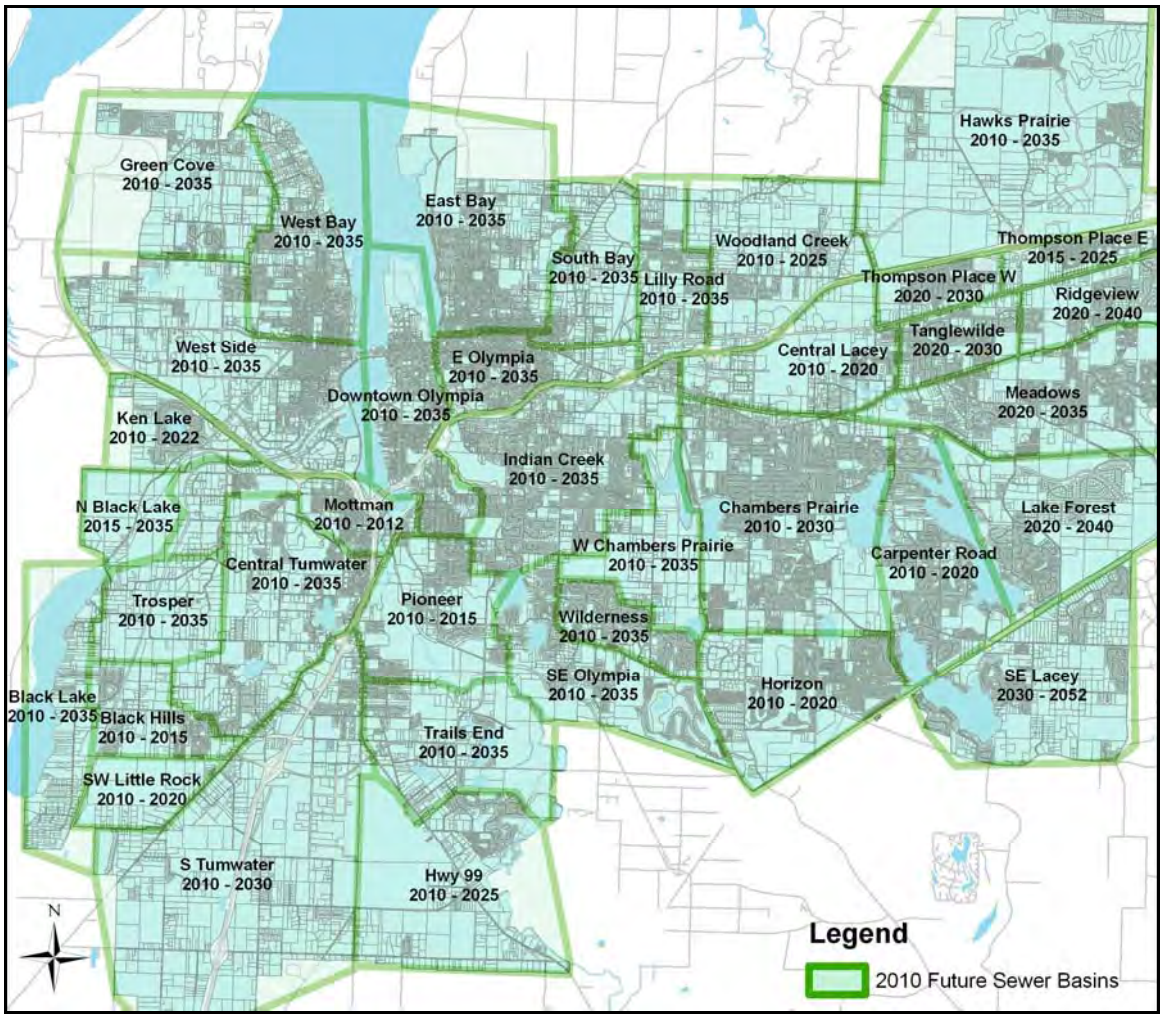


2.3 Future Sewered Area

In order to properly project future flows and loadings, future sewered areas must be accounted for. For each sewer basin shown in Figure 3, the jurisdictions were asked to associate a start and end date for connecting to the sewer system, to include conversions from septic systems. The start date is an estimate of when the non-sewered areas would begin connecting to the sewer system. The end date is an

estimate of when the entire basin would be sewered. This information was entered into the forecasting model, which allocated the new sewered population evenly over that time period. Figure 3 illustrates the future sewered areas and their associated timeline.

Figure 3. 2010 Future Sewer Basins



2.4 Planned Developments

While TRPC population and employment data are updated annually, LOTT has typically canvassed the partner jurisdictions to incorporate any new or planned developments, which might not have made it into the TRPC projection. Though the TRPC projections in this report include the majority of the planned developments, which LOTT has been tracking, there were a few cases where the development information received from the cities were significantly different from the TRPC projection. The largest of these developments are summarized in Table 1. Each of these developments was included in the LOTT flows and loadings projection.

Table 1. Planned Developments and TRPC Population Projections Comparison

Development	Planned*		2006 TRPC Projections					
			Residential					Emp
	Res	Emp	2010	2015	2020	2025	2030	2030
Horizon Point (00-217)	3,323		1,271	1,685	2,062	2,162	2,280	416
Gateway	6,750	3,000	481	1,134	1,701	2,205	2,572	886
Village at Union Mills	850		21	96	164	239	280	56
Sagewood	1,617		0	0	0	0	0	71
Doelman	2,160		2	2	1	1	0	35
Briggs Village	2,179	223	6	22	31	34	36	912
Triway Mixed Use		588	0	0	0	0	0	20
Tilley Road Industrial Park		274	2	2	2	2	2	126
Big Rock Medical Plaza		500	0	0	0	0	0	258
Wal Mart		103	0	0	0	0	0	242
New Market Industiral Park		998	0	0	0	0	0	300
Commerce Industiral Park		340	0	0	0	0	0	0
Benaroya Industiral Park		431	3	3	3	3	2	137
Accountability and Resitution Center	320	117	0	0	0	0	0	2
Chamber Lake	861		94	138	176	211	252	17

* 2008 data collected from the jurisdictions

Based on the additional developments identified in Table 1, Table 2 displays the additional values that were added to the various parameters.

Table 2. Developments Analysis Impact on TRPC-based Projections

Year	Res	Emp	Base Flow (mgd)	ERU*	BOD lbs/d	TSS lbs/d
2010	752	904	77,703	428	205	205
2015	3,297	1,808	273,080	1,592	661	661
2020	5,966	2,712	475,346	2,808	1,134	1,134
2025	9,105	3,616	708,025	4,211	1,672	1,672
2030	12,642	4,521	965,593	5,722	2,267	2,267

*Equivalent Residential Unit

3. Population and Employment Forecast

3.1 Projections

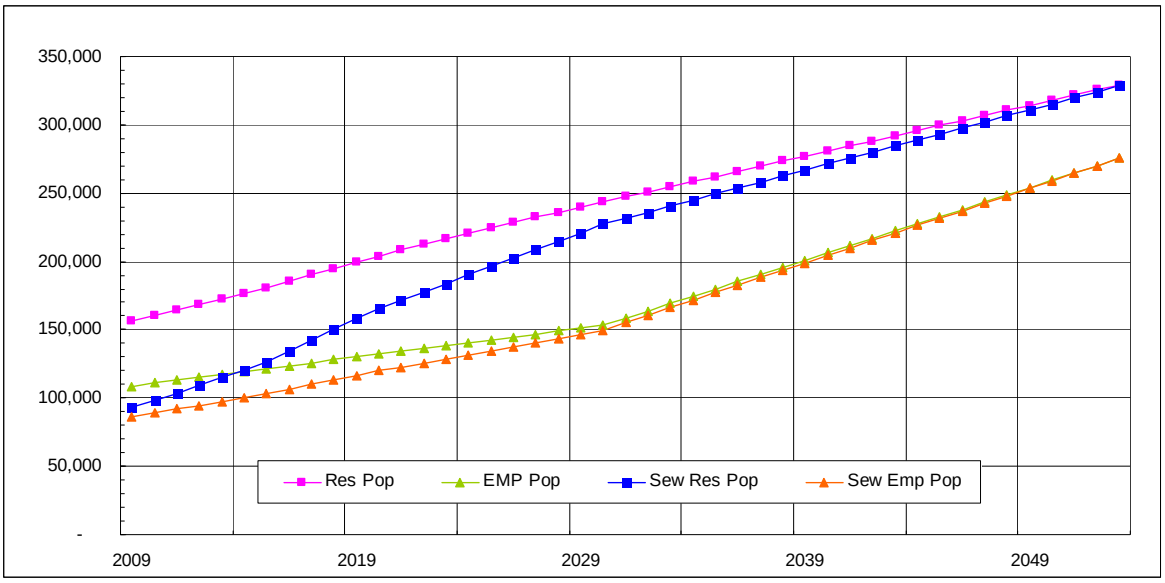
The population forecasts for the LOTT service area were developed using a geographical information system (GIS) file obtained from TRPC. The file was updated in 2009 and included polygons of all parcels within the service area with an associated population for each of the projection years to include: 2010, 2015, 2020, 2025, and 2030.

Table 3 displays the results of the population analysis performed by the CAPE model to include the developments data collected from the jurisdictions. The residential and employment populations include all persons and employees within the UGA. The sewered residential population and sewered employment population include only those contained within the sewered areas. Future expansion of the sewered areas is accounted for in the projections throughout the forecast period. Figure 4 displays the projected population and employment forecasts for the planning period (2010-2053).

Table 3. Population and Employment Projections

Year	Residential Population	Employee Population	Sewered Residential Population	Sewered Employee Population
2010	160,227	111,042	93,911	87,044
2011	164,342	113,151	98,515	89,737
2012	168,442	115,257	103,309	92,498
2013	172,552	117,361	108,273	95,263
2014	176,659	119,476	113,418	98,101
2015	180,762	121,579	118,743	100,993
2016	185,412	123,681	124,191	103,797
2017	190,072	125,795	129,849	106,667
2018	194,708	127,900	135,699	109,590
2019	199,369	130,004	141,759	112,574
2020	204,023	132,113	148,033	115,620
2021	208,168	134,232	154,730	118,678
2022	212,282	136,332	161,623	121,786
2023	216,400	138,431	168,662	124,918
2024	220,534	140,542	175,917	128,116
2025	224,677	142,655	183,400	131,388
2026	228,471	144,756	190,034	134,542
2027	232,257	146,859	196,804	137,749
2028	236,057	148,974	203,721	141,016
2029	239,861	151,086	210,823	144,333
2030	243,648	153,188	218,054	147,691
2031	247,364	155,581	224,754	150,323
2032	251,097	157,974	231,598	152,954
2033	254,801	160,366	238,556	155,586
2034	258,547	162,759	245,675	158,218
2035	262,241	165,152	252,861	160,850
2036	265,959	167,545	257,275	163,481
2037	269,682	169,938	261,728	166,113
2038	273,392	172,330	266,174	168,745
2039	277,127	174,723	270,683	171,377
2040	280,840	177,116	275,203	174,009
2041	284,554	179,509	279,236	176,640
2042	288,264	181,901	283,278	179,272
2043	292,001	184,294	287,362	181,904
2044	295,709	186,687	291,440	184,536
2045	299,423	189,080	295,538	187,168
2046	303,143	191,472	299,663	189,799
2047	306,852	193,865	303,794	192,431
2048	310,581	196,258	307,961	195,063
2049	314,304	198,651	312,151	197,695
2050	318,016	201,044	316,333	200,327
2051	321,737	203,436	320,553	202,958
2052	325,454	205,829	324,783	205,590
2053	329,184	208,222	328,506	208,222

Figure 4. Population and Employment Projections (2010-2053)



3.2 Equivalent Residential Units (ERUs)

For billing and capital project planning, each customer connection to the sewered system is measured in terms of equivalent residential units (ERUs). One ERU is the amount of wastewater presumed to come from an average connected single-family household. LOTT has historically defined an ERU as 900 cubic feet of wastewater volume per month (224 gallons per day). Each single-family home counts as one ERU. For multi-family housing (apartments) each living unit is counted as 7/10 of an ERU. Commercial and industrial dischargers are billed according to water consumption and mathematically converted to ERUs. Changes in wastewater generation rates have decreased the actual residential unit production, but the value of 900 cubic feet per month continues to be used for billing purposes as an agreed-upon standard of reference. In order to project ERUs into the future, the following conversion table has been developed. Residents per ERU have been assigned to match US Census data for household size for the three jurisdictions (2000 Census).

Table 4. Jurisdiction ERU Summary 2010

Jurisdiction	Residents/ERU	Employees/ERU
Lacey	2.51	5.10
Olympia	2.26	8.67
Tumwater	2.26	5.75
Weighted Average	2.35	6.94

Based on billing data provided by the jurisdictions, Table 5 lists the total ERUs connected to the LOTT system over the last thirteen years.

Table 5. ERUs Served 13-Year Comparison

Year	Lacey	Olympia	Tumwater	Total
1997	10,966	21,430	6,447	38,843
1998	11,363	21,860	6,845	40,068
1999	11,786	22,242	6,962	40,990
2000	13,356	22,398	6,625	42,379
2001	12,362	23,062	6,582	42,006
2002	13,493	23,142	6,667	43,302
2003	13,689	23,445	6,999	44,133
2004	14,206	23,552	7,161	44,920
2005	14,335	24,064	7,569	45,969
2006	15,326	24,575	7,808	47,709
2007	17,513	24,341	8,350	50,203
2008	18,497	24,522	8,937	51,956
2009	19,092	24,333	8,622	52,047

Figure 5 displays the total ERUs connected to the LOTT system over the last thirteen years. Residential and employment population projections were converted to ERUs based on the ratios shown in Table 4. Figure 6 displays the projected number of ERUs for each jurisdiction. Table 6 lists the projected number of ERUs for each jurisdiction based on the CAPE model including proposed developments. The model projections for ERUs for each jurisdiction are shown in Figure 6.

Figure 5. ERUs Served 13-Year Comparison

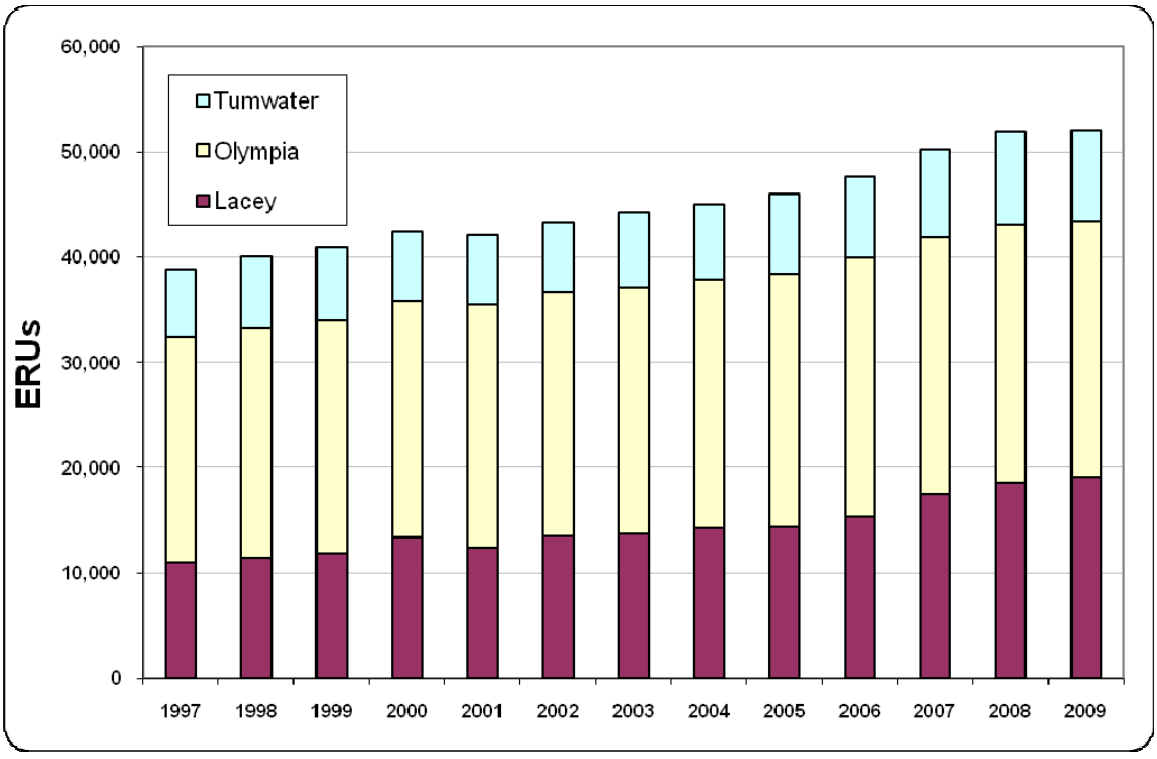
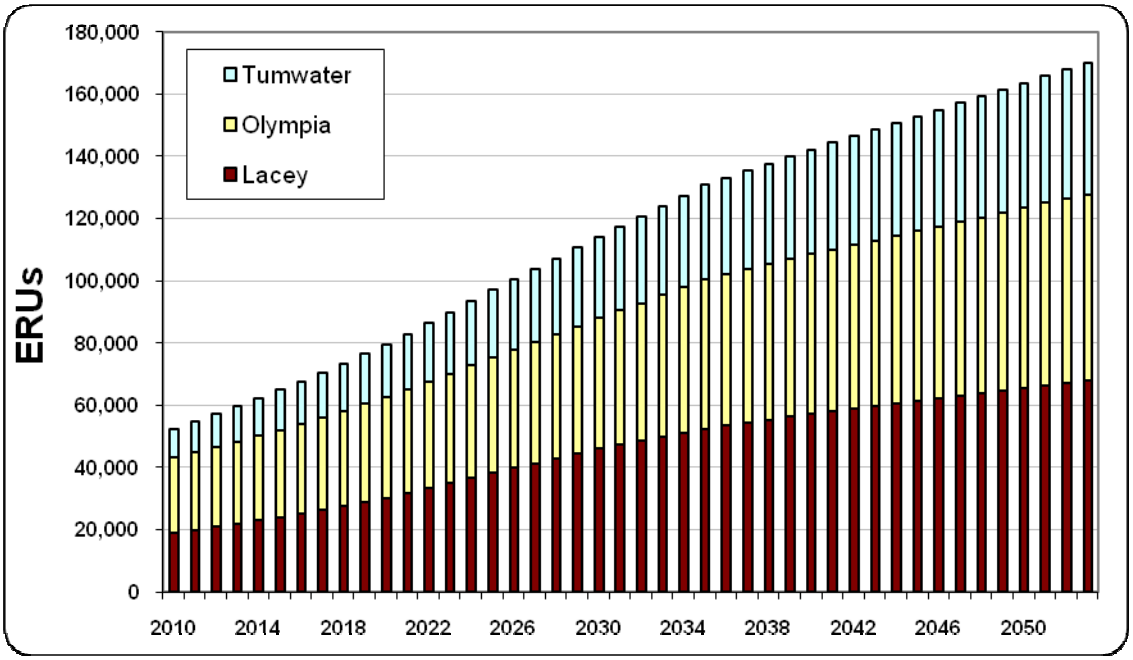


Table 6. ERUs Served – Model Projections

Year	Olympia	Tumwater	Lacey	Other*	Total
2010	24,264	9,071	18,997	116	52,447
2011	24,953	9,789	19,962	122	54,826
2012	25,676	10,532	20,960	128	57,297
2013	26,424	11,288	21,994	135	59,841
2014	27,206	12,068	23,058	142	62,474
2015	28,015	12,871	24,156	149	65,191
2016	28,842	13,623	25,323	158	67,945
2017	29,695	14,413	26,524	166	70,799
2018	30,574	15,240	27,755	176	73,744
2019	31,485	16,105	29,015	185	76,790
2020	32,421	17,010	30,312	195	79,937
2021	33,317	17,875	31,849	206	83,247
2022	34,236	18,769	33,427	217	86,648
2023	35,151	19,692	35,045	228	90,116
2024	36,088	20,649	36,709	240	93,685
2025	37,056	21,636	38,421	252	97,364
2026	37,978	22,504	39,907	263	100,652
2027	38,923	23,385	41,423	274	104,005
2028	39,886	24,287	42,973	285	107,431
2029	40,878	25,208	44,561	297	110,943
2030	41,887	26,145	46,176	309	114,517
2031	43,081	26,969	47,390	318	117,759
2032	44,291	27,807	48,636	327	121,061
2033	45,518	28,656	49,902	337	124,412
2034	46,759	29,518	51,206	346	127,830
2035	48,007	30,388	52,525	356	131,275
2036	48,671	31,041	53,466	358	133,536
2037	49,333	31,695	54,423	361	135,812
2038	49,993	32,348	55,381	363	138,085
2039	50,655	33,000	56,362	365	140,383
2040	51,314	33,653	57,351	368	142,686
2041	51,974	34,306	58,144	370	144,794
2042	52,635	34,958	58,942	372	146,906
2043	53,298	35,611	59,752	374	149,035
2044	53,957	36,263	60,565	376	151,161
2045	54,616	36,916	61,385	378	153,295
2046	55,277	37,569	62,215	380	155,440
2047	55,939	38,220	63,046	382	157,587
2048	56,600	38,872	63,893	384	159,749
2049	57,262	39,525	64,747	386	161,920
2050	57,920	40,178	65,600	389	164,088
2051	58,583	40,832	66,465	391	166,271
2052	59,242	41,483	67,340	393	168,457
2053	59,904	42,138	68,006	394	170,442

*Areas in the County not accounted for by the jurisdictions

Figure 6. ERUs Served – Model Projections



3.3 New Connections

New connections to the system are billed a one-time connection fee, called a Capacity Development Charge (CDC). One CDC is assessed for each ERU connected to the system. Table 7 lists the number of CDCs collected over the last thirteen years. Table 8 lists the projected new connections over the planning period.

Table 7. New Connections 13-Year Comparison

Year	Lacey	Olympia	Tumwater	Total
1997	533	381	109	1,023
1998	663	1,361	429	2,453
1999	1,062	882	214	2,159
2000	316	301	144	761
2001	498	306	164	968
2002	489	410	130	1,029
2003	541	296	273	1,110
2004	750	580	414	1,744
2005	942	392	368	1,702
2006	1,888	488	208	2,584
2007	587	155	295	1,748
2008	688	201	288	1,177
2009	510	247	118	875

Table 8. New Connection Projections Through the Year 2053

Year	Lacey	Olympia	Tumwater	Other	Total
2011	965	689	718	6	2,379
2012	998	724	743	6	2,471
2013	1,034	748	755	7	2,544
2014	1,065	781	780	7	2,633
2015	1,097	810	803	7	2,718
2016	1,167	826	752	8	2,753
2017	1,201	853	791	9	2,854
2018	1,231	879	826	9	2,945
2019	1,260	910	866	10	3,046
2020	1,297	936	904	10	3,148
2021	1,537	896	866	11	3,310
2022	1,578	918	893	11	3,401
2023	1,618	915	924	11	3,468
2024	1,664	937	957	12	3,569
2025	1,712	967	987	12	3,678
2026	1,486	923	868	11	3,288
2027	1,516	945	881	11	3,354
2028	1,550	963	902	11	3,425
2029	1,588	992	921	12	3,512
2030	1,615	1,009	937	12	3,574
2031	1,214	1,195	824	9	3,242
2032	1,245	1,210	838	9	3,302
2033	1,266	1,227	849	9	3,351
2034	1,304	1,241	863	10	3,418
2035	1,319	1,248	869	10	3,446
2036	941	664	653	2	2,260
2037	957	662	654	2	2,276
2038	958	660	653	2	2,273
2039	981	663	652	2	2,298
2040	989	658	653	2	2,303
2041	793	660	654	2	2,108
2042	798	661	651	2	2,112
2043	810	663	653	2	2,129
2044	813	659	652	2	2,126
2045	820	659	653	2	2,134
2046	830	661	653	2	2,145
2047	831	662	652	2	2,148
2048	847	661	652	2	2,161
2049	854	663	653	2	2,171
2050	854	658	654	2	2,168
2051	865	662	654	2	2,183
2052	875	660	650	2	2,187
2053	666	662	656	2	1,985

4. Flows and Loadings

4.1 Permit Requirements

The National Pollutant Discharge Elimination System (NPDES) Permit Number WA0037061 for the Budd Inlet Treatment Plant was issued by the Department of Ecology on September 1, 2005, and became effective on October 1, 2005. The compliance is based primarily on loadings (Biological Oxygen Demand (BOD), Total Suspended Solids (TSS), and Total Inorganic Nitrogen (TIN)), rather than flow. The final effluent limitations took effect November 1, 2006 and lasted through September 30, 2010. LOTT submitted the permit renewal application to Ecology in September 2010. Table 9 lists the loadings-based permit limitations.

Table 9. NPDES Permit Limitations

	Winter (November-March)		**Shoulder** (April, May, October)		**Summer** (June-September)	
Parameter	**Monthly**	**Weekly**	**Monthly**	**Weekly**	**Monthly**	**Weekly**
BOD (lbs/day)	5,640	8,460	900	1,350	671	1,006
TSS (lbs/day)	5,265	7,898	5,265	7,898	5,265	7,898
TIN			3 mg/L, 338 lbs/day		3 mg/L, 288 lbs/day	
Ammonia (as N)	26 mg/L	36 mg/L				

4.2 Drinking Water Analysis

For the 2010 report, drinking water consumption data for 2009 was collected from each of the jurisdictions. Drinking water consumption was reported monthly for each parcel. In order to determine the baseline drinking water consumption rate and minimize the effect of irrigation, wintertime (December, January, February, and March) drinking water consumption was used for sewered customers only. The total consumption was divided by the total number of days to determine the gallons per day per parcel. The wastewater generation rates were then updated using the population and employment data provided by TRPC.

The drinking water basins were created by consolidating sewer basins with similar consumption characteristics into larger basins. Figure 7 illustrates the drinking water basins included in this analysis. These basins were then imported into the CAPE model with their updated wastewater generation rates. The wastewater generation rates by drinking water basin are shown in Table 10. The large geographic differences in drinking water consumption (and therefore, wastewater generation) between basins may be attributed to a number of contributing factors. These include the type of residential units predominating the basin (single-family, multi-family, senior housing, etc), the predominant era of home construction, the average age of the residents, and the various commercial, industrial, or public sector employers present in each basin.

Figure 7. 2010 Drinking Water Basins

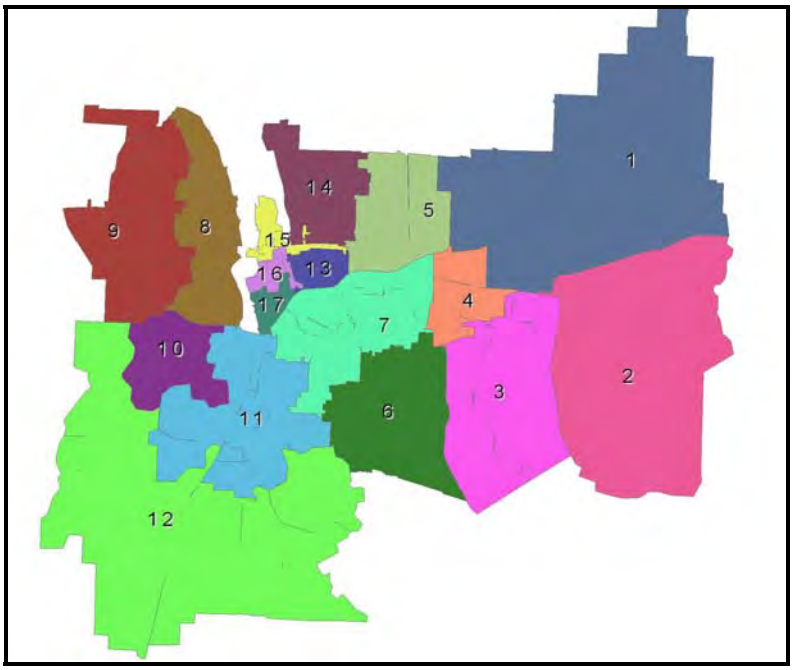


Table 10. Wastewater Generation Rates by Drinking Water Basin

	Population		Drinking Water Consumption			Adjusted WW Generation Rate		
Basin	Sewered Res	Sewered Emp	Total gpd	Res gpd	Emp gpd	Res gpcd[1]	Emp gped[2]	Base Flow gpd
1	8,006	7,346	781,111	505,792	275,319	63.2	37.5	781,695
2	5,285	729	383,712	364,793	18,919	69.0	25.9	383,288
3	19,358	3,622	1,349,432	1,285,784	63,647	66.4	17.6	1,349,262
4	5,554	8,368	504,345	372,280	132,064	67.0	15.8	504,305
5	3,528	7,616	386,198	262,197	124,000	74.3	16.3	386,303
6	3,164	408	205,122	196,026	9,096	62.0	22.3	204,848
7	8,374	2,916	577,254	529,941	47,313	63.3	16.2	577,584
8	10,206	6,758	863,260	726,578	136,682	71.2	20.2	864,037
9	6,508	8,201	776,521	515,080	261,441	79.1	31.9	775,383
10	2,415	3,511	181,232	144,160	37,073	59.7	10.6	182,292
11	9,694	9,826	805,682	686,021	119,661	70.8	12.2	805,086
12	1,357	3,424	177,418	122,682	54,736	90.4	16.0	177,124
13	1,836	3,068	139,843	106,904	32,939	58.2	10.7	139,701
14	4,559	752	319,747	310,138	9,609	68.0	12.8	319,647
15	1,175	7,362	188,352	58,179	130,174	49.5	17.7	189,031
16	653	10,030	121,576	40,330	81,245	61.8	8.1	121,317
17	1,312	2,020	157,011	97,731	59,279	74.5	29.3	156,936
Total	92,984	85,958	7,917,816	6,324,616	1,593,200	68.0[3]	29.3[3]	7,917,839[4]

[1] Gallons per capita per day
[2] Gallons per employee per day
[3] Averages
[4] Flow does not match observed base flow exactly, due to differences in parcel allocation and basin boundaries, exclusion of 400,000 gpd of Olympia artesian flow, and 144,000 gpd from The Evergreen State College.

4.3 Base Flow

In order to accurately forecast flows based on population changes within the service area, a base sanitary flow (BSF) must be established to calibrate residential and employee wastewater generation rates. The base sanitary flow is defined as the minimum average flow registered over a 7-day period in each year, and is assumed to have little to no influence from inflow and infiltration. The BSFs, measured in million gallons per day (mgd), from 2001 to 2010 are provided in Table 11 and exclude flows from the Tumwater Brewery.

Table 11. Base Sanitary Flow in LOTT Service Area

Year	Base Sanitary Flow (mgd)[1]
2001*	7.19
2002*	7.17
2003*	7.37
2004	8.01
2005	8.32
2006	8.27
2007	8.26
2008	8.58
2009	8.47
2010	8.34

* Corrected raw degritted sludge (RDS) measurements

Base sanitary flow is measured at the influent of the Budd Inlet Treatment Plant. The Martin Way Reclaimed Water Plant was put on-line in August 2006, which diverts flow from the Budd Inlet Treatment Plant. The diverted flow to the Hawks Prairie Ponds/ Recharge Basins was added to monitored flows at the Budd Inlet Treatment Plant to determine total system flows.

The current NPDES permit requires that the LOTT Alliance conduct an annual infiltration and inflow evaluation such that the entire collection system is evaluated once every seven years. LOTT currently has a total of ten flow monitors, five of which are rotated on an annual basis. In the summer of 2009, LOTT rotated the five flow meters to new locations within the system. This, along with flows recorded during previous years, allows for a more detailed analysis of each jurisdiction's base flows. The BSF for each of the jurisdictions is provided in Table 12. A more detailed analysis is included in the 2010 Inflow & Infiltration and Flow Monitoring Report (October, 2010).

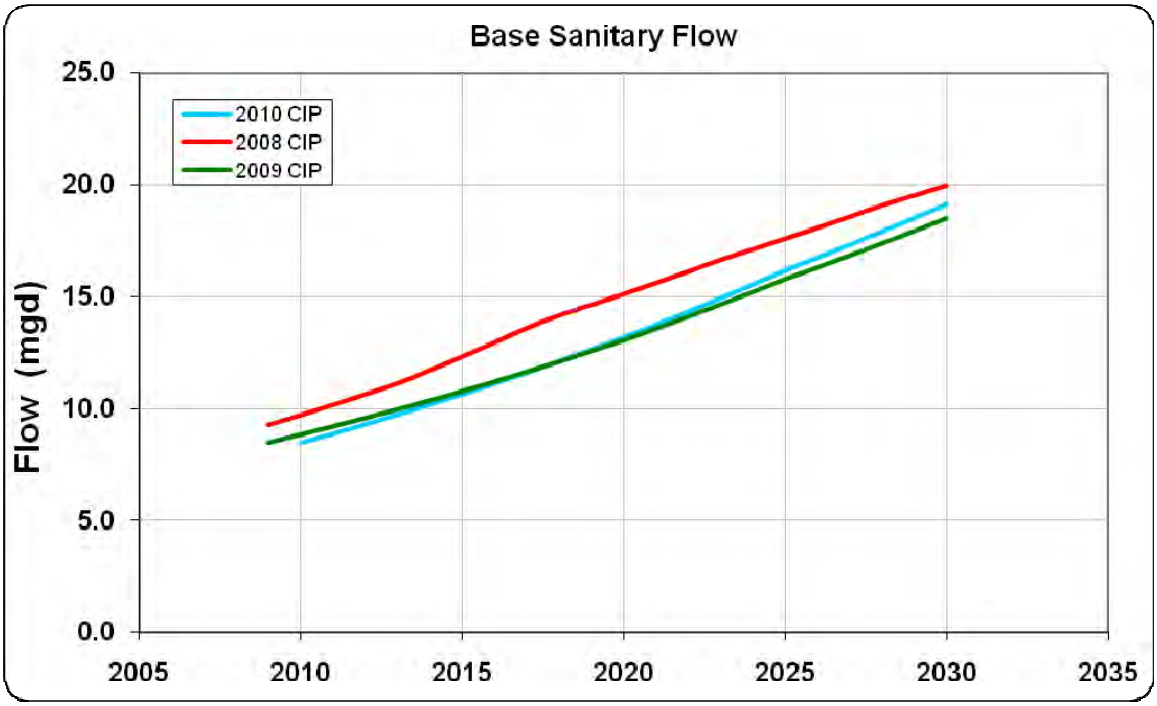
Table 12. Base Sanitary Flow by Jurisdiction (mgd)

Location	2006	2007	2008	2009	2010
Lacey	2.63	2.63	2.94	3.09	3.14
Olympia	4.31	4.32	4.02	3.42	3.56
Tumwater	1.73	1.21	1.14	1.41	1.19
Point Sources (TESC*, etc.)	0.05	0.10	0.48	0.54	0.45
Total	8.27	8.26	8.58	8.47	8.34

*The Evergreen State College

Previous BSF projections developed for the 2008 and 2009 Capital Improvements Plans, along with the current projections, are included in Figure 8. The current projections are similar to last year's projections.

Figure 8. Base Sanitary Flow Projections



4.4 Comparison with Historical Wastewater Generation Rates

Historically, wastewater generation rates were developed for each city based upon flow monitoring data. Beginning in 2007, drinking water consumption data has been obtained from each of the jurisdictions, enabling a more precise estimation of the wastewater generation rate profiles (Table 10). These profiles have been organized into city-specific profiles for comparison with previous estimates. Table 13 summarizes the historical rate profiles, along with the corresponding values developed in this report. These values are extrapolated from the values in Table 10 though were not used in the model. They are are presented for the sake of comparison to previous years' profiles.

Table 13. Previous Wastewater Generation Rate
Gallons Per Capita Per Day (gpcd)

Source	Lacey	Olympia	Tumwater	UGA	Employment
1995-2002 CIP	66	85	73	66	40
2003 CIP	64	81	69	64	39
Budd Inlet Master Plan (2004)	64	75	69	71	35
2005 CIP	68	62	65	68	35
2006 Flows and Loadings	71	64	61	71	34
2007 Flows and Loadings	69	67	74	86	22
2008 Flows and Loadings	62	66	81	73	26
2009 Flows and Loadings	66	67	73	65	20
2010 Flows and Loadings	66	69	69	65	25

4.5 Flow Projections

Flow projections are calculated by the CAPE model by entering the calculated wastewater generation rate for each jurisdiction's projected residential and employment population. The model assumes that these generation rates are constant throughout the simulation period (2010-2053). Each year these wastewater generation rates will be recalibrated based on ongoing flow monitoring and population estimates. Figure 9 displays the projected base flow, annual average, compliance period (winter, summer, shoulder), and peak flows through the year 2053.

4.6 Inflow and Infiltration Projections

The impact of inflow and infiltration on projected flows was also modeled using the CAPE tool. CAPE combines a history of flows recorded at the Budd Inlet Treatment Plant with a history of precipitation to determine a numerical relationship between precipitation intensity, timing, and wastewater flow. Precipitation data collected by the National Weather Service at the Olympia Airport from 1954 to 2003, and from the LOTT Alliance's own rain gauges from 2003 to the present were used to calibrate the inflow and infiltration scenarios. This relationship was applied to the following risk-based I&I scenarios: 1) annual average; 2) 10-year peak day; 3) 10-year peak hour; 4) 10-year peak month; 5) summer (June-September); 6) shoulder (April, May, October); and 7) winter (November-March) time period flows. Flow projections are displayed in Figure 9 and listed in Table 14.

Figure 9. Flow Projections (2010-2053)

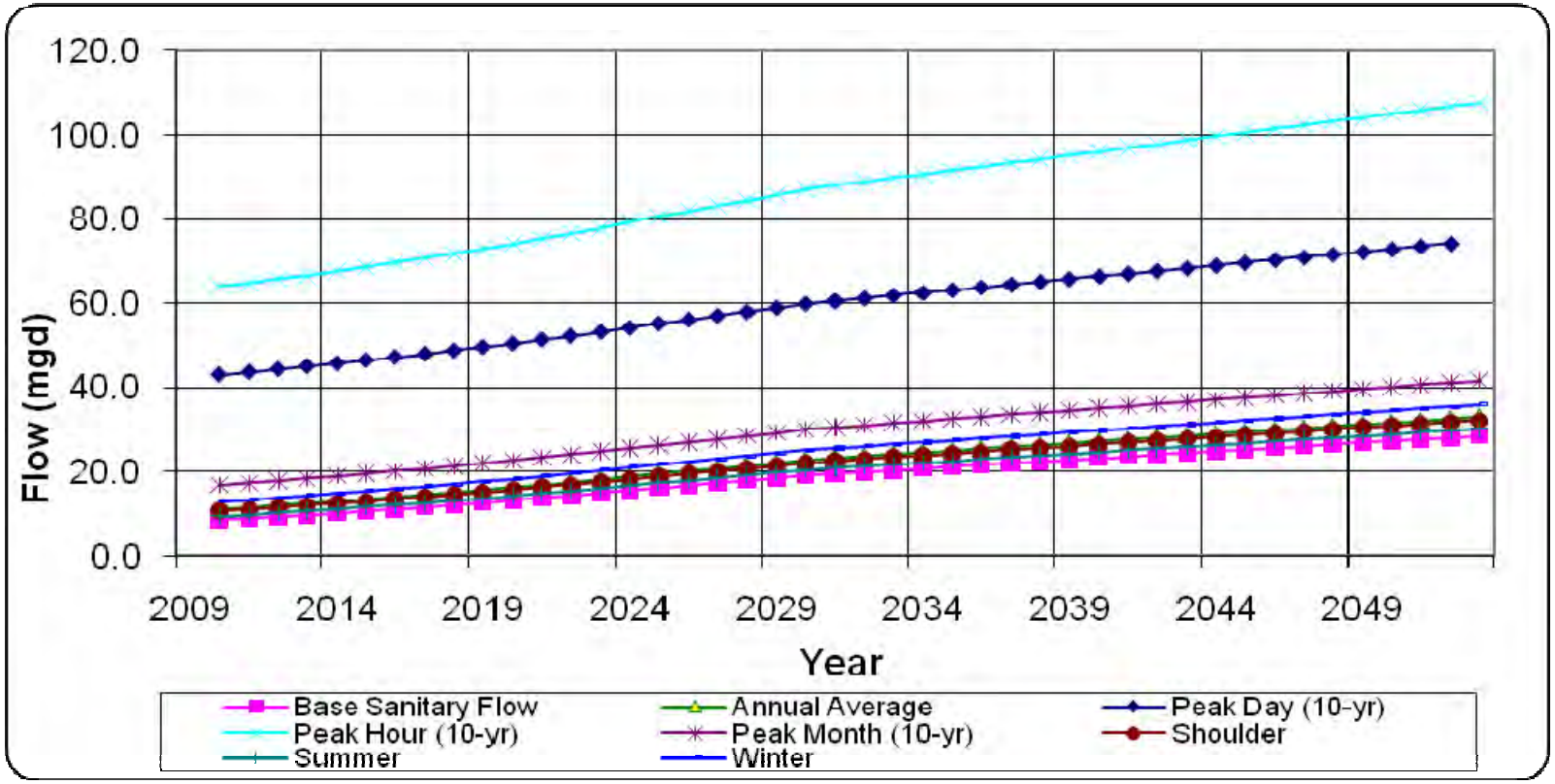


Table 14. Flow Projections (mgd)

Year	Base Sanitary Flow	Annual Average	Peak Day (10-year)	Peak Hour (10-year)	Peak Month (10-year)	Shoulder[1]	Summer[2]	Winter[3]
2011	8.9	11.6	43.6	64.8	17.4	11.1	9.8	13.4
2012	9.3	12.1	44.3	65.7	17.9	11.6	10.3	13.9
2013	9.7	12.5	45.0	66.7	18.4	12.0	10.7	14.3
2014	10.2	13.0	45.7	67.6	19.0	12.5	11.2	14.9
2015	10.6	13.5	46.4	68.6	19.5	13.0	11.7	15.4
2016	11.1	14.0	47.2	69.6	20.1	13.5	12.2	15.9
2017	11.6	14.6	48.0	70.7	20.7	14.0	12.7	16.5
2018	12.1	15.1	48.8	71.8	21.3	14.6	13.2	17.1
2019	12.6	15.7	49.6	72.9	22.0	15.1	13.7	17.7
2020	13.2	16.3	50.4	74.1	22.6	15.7	14.3	18.3
2021	13.7	16.9	51.3	75.3	23.4	16.3	14.9	18.9
2022	14.3	17.5	52.3	76.6	24.1	17.0	15.5	19.6
2023	14.9	18.2	53.2	77.9	24.8	17.6	16.1	20.3
2024	15.5	18.8	54.2	79.2	25.6	18.3	16.7	21.0
2025	16.2	19.5	55.2	80.6	26.4	18.9	17.4	21.7
2026	16.7	20.1	56.1	81.9	27.1	19.5	18.0	22.4
2027	17.3	20.8	57.0	83.1	27.8	20.2	18.6	23.0
2028	17.9	21.4	58.0	84.4	28.5	20.8	19.2	23.7
2029	18.5	22.1	58.9	85.7	29.2	21.5	19.8	24.4
2030	19.1	22.8	59.9	87.1	30.0	22.1	20.4	25.1
2031	19.5	23.2	60.6	88.0	30.5	22.6	20.9	25.6
2032	19.9	23.6	61.2	88.9	31.0	23.0	21.3	26.1
2033	20.3	24.1	61.9	89.8	31.5	23.4	21.7	26.5
2034	20.8	24.5	62.5	90.7	32.0	23.9	22.1	27.0
2035	21.2	25.0	63.2	91.6	32.5	24.3	22.6	27.5
2036	21.6	25.4	63.8	92.5	33.0	24.7	23.0	27.9
2037	22.0	25.9	64.5	93.4	33.6	25.2	23.4	28.4
2038	22.4	26.3	65.1	94.3	34.1	25.6	23.8	28.9
2039	22.8	26.8	65.8	95.2	34.6	26.1	24.3	29.4
2040	23.2	27.2	66.4	96.0	35.1	26.5	24.7	29.8
2041	23.6	27.7	67.1	96.9	35.6	26.9	25.1	30.3
2042	24.0	28.1	67.7	97.8	36.1	27.4	25.5	30.8
2043	24.4	28.5	68.4	98.7	36.6	27.8	25.9	31.2
2044	24.8	29.0	69.0	99.6	37.1	28.3	26.4	31.7
2045	25.3	29.4	69.7	100.5	37.6	28.7	26.8	32.2
2046	25.7	29.9	70.3	101.4	38.1	29.1	27.2	32.6
2047	26.1	30.3	71.0	102.3	38.6	29.6	27.6	33.1
2048	26.5	30.8	71.7	103.2	39.1	30.0	28.1	33.6
2049	26.9	31.2	72.3	104.1	39.6	30.5	28.5	34.0
2050	27.3	31.7	73.0	105.0	40.1	30.9	28.9	34.5
2051	27.7	32.1	73.6	105.9	40.6	31.3	29.3	35.0
2052	28.1	32.6	74.3	106.8	41.1	31.8	29.8	35.5
2053	28.5	33.0	74.9	107.7	41.7	32.2	30.2	35.9

1. April, May, and October
2. June, July, August, and September
3. November, December, January, February, and March

4.7 Loading Projections

Loading projections are updated each year based upon observed BOD and TSS loadings at the Budd Inlet Treatment Plant. In 2009, the average BOD and TSS loads at the treatment plant were 22,251 lbs/d and 21,894 lbs/d, respectively. In order to generate system loadings, BOD and TSS removed at the Martin Way Reclaimed Water Plant must be taken into account. The Martin Way Plant removed approximately 581 lbs/d of TSS and 1,339 lbs/d of BOD. Projected BOD and TSS loadings for this report are based on a correlation of loadings from 2003-2009, with the 2007 through 2009 values corrected to account for reclaimed water plant removals. These values are broken down into blanket residential and employment generation rates based upon the latest population and employment projections. These rates are provided in Table 15.

Table 15. Wastewater Load Generation Rate Profiles (lbs per capita/employee day)

Residential		Employment	
BOD	TSS	BOD	TSS
0.135	0.129	0.135	0.129

Figure 10 displays the historical influent loading characteristics at the Budd Inlet Treatment Plant to include monthly averages for TSS and BOD.

Figure 10. Historical Budd Inlet Treatment Plant Primary Influent Loads (Monthly Average)

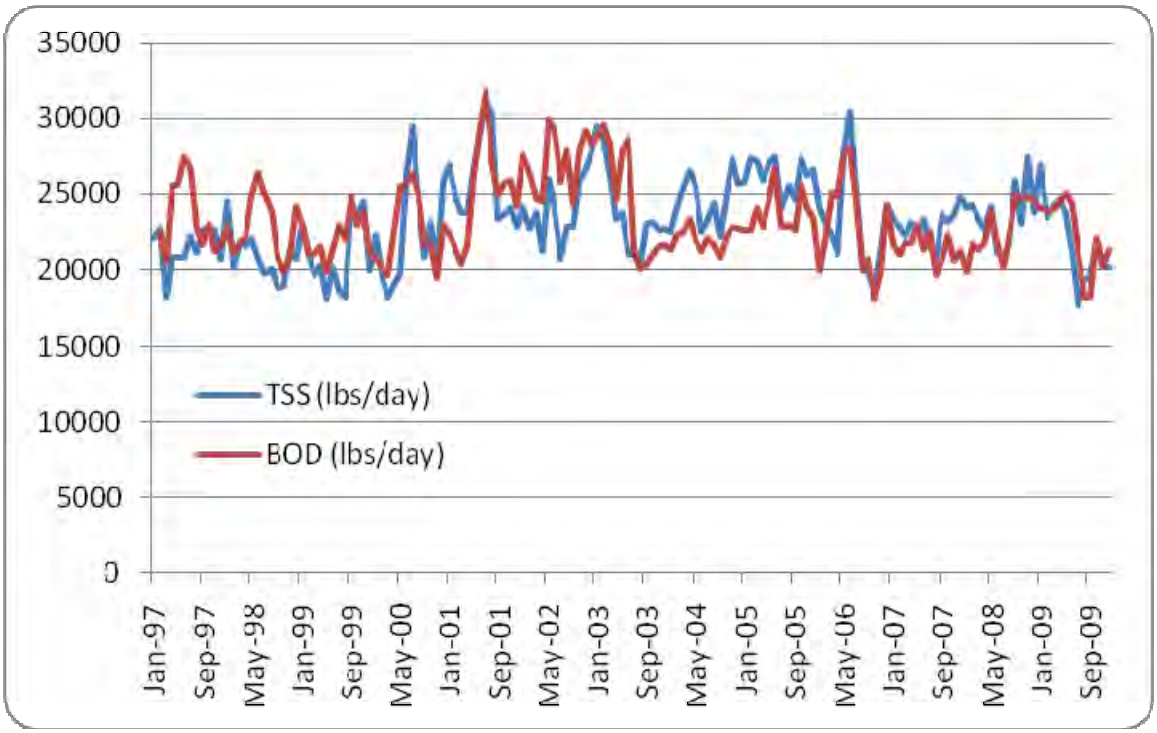


Figure 11 displays the projected total flows and loadings to the Budd Inlet Treatment Plant based on the planned timeline for adding additional satellite reclaimed water production capacity through 2053.

Figure 11. Projected Primary Influent Annual Averages for TSS, BOD and Flow

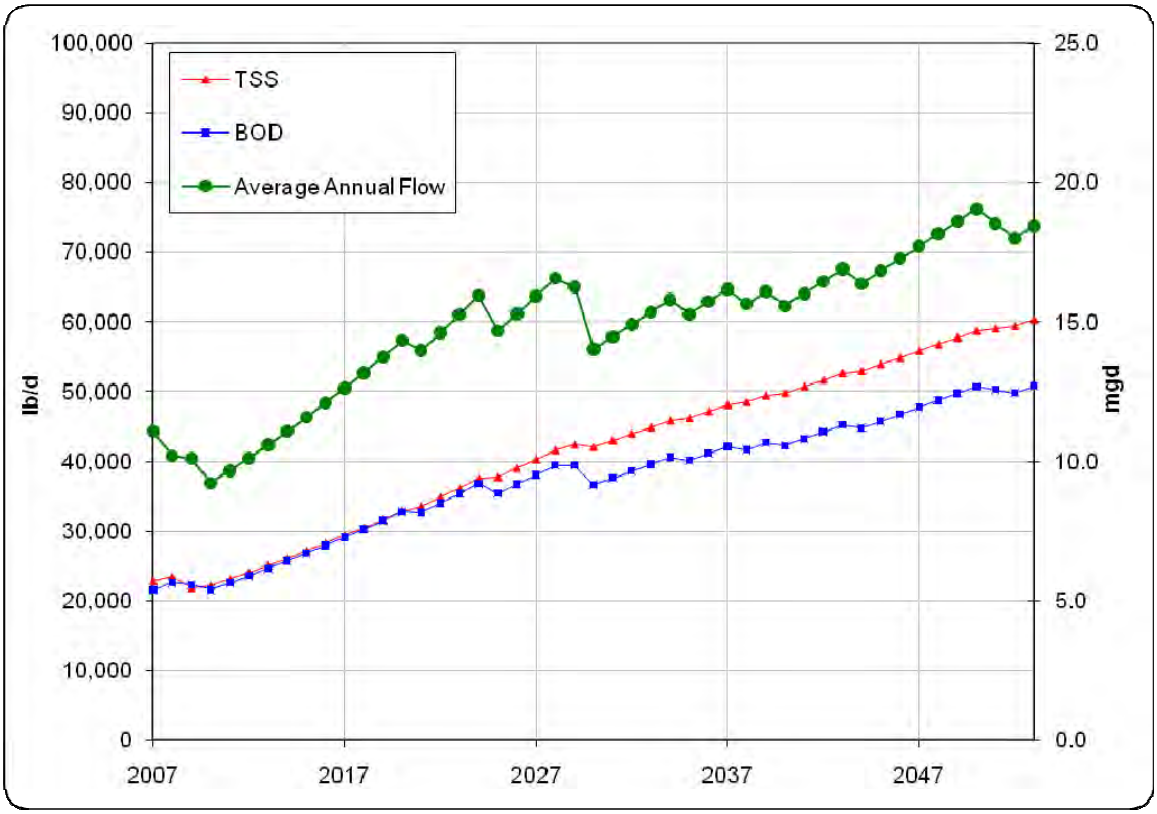


Table 16 lists the CAPE model projection results for flows and loadings to the Budd Inlet Treatment Plant throughout the planning period to include reclaimed water satellite flow diversions. The results assume 9 mgd of satellite treatment by 2030.

Table 16. Projected Primary Influent Flows and Loadings

Year	Satellite Flow	Average Annual Flow (mgd)	BOD (lbs/day)	TSS (lbs/day)
2011	2	9.7	22,571	23,136
2012	2	10.1	23,587	24,108
2013	2	10.6	24,631	25,105
2014	2	11.1	25,707	26,132
2015	2	11.6	26,817	27,194
2016	2	12.1	27,932	28,260
2017	2	12.6	29,086	29,362
2018	2	13.2	30,274	30,497
2019	2	13.7	31,498	31,666
2020	2	14.3	32,758	32,871
2021	3	14.0	32,643	33,545
2022	3	14.6	33,999	34,841
2023	3	15.3	35,380	36,162
2024	3	15.9	36,801	37,518
2025	5	14.7	35,407	37,754
2026	5	15.3	36,732	39,022
2027	5	15.9	38,086	40,314
2028	5	16.6	39,467	41,633
2029	6	16.3	39,456	42,409
2030	9	14.0	36,633	42,064
2031	9	14.5	37,623	43,010
2032	9	14.9	38,613	43,956
2033	9	15.4	39,603	44,902
2034	9	15.8	40,594	45,849
2035	10	15.3	40,157	46,217
2036	10	15.7	41,148	47,163
2037	10	16.2	42,139	48,110
2038	11	15.6	41,699	48,474
2039	11	16.1	42,689	49,421
2040	12	15.6	42,246	49,782
2041	12	16.0	43,237	50,728
2042	12	16.5	44,227	51,675
2043	12	16.9	45,219	52,622
2044	13	16.4	44,772	52,980
2045	13	16.8	45,763	53,927
2046	13	17.3	46,754	54,874
2047	13	17.7	47,746	55,822
2048	13	18.2	48,738	56,770
2049	13	18.6	49,730	57,718
2050	13	19.1	50,723	58,666
2051	14	18.5	50,271	59,020
2052	15	18.0	49,819	59,371
2053	15	18.4	50,811	60,319

Appendix G

Wastewater Discharge Permits

CITY OF LACEY
Shaping our community together
420 COLLEGE STREET SE
LACEY, WA 98503-1238

WASTEWATER DISCHARGE PERMIT No. MIU-LA-002

In accordance with the provisions of Section 13.10 of the Lacey Municipal Code:

Nutriom, L.L.C.
3145 Hogum Bay Road NE
Lacey, WA 98516

hereafter referred to as "Permittee", is hereby authorized to discharge industrial wastewater from the above identified facility and through the outfalls identified herein into the LOTT Clean Water Alliance (LOTT) Publicly Owned Treatment Works (POTW) via the City of Lacey (City) and/or other LOTT Partner sanitary sewer collection system in accordance with the conditions set forth in this Permit. Compliance with this Permit does not relieve the Permittee of its obligation to comply with any or all applicable pretreatment regulations, standards or requirements under local, state, and federal laws, including any such regulations, standards, requirements, or laws that may become effective during the term of this Permit.

Noncompliance with any term or condition of this Permit shall constitute a violation of the Lacey Municipal Code (LMC), Section 13.10.

This Permit shall become effective at 12:01 PM on February 14, 2013, and shall expire at 11:59 PM on February 13, 2016.

If the Permittee wishes to continue to discharge after the expiration date of this Permit, an application must be filed for a renewal permit in accordance with the requirements of Chapter 13.10.010 of the Lacey Municipal Code, and Section 8.6 of this Permit, a minimum of ninety (90) days prior to the expiration date.

By: _____
Scott Egger, P.E.
Director of Public Works
City of Lacey

By: _____
Michael D. Strub, P.E.
Executive Director
LOTT Clean Water Alliance

Issued this 13 day of February 2013

TABLE OF CONTENTS

SUBMITTAL SCHEDULE

PERMIT SECTION	SUBMITTAL	FREQUENCY	FIRST SUBMITTAL
3.2	Discharge Monitoring Reports	Monthly	15th of month following required monitoring
3.3	Reports of Additional Monitoring by the Permittee	As Needed	As Required
3.8	Notification of Violation/Repeat Sampling and Reporting	As Needed	As Required
3.7	Reports of Potential Problems	As Needed	As Required
5.5	Bypass Notification and Reporting	As Needed	As Required
3.9	Notification of Discharge of Hazardous Waste	As Needed	As Required
3.6	Reports of Changed Conditions	As Needed	30 days prior to commencing
6.2	Semi-annual Sampling and Reporting	January and July of every year	Sampling to occur by June 30, 2013
6.3	Accidental Discharge/Slug Discharge Control Plans	Update current Plan on file whenever significant facility revisions are planned or have been implemented	Whenever significant facility revisions have been implemented
7.2	Proper Operation & Maintenance Manual	As Needed	Manual due by March 29, 2013
8.6	Permit Application for Renewal	1/Permit Cycle	90 days prior to expiration date of Permit

PART 1 - DISCHARGE REQUIREMENTS

1.1 Description of Outfalls

Beginning on the effective date of the Permit and lasting through the expiration date, the Permittee is authorized to discharge process and/or domestic wastewater to the Lacey sewer system from the outfalls listed below:

Outfall	Descriptions
001	Discharge from high-strength diversion storage tank, located at: N 47° 4' 39.1217" W 122° 45' 57.0041"
002	The combined discharges of Outfall 001 and the sanitary wastewater, located at the "Municipal System Flow Measurement and Sampling Station": N 47° 4' 38.8323" W 122° 45' 58.5056"

1.2 Waste Streams at Each Outfall

During the term of this Permit, the discharge from Outfall 001 shall consist of process and non-process wastewater only.

During the term of this Permit, the discharge from Outfall 002 shall consist of a combination of domestic, non-process, and process wastewater.

1.3 Effluent Limitations

Beginning on the effective date of this Permit, and lasting through the expiration date, the Permittee shall not discharge wastewater from Outfall 001 in excess of the following effluent limitations:

ANALYTE	DAILY MAXIMUM CONCENTRATION LIMIT	DAILY MAXIMUM LOADING LIMITS (1,000 gallons per day or less)
Arsenic	0.2 mg/L	0.002 lbs. per day
Cadmium	0.2 mg/L	0.002 lbs. per day
Chromium	1.0 mg/L	0.008 lbs. per day
Chromium (hexavalent)	0.25 mg/L	0.002 lbs. per day
Copper	0.5 mg/L	0.004 lbs. per day
Cyanide	0.64 mg/L	0.005 lbs. per day
Cyanide (Free)	0.25 mg/L	0.002 lbs. per day
Lead	0.4 mg/L	0.004 lbs. per day
Mercury	0.05 mg/L	0.0004 lbs. per day
Nickel	0.5 mg/L	0.004 lbs. per day
Silver	0.2 mg/L	0.002 lbs. per day
Zinc	1.0 mg/L	0.008 lbs. per day
Fats, oils, & greases of animal or vegetable origin	300 mg/L	Any amount
Hydrocarbon-based oils & greases	50 mg/L	Any amount
Minimum pH	5.0 standard units	N/A
Maximum pH	11.0 standard units	N/A
Reduction in POTW effluent ultra violet transmissivity (per cm at 254 nm wavelength)	10% reduction	N/A
Decrease in POTW maximum effluent no observed effect concentration (NOEC) in any whole effluent toxicity test	10% decrease	N/A

WASTE LOADING PARAMETER	DAILY MAXIMUM	MONTHLY AVERAGE (measured over calendar month)
Flow	8,000 Gallons per day	5,300 Gallons per day

A. All concentrations for metallic substances are for total metal unless indicated otherwise. The Executive Director may impose mass limits in addition to concentration-based limits.

B. The Permittee shall be subject to "instantaneous limits" (as determined by a grab sample) of equal to twice the above "daily maximum" concentrations for any pollutant for which a composite sample is required in this Permit. This provision is inapplicable to the Permittee when there is no permit requirement to collect a composite sample for the analyte in question.

C. If the Permittee discharges Biochemical Oxygen Demand, Total Suspended Solids, or Total Ammonia in excess of the concentration limits or threshold amounts listed below, the Permittee will be subject to surcharges as established in and under the authority of Section 6.1 up to any maximum loading limit established by this Permit.

ANALYTE	EXCESS STRENGTH CHARGES THRESHOLD LIMIT	PERMITTED DISCHARGE THRESHOLD AMOUNT
Biochemical Oxygen Demand (BOD_5)	300 mg/L	2.5 lbs. per day
Total Suspended Solids (TSS)	300 mg/L	2.5 lbs. per day
Total Ammonia, as ammonia (NH_3) and ammonium ion (NH_4^+)	60 mg/L	0.5 lbs. per day

D. The City may use this Permit to establish ceiling limits for compatible pollutants and appropriate discharge limits for all other pollutants not contained in this Section. This includes pollutants subject to regulation under RCRA, volatile or semi-volatile organics, halogenated or brominated compounds, poly-aromatic hydrocarbons, polymers, surfactants, pesticide active ingredients, and any other pollutant.

1.4 Requirement to Apply AKART

The Permittee shall provide all known, available, and reasonable methods of prevention, control and treatment (AKART) as required to comply with this Permit and local, State and Federal regulations, and shall achieve compliance with all applicable pretreatment standards and requirements within the time limitations as specified by appropriate statutes, regulations, chapters and ordinances. Any facilities required to treat wastewater to satisfy applicable pretreatment standards and requirements contained in this Permit, shall be supplied, properly operated, and maintained at the Permittee's expense.

1.5 Best Management Practices

The Executive Director may establish, and the City require, Best Management Practices (BMPs) for any category of industry or type of industrial process, which creates a non-domestic waste stream. Such requirements may be applied either in lieu of or in addition to the effluent limitations contained in Section 1.3. BMPs may also include alternative limits, which may be applied at the end of a specific process or treatment step instead of at the combined effluent.

1.6 Right of Revision

The Executive Director and the City reserves the right to establish, by this Permit, more stringent standards or requirements on discharges to the POTW.

PART 2– MONITORING REQUIREMENTS

2.1 Monitoring Schedule

From the period beginning on the effective date of this Permit and lasting through the expiration date, the Permittee shall monitor Outfall 001 for the following parameters, at the indicated frequency:

Parameter (units)	Locations	Frequency	Sample Type
Flow (gpd)	001	Continuously	Meter
BOD_5 (mg/L)	001	Three per month[2]	Grab[3]
TSS (mg/L)	001	Three per month[2]	Grab[3]
pH	001	Daily	Grab
Fats, oils, & greases of animal or vegetable origin (mg/L)	001	Twice per year	Grab[3]
Hydrocarbon-based oils & greases (mg/L)	001	Twice per year	Grab[3]
Arsenic, total (mg/L)	001	Twice per year	Grab[3]
Cadmium, total (mg/L)	001	Twice per year	Grab[3]
Chromium, total [1](mg/L)	001	Twice per year	Grab[3]
Copper, total (mg/L)	001	Twice per year	Grab[3]
Lead, total (mg/L)	001	Twice per year	Grab[3]
Mercury, total (mg/L)	001	Twice per year	Grab[3]
Molybdenum, total (mg/L)	001	Twice per year	Grab[3]
Nickel, total (mg/L)	001	Twice per year	Grab[3]
Selenium, total (mg/L)	001	Twice per year	Grab[3]
Silver, total (mg/L)	001	Twice per year	Grab[3]
Zinc, total (mg/L)	001	Twice per year	Grab[3]
Cyanide, total[1] (mg/L)	001	Twice per year	Grab[3]

2.2 Analytical Requirements

All pollutant sampling and analyses required under this Permit shall conform to the most current version of 40 CFR Part 136. If 40 CFR Part 136 does not contain sampling or analytical techniques for a pollutant, or the Executive Director determines that the Part 136 sampling and analytical techniques are inconsistent with the goal of the sampling, the Executive Director may specify an analytical method. If neither case applies, the Permittee shall use validated analytical methods or applicable sampling and analytical procedures approved by USEPA.

1 If total chromium in excess of 0.25 mg/l is detected, the Permittee shall immediately resample by grab sample and analyze for hexavalent chromium; if total cyanide in excess of 0.25 mg/l is detected, the Permittee shall immediately resample and analyze for free cyanide.

2 Samples for biochemical oxygen demand (BOD_5) and total suspended solids (TSS) shall be collected during three consecutive days in accordance with Part 2.4 of this permit

3 Grab samples from the contents of the high strength diversion storage tank shall be collected after accumulating a batch of all the process and non-process wastewater produced during a twenty-four hour period of a typical production day.

2.3 Recording of Results

For each measurement or sample taken, the Permittee shall record the following information:

A. The date, exact place, and time of the sampling;

B. The method of sample taking and preservation;

C. The names of the person(s) who performed the sampling or measurements, and each person with custody of the sample until analysis;

D. The date(s) analyses were performed and who performed them;

E. The analytical techniques or methods used;

F. The results of such analyses, and;

G. All quality control/quality assurance results pertaining to the analyses.

This information shall be included in the Discharge Monitoring Report described in Section 3.2 of this Permit. Additional information, such as laboratory raw data, shall be submitted to the Executive Director upon request.

2.4 Representative Sampling

A. The Permittee must ensure that all samples collected to satisfy sampling requirements under this Permit are representative of the range of conditions occurring during the reporting period. Samples and measurements taken to meet the requirements of this Permit shall be representative of the volume and nature of the monitored discharge(s) and the discharges monitored shall be representative of daily operations.

B. All samples shall be taken at the monitoring points specified in this Permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water or substance. All equipment used for sampling and analysis must be routinely calibrated, inspected, and maintained to ensure its accuracy. Monitoring points shall not be changed without notification to and the approval of the Executive Director.

2.5 Sample Collection and Analysis

A. The Permittee must use properly cleaned sample containers appropriate for the sample analysis and sample collection and preservation protocols specified in 40 CFR Part 136 and appropriate USEPA guidance.

B. The Permittee must obtain samples for oil and grease, temperature, pH, cyanide, total, and volatile organic compounds using grab collection techniques.

C. For certain pollutants, the Permittee may composite multiple grab samples taken over a 24-hour period. The Permittee may composite grab samples for cyanide either in the laboratory or in the field, and may composite grab samples for volatile organics and oil & grease in the laboratory prior to analysis.

D. For all other pollutants, the Permittee must be representative of the volume and nature of the monitored discharge(s) and the discharges monitored shall be representative of daily operations.

E. The Executive Director may authorize composite samples for parameters unaffected by the compositing procedures, as appropriate.

F. The Executive Director may require grab samples either in lieu of or in addition to composite sampling to show compliance with instantaneous discharge limits.

G. In all cases, the Permittee must take care to ensure the samples are representative of their wastewater discharges.

2.6 Requirements for Laboratory Accreditation

All required monitoring data shall be analyzed by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, Accreditation of Environmental Laboratories, except for flow, temperature, total suspended solids, conductivity, pH, turbidity, and internal process control parameters. However, if the laboratory analyzing samples for conductivity, pH, and turbidity must otherwise be accredited, it shall be accredited for these parameters as well.

PART 3 – REPORTING REQUIREMENTS

3.1 Where to Send Reports or Make Notifications

All reports required by this Permit shall be submitted to LOTT at the following address:

Environmental Compliance Supervisor
LOTT Clean Water Alliance
500 Adams Street NE
Lacey, WA 98501-1073

Telephone notification shall be made to the LOTT Environmental Compliance Supervisor at phone number (360) 528-5708, or if unavailable, to the LOTT Budd Inlet Treatment Plant at phone (360) 528-5700.

3.2 Scheduled Reports – Discharge Monitoring Reports

The Permittee shall summarize and report the results of all monitoring of pollutants discharged to the POTW. This information shall be compiled each month and reported on a form provided by or approved by the City. Each report shall be submitted, along with the information described in Section 2.3 of this Permit, by the fifteenth (15^{th}) day of the following month. Monitoring shall begin on the effective date of this Permit and each pollutant shall be sampled within the specified sampling interval.

3.3 Reports of Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this Permit using test procedures prescribed in 40 CFR Part 136 or amendments thereto, or otherwise approved by EPA or specified in this Permit, the results of such monitoring shall be included in calculating the daily maximum and monthly average pollutant discharges, and the results of the additional sampling shall be reported in the Discharge Monitoring Report.

3.4 Date of Receipt of Reports

The Executive Director will credit written reports as having been submitted on the date of the post mark when mailed through the United States Postal Service. Reports delivered in any other manner will be credited as having been submitted on the business day received.

3.5 Record Keeping

The Permittee shall retain the information listed in Section 2.3 for all monitoring required by this Permit and for any additional monitoring, which could be used to satisfy minimum monitoring requirements. The Permittee must make these records available for inspection and copying at the location of the discharge. The Permittee must similarly maintain documentation associated with any Best Management Practices required under authority of Section 1.5.

Permittee shall retain quality control and quality assurance information provided by the laboratory and submit this information in routine reporting. For analytes for which Washington State requires use of a certified/accredited laboratory, the Permittee must maintain the scope of accreditation for laboratories performing any analyses for them.

The Permittee shall maintain the above records for at least three (3) years, until any litigation concerning the Permittee or the City, or the Executive Director is complete, or for longer periods when the Permittee has been specifically notified of a longer retention period by the Executive Director.

3.6 Reports of Changed Conditions

The Permittee must notify the Executive Director of any changes to the Permittee's operations or system, which might alter the nature, quality, or volume of its wastewater. This notification must be made at least thirty (30) days before the desired change and be sent to both the Executive Director and the receiving POTW if they are different. In such cases:

A. The Executive Director may require the Permittee to submit whatever information is needed to evaluate the changed condition. The Executive Director may also require the Permittee to submit a new or revised wastewater discharge permit application.

B. The City may reissue or modify this Permit, applying the procedures of Section 8.3(B) of this Permit, in response to a Permittee's notice under this Section.

3.7 Reports of Potential Problems

A. Any Permittee, which has any unusual discharge that could cause problems to the POTW must immediately notify the Executive Director by telephone of the incident. This notification shall include the location of the discharge, type of waste, concentration and volume, if known, and corrective actions taken by the Permittee to control and curtail the discharge. Such discharges may include spills, slug loads, accidental discharges, or other discharges of a non-routine, episodic nature. Problems to the POTW which require reporting under this Section include violating pretreatment prohibitions, treatment standards, or other requirements of Parts 1 and 5 of this Permit, including gas vapor toxicity and explosivity limits.

B. Within five (5) days following such discharge, the Permittee shall submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the Permittee to prevent similar future occurrences. Such notification shall not relieve the Permittee of any expense, loss, damage, or other liability, which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the Permittee of any fines, penalties, or other liability, which may be imposed pursuant to this Permit.

C. Regardless of whether the Permittee has been required to submit a Slug Discharge Control Plan per Section 6.3, the Permittee shall post notice in a prominent location advising employees who to call at the POTW to inform the Executive Director of a potential problem discharge as required by Section 3.7(A) above. The Permittee shall ensure that all employees who may cause or witness such a discharge are advised of the emergency notification procedures.

D. The Permittee must immediately notify the Executive Director of any changes at their facility, which might increase their potential for a slug discharge. This includes increasing the volume of materials stored or located on site, which, if discharged to the POTW, would cause problems. The Permittee required to prepare a Slug Discharge Control Plan under Section 6.3 shall also modify their plans to include the new conditions prior to, or immediately after making such changes.

3.8 Notification of Violation/Repeat Sampling and Reporting

If sampling performed by the Permittee indicates a violation, the Permittee must notify the Executive Director within twenty-four (24) hours of becoming aware of the violation. The Permittee shall also repeat the sampling and analysis and submit the results of the repeat analysis to the Executive Director within thirty (30) days after becoming aware of the violation. The Executive Director may waive the repeat sampling requirement where the Executive Director has sampled the effluent for the pollutant in question prior to the Permittee obtaining sampling results.

3.9 Notification of Discharge of Hazardous Waste

A. If the Permittee discharges any substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261, or Chapter 173-303 WAC must also comply with the following requirements:

1. Notify the Executive Director, the USEPA Regional Waste Management Division Director, and State hazardous waste authorities, in writing, of the discharge. Maintain a copy of this notification and include it in all subsequent permit application or re-applications under this Section.

2. Include the following information in the notification:

   a. The name of the hazardous waste as found in 40 CFR Part 261;

   b. The USEPA hazardous waste number; and

   c. The type of discharge (continuous, batch, or other).

3. If the discharge totals more than two hundred and twenty (220) pound in any month, also provide:

   a. The hazardous constituents contained in the wastes,

   b. An estimate of the mass and concentration of hazardous constituents in the wastestream discharged during that calendar month, and

   c. An estimate of the mass of constituents in the wastestream expected to be discharged during the following twelve (12) months.

4. This notice shall be repeated for new or increased discharges of substances subject to this reporting requirement.

5. All notifications must take place prior to discharging a substance for which these reporting requirements apply. If this is not possible, the notice must be provide as soon after discharge as practical and describe why prior notice was not possible.

6. The Permittee must provide notifications under this paragraph only once to USEPA and the State for each hazardous waste discharged. However, all of the information of these notices shall be repeated in each new permit application submitted under this Section.

7. This requirement does not relieve the Permittee from requirements to provide other notifications, such as of changed conditions under Section 3.6 of this Permit, or applicable Permit conditions, permit application requirements, and prohibitions.

8. The notification requirements in this Section do not apply to pollutants for which routine monitoring and reporting is required in a permit under this Permit.

B. The Permittee must report all discharges of more than thirty-three (33) pounds per month of substances, which, if otherwise disposed of, would be hazardous wastes. The Permittee must also report any discharge of acutely hazardous wastes as specified in 40 CFR Parts 261.30(d) and 261.33(e). Subsequent months during which the Permittee discharges more of a hazardous waste for which notice has already been provided do not require another notification to USEPA or the State, but must be reported to the Executive Director.

C. If new regulations under RCRA describe additional hazardous characteristics or substances as a hazardous waste, the Permittee must provide notifications under paragraphs A, if required by paragraph B within ninety (90) days of the effective date of such regulations.

D. For any notification made under this Section, the Permittee shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical and shall describe that program and reductions obtained through its implementation.

E. This provision does not create a right to discharge any substance not otherwise permitted to be discharged by this Permit, an ordinance, or any applicable Federal or State law.

3.10 Authorized or Duly Authorized Representative of the Permittee

All forms, applications, and reports required by this Permit must be signed by an authorized representative of the Permittee, as defined below:

A. If the Permittee is a corporation:

1. The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

2. The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions, which govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for control mechanism requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

B. If the Permittee is a partnership or sole proprietorship: a general partner or proprietor, respectively.

C. If the Permittee is a Federal, State, or local governmental facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or their designee.

D. The individuals described in Section 3.10(A-C), may designate another authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates, or having overall responsibility for environmental matters for the company, and the written authorization is submitted to the Executive Director.

The Permittee shall submit a new authorization if the designation of an authorized representative is no longer accurate. This includes when a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company. The User must submit the new authorization prior to or with any reports to be signed by the new authorized representative.

3.11 Certification Statement

In addition to the signatory requirements defined in Section 3.10 above, all forms, applications, and reports required by this Permit must contain the following certification statement:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

PART 4 – DEFINITIONS

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this Permit, shall have the meanings hereinafter designated.

4.1 **Batch** – The stored volume of process wastewater produced during a twenty-four hour period of a typical production day.

4.2 **Biochemical Oxygen Demand or BOD** – The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures for five (5) days at 20 degrees centigrade, usually expressed as a concentration (e.g., mg/L).

4.3 **Best Management Practices or BMPs** – Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the prohibitions listed in Part 2 and 40 CFR Part 403.5(a)(1) and (b). BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage.

4.4 **City** – The City of Lacey, Washington, a municipal corporation organized and existing under and by virtue of the laws of the State of Washington.

4.5 **Composite Sample** – A composite of several samples taken throughout the period of a day when a regulated discharge is occurring. Several brands of electric samplers, some with a refrigerated sample collection area, may be used. Approvable composite samplers may either use a flow paced or time paced algorithm. For example, collecting a same size aliquot every 1,000 gallons (flow paced), or a variable sized aliquot every hour (time paced). In both cases, they must interface with a device, which senses the effluent flow volume to collect a representative sample unless the Executive Director has determined that a flow proportionate sample is not required.

4.6 **Daily Limit or Daily Maximum Limit** – The maximum allowable discharge of a pollutant over a calendar day or equivalent representative 24-hour period. Where daily maximum limits are expressed in units of mass, and the daily discharge is calculated by multiplying the daily average concentration and total flow volumes in the same 24-hour period by a conversion factor to get the desired units. Where daily limits are expressed in terms of a concentration, the daily discharge is the composite sample value, or flow weighted average if more than one discrete sample was collected. Where flow weighting is infeasible, the daily average is the arithmetic average of all samples if analyzed separately, or the sample value if samples are composited prior to analysis.

4.7 **Environmental Compliance Supervisor** – The individual designated by the Executive Director of the LOTT Clean Water Alliance to represent the Executive Director in the implementation of LOTT's Industrial Pretreatment Program.

4.8 **Executive Director** – The Executive Director of the LOTT Clean Water Alliance and shall be considered LOTT Clean Water Alliance personnel or the LOTT Clean Water Alliance's agent for purposes of Article VII of the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999." The term also means a duly authorized representative of the Executive Director.

4.9 **Grab Sample** – A sample, which is taken from a wastestream without regard to the flow in the wastestream and over a period of time not to exceed fifteen (15) minutes.

4.10 **Instantaneous Maximum Discharge Limit or Instantaneous Limit** – The maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of a discrete sample. Where the Permittee is required to take a grab sample for purposes of determining compliance with Local Limits, this standard is the same as the Daily Maximum standard. For pollutants for which Users are required to take composite samples, (or for metals if no permit has been issued) the Instantaneous Limit shall be twice the Daily Limit.

4.11 **Interference** – A discharge that causes (either by itself or in combination with other discharges) a violation of LOTT's NPDES and/or Reclaimed Water permits, or prevents the intended sewage sludge use or disposal by inhibiting or disrupting the POTW, including its collection systems, pump stations, and wastewater and sludge treatment processes. This includes any discharge from the Permittee that causes a blockage resulting in a discharge at a point not authorized under LOTT's NPDES or Reclaimed Water permits.

4.12 **LOTT Clean Water Alliance or LOTT** – A State of Washington nonprofit corporation created by the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999," that operates as a public agency under State of Washington law, providing wastewater management and reclaimed water production services for the urbanized area of north Thurston County, Washington.

4.13 **Medical Waste** – Isolation wastes, infectious agents, human blood and blood products, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes, potentially contaminated laboratory wastes, and dialysis wastes.

4.14 **Monthly Average** – The arithmetic mean of the effluent samples collected during a calendar month or specified 30-day period. Where the Executive Director has taken a sample during the period, it must be included in the monthly average if provided in time. However, where composite samples are required, grab samples taken for process control or by the Executive Director are not to be included in a monthly average.

4.15 **Monthly Average Limit** – The limit to be applied to the Monthly Average to determine compliance with the requirements of this Permit (see Section 1.3 for listing).

4.16 **Non-Contact Cooling Water** – Water used for cooling that does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

4.17 **Pass Through** – A discharge, which exits the POTW into waters of the United States in quantities or concentrations, which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of LOTT's NPDES and/or Reclaimed Water permits, including an increase in the magnitude or duration of a violation.

4.18 **Person** – Any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity; or their legal representatives, agents, or assigns. This definition includes all Federal, State, and local governmental entities.

4.19 **pH** – A measure of the acidity or alkalinity of a solution, expressed in standard units.

4.20 **Pollutant** – Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, medical wastes, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural and industrial wastes, and certain characteristics of wastewater (e.g., pH, temperature, Total Suspended Solids, turbidity, color, Biochemical Oxygen Demand, Carbonaceous Oxygen Demand, toxicity, or odor).

4.21 **Pretreatment** – The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, introducing such pollutants into the POTW. This reduction or alteration can be obtained by physical, chemical, or biological processes; by process changes; or by other means, except by diluting the concentration of the pollutants unless allowed by an applicable pretreatment standard.

4.22 **Pretreatment Requirements** – Any substantive or procedural requirement related to pretreatment imposed on the Permittee, other than a pretreatment standard.

4.23 **Pretreatment Standards or Standards** – Pretreatment standards shall mean the discharge requirements contained in Part 1, and the Prohibited Discharges contained in Part 5.

4.24 **Publicly Owned Treatment Works or POTW** – A treatment works, as defined by Section 212 of the Act (33 U.S.C. Section 1292), which is owned by LOTT and/or the [City or County] and more fully described in the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999." This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature and any conveyances, including sanitary sewer and storm sewer collection systems, which convey wastewater to a treatment plant.

4.25 **Sewage** – Human excrement and gray water (from household showers, toilets, kitchens, clothes and dish washing, and related domestic activities).

4.26 **Slug Load or Slug Discharge** – Any Discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch Discharge, which has a reasonable potential to cause Interference or Pass Through, or in any other way violate the POTW's regulations, local limits, or Permit conditions. This includes discharges at a flow rate or concentration that could cause a violation of the prohibited discharge standards of Section 1.3 and Part 5 of this Permit.

4.27 **Storm Water** – Any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt.

4.28 **Total Suspended Solids** – The total suspended matter that floats on the surface of, or is suspended in, water, wastewater, or other liquid, and which is removable by laboratory filtering.

4.29 **Wastewater** – Liquid and water-carried industrial wastes and sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, which are contributed to the POTW.

4.30 **Wastewater Treatment Plant or Treatment Plant** – That portion of the POTW, which is designed to provide treatment of municipal sewage and industrial waste.

PART 5 – PROHIBITED DISCHARGES

5.1 General Prohibitions

The Permittee shall not introduce or cause to be introduced into the POTW any pollutant or wastewater, which causes Pass Through or Interference.

5.2 Specific Prohibitions

The Permittee shall not introduce or cause to be introduced into the POTW the following pollutants, substances, or wastewater:

A. Pollutants, which either alone or by interaction may create a fire or explosive hazard in the POTW, a public nuisance or hazard to life, or prevent entry into the sewers for their maintenance and repair or are in any way injurious to the operation of the system or operating personnel. This includes waste streams with a closed-cup flashpoint of less than 140 degrees F (60 degrees C) using the test methods specified in 40 CFR Part 261.21.

B. Wastewater having a pH less than 5.0 or more than 11.0, or otherwise having any other corrosive property capable of causing damage or hazard to structures, equipment, or personnel. Discharges outside this pH range may be authorized by the Executive Director through revisions of this Permit issued by the City pursuant to a finding that the system is specifically designed to accommodate a discharge of that pH.

C. Solid or viscous substances in amounts that may cause obstruction to the flow in the sewer or other interference with the operation of the system. In no case shall solids greater than 1/4 inch (0.64 cm) in any dimension be discharged.

D. Pollutants, including oxygen-demanding pollutants (Biochemical Oxygen Demand, etc.), released in a discharge at a flow rate and/or pollutant concentration, which, either singly or by interaction with other pollutants, will cause interference with the POTW.

E. Wastewater having a temperature that will interfere with the biological activity in the system, has detrimental effects on the collection system, or prevents entry into the sewer. In no case shall wastewater be discharged, which causes the wastewater temperature at the treatment plant to exceed 104 degrees F (40 degrees C).

F. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin, in amounts that will cause Interference or Pass Through.

G. Pollutants, which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

H. Trucked or hauled pollutants, except at discharge points designated by the Executive Director.

I. The following are prohibited unless approved by the Executive Director under extraordinary circumstances, such as lack of direct discharge alternatives due to combined sewer service or need to augment sewage flows due to septic conditions (as required under WAC 173-216-050).

1. Non-contact cooling water in volumes the Executive Director determines as significant.
2. Storm water, or other direct inflow sources.
3. Wastewaters affecting system hydraulic loading which do not require treatment, or would not be afforded a significant degree of treatment by the system, as determined by the Executive Director.

J. Noxious or malodorous liquids, gases, solids, or other wastewater, which, either singly or by interaction with other wastes, are sufficient to create a public nuisance or a hazard to life, or to prevent entry into the sewers for maintenance or repair.

K. Wastewater, which imparts color that cannot be removed by the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions, which consequently imparts color to the treatment plant's effluent, thereby violating LOTT's NPDES and/or Reclaimed Water permits.

L. Wastewater containing any radioactive wastes or isotopes except in compliance with applicable State or Federal regulations.

M. Storm water, surface water, ground water, artesian well water, roof runoff, subsurface drainage, swimming pool drainage, condensate, deionized water, noncontact cooling water, and unpolluted wastewater, unless specifically authorized by the Executive Director.

N. Sludges, screenings, or other residues from the pretreatment of industrial wastes.

O. Medical wastes, except as specifically authorized by the Executive Director and the City in a revision of this Permit.

P. Wastewater causing, alone or in conjunction with other sources, the treatment plant's effluent to fail a toxicity test.

Q. Detergents, surface-active agents, or other substances, which may cause excessive foaming in the POTW.

R. Fats, oils, or greases of animal or vegetable origin in concentrations greater than three hundred (300) mg/L, or Total Petroleum Hydrocarbon concentrations of no more than fifty (50) mg/L.

S. Wastewater causing two readings on an explosion hazard meter at the point of discharge into the POTW, or at any point in the POTW, of more than ten percent (10%) or any single reading over twenty percent (20%) of the Lower Explosive Limit based on an explosivity meter reading.

Pollutants, substances, or wastewater prohibited by this Section shall not be processed or stored in such a manner that they could be discharged to the POTW.

5.3 Dilution Prohibition

The Permittee shall not increase the use of process water, or in any way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with a discharge limit unless expressly authorized by an applicable pretreatment standard or requirement. The Executive Director may impose mass limitations on the Permittee where deemed appropriate to safeguard against the use of dilution to meet applicable pretreatment standards or requirements, or in other cases when the imposition of mass limitations is appropriate.

5.4 Affirmative Defense to Violating Prohibited Discharge Standards

The Permittee will have an affirmative defense to an enforcement action brought against it for noncompliance with the prohibitions in Section 5.1 and 5.2(A-G) of this Permit in certain cases, pursuant to 40 CFR Part 403.5(a)(2). The Permittee must be able to prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause Pass Through or Interference and that either:

A. A local limit exists for each pollutant discharged and the Permittee was in compliance with each limit directly prior to, and during, the Pass Through or Interference; or

B. No local limit exists, but the discharge did not change substantially in nature or constituents from the Permittee's prior discharge when LOTT was regularly in compliance with its NPDES and/or Reclaimed Water permits, and in the case of Interference, was in compliance with applicable sludge use or disposal requirements.

5.5 Bypass Notification and Reporting

A. For the purposes of this Section:

1. Bypass means the intentional diversion of wastestreams from any portion of a Permittee's treatment facility.

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, which 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. The Permittee may allow a bypass to occur if it does not cause pretreatment standards or requirements to be violated and is for essential maintenance to assure efficient operation.

C. Any other bypass must meet the following requirements:

1. The Permittee knowing in advance of the need for a bypass must submit prior notice to the Executive Director, at least ten (10) days before the bypass wherever possible; and

2. The Permittee must tell the Executive Director of any unanticipated bypass that exceeds applicable pretreatment standards within twenty-four (24) hours of becoming aware of the bypass. The Permittee must provide a written follow-up report within five (5) days. The Executive Director may waive the written report if the oral report was timely and complete. Unless waived, the written report must contain:

   a. A description of the bypass (volume, pollutants, etc.);

   b. What caused the bypass;

   c. When, specifically, the bypass started and ended;

   d. When the bypass is expected to stop (if ongoing); and

   e. What steps the Permittee has taken or plans to take to reduce, eliminate, and prevent the bypass from reoccurring.

D. Bypass is prohibited, and the City may take an enforcement action against the Permittee for a bypass, unless:

1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2. 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 back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment downtime or preventive maintenance; and

3. The Permittee submitted notices as required under Section 5.5(C) above.

E. The Executive Director may approve an anticipated bypass, after considering its adverse effects, if the Executive Director determines that it will meet the three (3) conditions listed in Section 5.5(D) above.

PART 6 – SPECIAL CONDITIONS

6.1 Excess Strength Charges

For industrial waste or other discharges exceeding the biochemical oxygen demand (BOD), total suspended solids (TSS), or total ammonia (TA) limits defined in Section 1.3(C) of this Permit, the following formula shall be used to determine the equivalent residential units (ERU) equivalency of the waste flow. The Executive Director may determine that all or part of Permittee's industrial waste or other discharge exceeding the limits defined in Section 1.3(C) results in a net benefit to the operation of the POTW, and may grant exemptions to the Permittee from some or all of the resulting surcharges.

This formula applies only to BOD and/or TSS concentrations in excess of 300 mg/L and total ammonia in excess of 60 mg/L.

A. ERU Equivalent for High Strength Waste shall be the sum of the following:

1. Flow Calculation:

$$(\text{P-FLOW}) \times \frac{\text{Industry flow (cu ft/ month)}}{\text{900 cu. ft. /ERU}} = \text{FLOW ERUs}$$

2. Biochemical Oxygen Demand Calculation:

$$(\text{P-BOD}) \times \frac{\text{Industry BOD (mg/L)}}{\text{300 mg/L}} \times \frac{\text{Industry Flow (cu ft/month)}}{\text{900 cu ft/ERU}} = \text{BOD ERUs}$$

3. Total Suspended Solids Calculation:

$$(\text{P-TSS}) \times \frac{\text{Industry TSS (mg/L)}}{\text{300 mg/L}} \times \frac{\text{Industry Flow (cu ft/month)}}{\text{900 cu ft/ERU}} = \text{TSS ERUs}$$

4. Total Ammonia Calculation:

$$(\text{P-TA}) \times \frac{\text{Industry TA (mg/L)}}{\text{60 mg/L}} \times \frac{\text{Industry Flow (cu ft/month)}}{\text{900 cu ft/ERU}} = \text{TA ERUs}$$

B. Explanation of terms:

1. (P-FLOW) = Percentage treatment costs associated with hydraulic flow, equal to twenty-nine percent (29%)
2. (P-BOD) = Percentage treatment costs associated with biochemical oxygen demand, equal to thirty-four percent (34%)
3. (P-TSS) = Percentage treatment costs associated with total suspended solids, equal to twenty-two percent (22%)
4. (P-TA) = Percentage treatment costs associated with total ammonia, equal to fifteen percent (15%)
5. ERU: (Equivalent Residential Unit) = to 900 cubic feet of wastewater containing a maximum of 300 mg/L of total suspended solids, a maximum of 300 mg/L of biochemical oxygen demand, and a maximum of 60 mg/L of total ammonia.
6. The percentage of treatment costs used in items Sections 6.1(B)(1-4) are calculated based on an average of documented treatment costs.

7. All monthly charges per ERU established by the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Clean Water Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999," as amended, shall apply to ERU's calculated by the preceding formulas.

6.2 Semi-annual Sampling and Reporting

Semi-annual sampling from Outfall 001 shall occur at least every six months and commence before June 30, 2013, consisting of the following:

Twice each calendar year the Permittee shall sample for the following total metals: Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, and Zinc. These samplings shall be performed on a typical full process workday. Samples shall be grab samples according to Section 2.1, Footnote 3. If Total Chromium in excess of 0.25 mg/L is detected, the Permittee shall immediately resample by grab sample and analyze for Hexavalent Chromium.

In addition, twice each calendar year the Permittee shall sample for Total Cyanide, Fats, oils & greases, and Hydrocarbon-based oils & greases. These samplings shall be performed on a typical full process workday. Samples shall be grab samples according to Section 2.1, Footnote 3. If Total Cyanide in excess of 0.25 mg/L is detected, the Permittee shall immediately resample by grab sample and analyze for Free Cyanide.

6.3 Accidental Discharge/Slug Discharge Control Plans

The Permittee shall develop, implement, and revise whenever additions or revisions have been made to the operation of the facility, an Accidental Discharge/Slug Discharge Control Plan (Plan), and take other actions the Executive Director believes are necessary to control discharges, which may be caused by spills or periodic non-routine activities. The Plan and any revisions shall be submitted to the Executive Director for approval prior to being adopted by the Permittee. Upon approval of the Plan by the Executive Director, failure of the Permittee to promptly revised the Plan to reflect changed conditions, or to follow the Plan in the event of a spill is a violation of this Permit. Accidental discharge/slug discharge control plans shall include at least the following:

A. A description of all discharge practices, including any non-routine batch discharges such as from cleaning, replenishment, or disposal;

B. A description of all stored chemicals, disclosing all ingredients in formulations, which could violate a discharge prohibition if discharged to the sewer;

C. The procedures for immediately notifying the Executive Director and the City of any accidental or slug discharge, as required by Section 3.7 of this Permit; and

D. The procedures that will be taken to prevent the occurrence or adverse impact from any accidental or slug discharge. Such procedures shall address the inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment for emergency response.

PART 7 – PRETREATMENT OF WASTEWATER

7.1 Pretreatment Facilities

The Permittee shall provide wastewater treatment as necessary to comply with this Permit and shall achieve compliance with all pretreatment standards, local limits, and the prohibitions set out in Sections 1 and 5 of this Permit within the time limitations specified by USEPA, the State, the City, or the Executive Director, whichever is more stringent. Any facilities necessary for compliance shall be provided, operated, and maintained at the Permittee's expense.

7.2. Proper Operation and Maintenance

The Permittee shall at all times be responsible for the proper operation and maintenance of any facilities or systems of control installed to achieve compliance with the terms and conditions of this Permit. Where design criteria have been established, the Permittee shall not permit flows or waste loadings to exceed approved design criteria. A current and approved Operation and Maintenance Manual shall be maintained by the Permittee to assure that procedures for proper operation and maintenance of the treatment facilities are documented and up to date. Proper operation and maintenance includes but is not limited to: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

7.3 Additional Pretreatment Measures

A. The Executive Director may immediately and effectively halt or prevent any discharge of pollutants to the POTW, which reasonably appear to present an imminent endangerment to the health or welfare of persons. In such cases, the Executive Director will provide the Permittee advance notice if possible, but shall not delay a response to imminent endangerment.

B. The Executive Director may halt or prevent any discharge to the POTW, which presents or may present an endangerment to the environment or, which threatens to interfere with the operation of the POTW (including the collection system and pump stations). In such cases, the Executive Director shall attempt to provide not only notice to the Permittee, but the opportunity to respond.

C. If the Permittee causes the Executive Director to exercise the emergency authorities provided for under Sections 7.3(A) and (B) above, the Permittee shall be responsible for reimbursement of all related costs to the Executive Director and the City.

D. The Executive Director may require the Permittee to reduce or curtail certain discharges to the sewer, designate that certain wastewater be discharged only into specific sewers, relocate and/or consolidate points of discharge, separate sewage wastestreams from industrial wastestreams, and take all other measures to protect the POTW and determine the Permittee's compliance with the requirements of this Permit.

E. The Executive Director and the City, based on the determination that such devices are necessary for implementation of pretreatment requirements, may require any Permittee to install and maintain, on their property and at their expense the following devices:

1. A sample taking facility accessible to the Executive Director

2. A suitable storage and/or flow equalization tank

3. Grease, oil, and/or grit interceptors

4. An approved combustible gas detection meter

F. The Permittee installing any of the above devices shall ensure they are of the type and capacity approved by the City, meet applicable building and plumbing codes, and conform to any separate requirements established by the City and the Executive Director. The Permittee shall locate units in areas easily accessible for cleaning and inspection by representatives of the City or Executive Director. The Permittee shall be responsible for all periodic inspection, cleaning, and repair of such devices.

7.4 Treatment Facility Plan Approval

The Permittee must comply with the regulations contained in Chapter 173-240 WAC, Submission of Plans and Reports for Construction of Wastewater Facilities, prior to the Permittee constructing or modifying, or proposing to construct or modify, any wastewater treatment facilities. Such plans and reports (Engineering Report, Plans and Specifications, and Operation and Maintenance Manuals) shall be submitted as required by Chapter 173-240 WAC to the Executive Director, the City, and the Department of Ecology for review, and the Permittee shall obtain approval from the Department of Ecology prior to construction. The review of such plans and operating procedures shall in no way relieve the Permittee from the responsibility of modifying such facilities as necessary to produce a discharge acceptable to the Executive Director and the City under the provisions of this Permit. To ensure conformance with this requirement, proof of the approval of such plans and one copy of each approved plan shall be provided by the Permittee to the Executive Director and the City before commencing any such construction or modification.

PART 8 – PERMIT ADMINISTRATION

8.1 Discharge Permit Fees

Annual discharge permit fees shall be levied on the Permittee based on three criteria: (1) permitted flow rate; (2) permit complexity; and (3) potential danger to the collection system or POTW. The Permittee will be evaluated annually by the Executive Director and placed in one of three categories; with Category III having the highest combination of flow, complexity, and risk. The Executive Director shall use the Permit Fee Category Criteria set forth in the following table.

PERMIT FEE CATEGORY CRITERIA

CRITERION	RANGE	DESCRIPTION	SCORE
Flow	High	>25,000 gpd	3
	Medium	1,000 – 25,000 gpd	2
	Low	<1,000 gpd	1
Complexity	High	Categorical SIU	3
	Medium	Non-Categorical SIU	2
	Low	MIU	1
Potential Danger	High	Excess Strength Discharge, High Spill Potential, Large Quantity Of Toxic Materials, High Flows	3
	Medium	All Others	2
	Low	Low Spill Potential, Low or No Excess Strength, Low Or No Toxics On Site, Low Flows	1

The total scores for all criteria determine the permit category and fee according to the following table. The Executive Director has determined that the Permittee designates as permit category I.

PERMIT FEES
2013

SCORE	CATEGORY	FEE
3-4	I	$292
5-7	II	$438
8-9	III	$583

These fees shall be adjusted each calendar year for inflation by an amount equal to ninety (90) percent of the change in the Seattle-Tacoma-Bremerton area Consumer Price Index for Urban Wage and Clerical Workers (CPI-W), as published by the United States Department of Commerce Bureau of Labor Statistics, for the preceding twelve (12) month period. These discharge permit fees are in addition to the excess strength charges required in Section 6.1.

8.2 Permit Issuance Process

A. Public Notice: The Permittee shall follow the procedures for public notice found in Section 8.6. The Executive Director shall consider and respond to public input as appropriate prior to issuance of a permit.

B. Permit Appeals: The Executive Director shall provide public notice of the issuance of a wastewater discharge permit. The Permittee may petition the City to reconsider the terms of this Permit within thirty (30) days of notice of its issuance. Failure to submit a timely petition for review shall be deemed to be a waiver of the administrative appeal. In its petition, the appealing party must indicate the wastewater discharge permit provisions objected to, the reasons for this objection, and the alternative condition, if any, it seeks to place in the wastewater discharge permit. The effectiveness of the wastewater discharge permit shall not be stayed pending the appeal. If the City fails to act within thirty (30) days, a request for reconsideration shall be deemed to be denied. Decisions not to reconsider this Permit, not to issue this Permit, or not to modify this Permit shall be considered final administrative actions for purposes of judicial review. Aggrieved parties seeking judicial review of the final administrative wastewater discharge permit decision must do so by filing a complaint with the Superior Court of Thurston County within ten (10) days of the final administrative action.

8.3 Wastewater Discharge Permit Modification

The City, after consulting with the Executive Director, may modify this Permit for good cause, including, but not limited to, the following reasons:

A. To incorporate any new or revised Federal, State, or local pretreatment standards or requirements including new or revised local limits;

B. To address new or changed operations, processes, production rates, waste streams, or changes in water volume or character;

C. To reflect conditions at the POTW requiring an authorized discharge to be reduced or curtailed. Such requirements may be either temporary or permanent;

D. Based on information indicating that a permitted discharge poses a threat to the Executive Director's and/or City's POTW or staff, the receiving waters, or to violate a prohibition of this Section;

E. To address violations of any terms or conditions of this Permit;

F. To address misrepresentations or failure to fully disclose all relevant facts in this Permit application or in any required report;

G. To incorporate revisions based on a variance from categorical pretreatment standards approved pursuant to 40 CFR Part 403.13;

H. To correct typographical or other errors in this Permit; or

I. To reflect a transfer of the facility ownership or operation to a new owner or operator as required under Section 8.4.

8.4 Wastewater Discharge Permit Transfer

This Permit may be transferred to a new owner or operator only if the Permittee gives at least thirty (30) days advance notice to the Executive Director and the City, and the Executive Director and the City approves the Permit transfer. Failure to provide advance notice of a transfer renders this Permit void as of the date of facility transfer. The notice to the Executive Director and the City must include a written certification by the new owner or operator, which:

A. States that the new owner and/or operator have no immediate intent to change the facility's operations and processes;

B. Identifies the specific date on which the transfer is to occur; and

C. Acknowledges full responsibility for complying with this Permit.

8.5 Wastewater Discharge Permit Revocation

The City may revoke this Permit for good cause, including, but not limited to, when the Permittee has:

A. Failed to notify the Executive Director of changes to the wastewater deemed significant by the Executive Director, prior to the changed discharge;

B. Failed to provide prior notification to the Executive Director of changed conditions pursuant to Section 3.6 of this Permit;

C. Misrepresented or failed to fully disclose all relevant facts in the wastewater discharge permit application;

D. Falsified self-monitoring reports or tampered with monitoring equipment;

E. Refused to allow the Executive Director timely access to the facility premises and records;

F. Failed to meet effluent limitations or Permit conditions;

G. Failed to pay applicable fines or sewer charges;

H. Failed to meet compliance schedule deadline dates;

I. Failed to complete a wastewater survey or wastewater discharge permit application;

J. Failed to provide advance notice of the transfer of business ownership;

K. Violated any pretreatment standard or requirement, or any terms of this Permit, or Permit;

L. Ceased operations; or

M. Transferred business ownership.

This Permit is void upon the issuance of a new wastewater discharge permit to the Permittee.

8.6 Permit Application for Renewal

A. The Permittee shall apply for wastewater discharge permit reissuance by submitting a complete permit application, using the form provided by the Executive Director, a minimum of ninety (90) days prior to the expiration of this Permit.

B. Persons applying for a new permit or a permit renewal or modification, which allows a new or increased pollutant loading shall publish notice for each application in the format provided by the Executive Director. Such notices shall fulfill the requirements of WAC 173-216-090. These requirements include publishing:

1. The name and address of the applicant and facility/activity to be permitted;

2. A brief description of the activities or operations, which result in the discharge;

3. Whether any tentative determination, which has been reached with respect to allowing the discharge;

4. The address and phone number of the office of the Executive Director where persons can obtain additional information;

5. The dates of the comment period (which shall be at least 30 days); and

6. How and where to submit comments or have any other input into the permitting process, including requesting a public hearing.

C. The Executive Director and the City may require the applicant to also mail this notice to persons who have expressed an interest in being notified, to State agencies and local governments with a regulatory interest, and to post the notice on the premises. If the Executive Director or the City determined there is sufficient public interest the City shall hold a public meeting following the rules of WAC 173-216-100.

D. The Executive Director or the City may assume responsibility for the public notice requirements for the Permittee contained in this Section.

PART 9 – COMPLIANCE MONITORING

9.1 Right of Entry: Inspection and Sampling

The Executive Director shall have the right to enter the premises of the Permittee to determine whether the Permittee is complying with all requirements of this Permit, LMC Chapter 13.10, or order issued hereunder. The Permittee shall allow the Executive Director ready access to all parts of the premises for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties.

A. Where the Permittee has security measures in force, which require proper identification and clearance before entry into its premises, the Permittee shall make necessary arrangements with its security guards so that, upon presentation of suitable identification, the Executive Director will be permitted to enter without delay for the purposes of performing specific responsibilities.

B. The Executive Director shall have the right to set-up on the Permittee's property, or require installation of, such devices as are necessary to conduct sampling and/or metering of the Permittee's operations.

C. The Permittee shall provide full access to the Executive Director to use any monitoring facilities and utilities available or required in accordance with Sections 7.1 and 7.3(E) and (F) to confirm that the standards or treatment required for discharge to the sewer are being met.

D. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the Permittee at the written or verbal request of the Executive Director and shall not be replaced. The costs of clearing such access shall be borne by the Permittee.

E. Any unreasonable delay in allowing the Executive Director full access to the Permittee's premises and wastewater operations shall be a violation of this Permit.

9.2 Search Warrants

The City, on behalf of the Executive Director, may seek issuance of a search warrant from the Superior Court of Thurston County. Such warrants may be secured when:

A. The Executive Director has been refused access or is unable to locate a representative who can authorize access to a building, structure, or property, or any part thereof, and has probable cause that a violation of this Permit is occurring on the premises;

B. The Executive Director has been denied access to inspect and/or sample as part of a routine inspection and sampling program of the Executive Director designed to verify compliance with this Permit, LMC Chapter 13.10, or order issued hereunder; or

C. The Executive Director has cause to believe there is imminent endangerment of the overall public health, safety, and welfare of the community by an activity on the premises.

PART 10– CONFIDENTIAL INFORMATION

Generally, information submitted to demonstrate compliance with pretreatment standards and requirements will be freely available to the public. To the extent such is consistent with State and Federal laws, the Permittee may have certain information treated as confidential if the following process is followed.

A. When the Permittee submits information to the City or Executive Director, or provides information to inspectors, the Permittee may request that specific information be maintained as confidential. The Permittee must promptly identify the specific information in writing, and describe why the release would divulge information, processes, or methods of production entitled to protection as trade secrets or confidential business information under applicable State or Federal laws.

B. Dependent on the agency receiving the request, the Executive Director or the City shall review and approve or deny such requests. When approved, the information shall not be publicized by the City unless required by State or Federal law.

C. All other information submitted to the Executive Director or the City and obtained from the Executive Director's or the City's oversight shall be available to the public subject to the Executive Director or the City records review policy.

D. Information held as confidential may not be withheld from governmental agencies for uses related to the NPDES or Reclaimed Water programs, or pretreatment program, or in enforcement proceedings involving the Permittee.

E. Federal rules prevent wastewater constituents and characteristics and other effluent data, as defined by 40 CFR Part 2.302 from being recognized as confidential information.

PART 11 – PUBLICATION OF SIGNIFICANT NONCOMPLIANCE

11.1 Publishing

The Executive Director must annually publish a list of permitted industries, which, at any time during the previous twelve (12) months, were in Significant Noncompliance with applicable pretreatment standards and requirements. The list will be published in a newspaper of general circulation that provides meaningful public notice within the jurisdictions served by the POTW.

11.2 Definition of Significant Noncompliance

For the purposes of this Section, the term **Significant Noncompliance** means:

A. Any violation of a pretreatment standard or requirement including numerical limits, narrative standards, and prohibitions, that the Executive Director determines has caused, alone or in combination with other discharges, Interference or Pass Through, including endangering the health of POTW personnel or the general public.

B. Any discharge of a pollutant that has caused imminent endangerment to the public or to the environment, or has resulted in the Executive Director's or City's exercise of its emergency authority to halt or prevent such a discharge.

C. Any violation(s), including of Best Management Practices, which the Executive Director determines will adversely affect the operation or implementation of the local pretreatment program.

D. Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent (66%) or more of all of the measurements taken for the same pollutant parameter taken during a rolling six (6) month period exceed, by any magnitude, a numeric pretreatment standard or requirement, including instantaneous limits of Section 1.3.

E. Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent (33%) or more of wastewater measurements taken for each pollutant parameter during a rolling six (6) month period equal or exceed the product of the numeric pretreatment standard or requirement, (including instantaneous limits, as defined by Section 1.3(B)), multiplied by the applicable criteria. Applicable criteria are 1.4 for Biochemical Oxygen Demand, Total Suspended Solids, fats, oils and greases, and 1.2 for all other pollutants except pH.

F. Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in this Permit or enforcement order for starting construction, completing construction, or attaining final compliance.

G. Failure to provide any required report within forty-five (45) calendar days after the due date. This includes initial and periodic monitoring reports, and reports on initial compliance and on meeting compliance schedules.

H. Failure to accurately report noncompliance.

11.3 Applicability

The criteria in Sections 11.2(A-C) are applicable to all permitted industries, whereas the criteria in Sections 11.2(D-H) are only applicable to Significant Industrial Users.

PART 12– ADMINISTRATIVE ENFORCEMENT REMEDIES

12.1 Notification of Violation

The City may serve a written Notice of Violation on the Permittee that the City and/or the Executive Director finds the Permittee has violated any provision of this Permit, including terms or requirements of an ordinance, order, or a pretreatment standard or requirement. In all cases in this Permit, a continuation of a violation of a provision of this Permit is a "violation." The Permittee shall, in response to a Notice of Violation, provide the City a written explanation of the violation, its cause, and a corrective action plan within thirty (30) days of the receiving this notice. The Permittee submitting plans to correct noncompliance must include the specific actions they will take to correct ongoing and prevent future violations at the soonest practicable date. The City's acceptance of a plan does not relieve the Permittee of liability for any violations. The City may also take any action, including emergency actions of any other enforcement action, without first issuing a Notice of Violation.

12.2 Consent Orders

The City may enter into a Consent Order or other voluntary agreement to memorialize agreements with the Permittee for violating any requirement of this Permit after consultation with the Executive Director. Such agreements must include the specific action(s) required and date(s) they are to be completed to correct the noncompliance. Such documents must be constructed in a judicially enforceable manner, and have the same force and effect as administrative orders issued pursuant to Sections 12.4 and 12.5 of this Permit.

12.3 Show Cause Hearing

After consultation with the Executive Director, the City may propose actions in response to a violation of any provision of this Permit, including a provision of an ordinance, order, or a pretreatment standard or requirement. The City will notify the Permittee of the violation, the proposed action, the rationale, and the Permittee's rights and obligations to provide evidence why the proposed enforcement action should not be taken, and to provide its support for any alternative it proposes at this meeting. The Permittee shall have the right to a show cause hearing to contest the City's action provided for by this Permit or determination that the Permittee has violated a compliance schedule order.

Any hearing pursuant to this Section must be requested by the Permittee in writing within fifteen (15) business days after the Permittee receives notice of the City's proposed action. The Permittee's written request for hearing shall be filed with the Executive Director.

The hearing authorized by this Section shall be held before the LOTT Technical Sub-Committee (TSC). Formal rules of evidence shall not apply, but the Permittee and the City shall have the right to present witnesses and other evidence. The TSC shall issue a written decision within fourteen (14) business days of the conclusion of the hearing.

The Permittee shall have the right to make an electronic or stenographic record of the proceedings. Such record shall be made at the Permittee's expense.

The TSC may, by resolution or Permit, adopt additional rules for the conduct of hearings pursuant to this Section.

A show cause hearing shall not be a bar against, or prerequisite for, taking any other action against the Permittee.

12.4 Compliance Orders

The City, after consulting with the Executive Director, may issue a compliance order to the Permittee, if the Permittee has violated any provision of this Permit including a requirement of a Permit, order, or a pretreatment standard or requirement. The compliance order may direct that the Permittee come into compliance within a specified time, install and properly operate adequate treatment facilities or devices, or take such measures as the City or Executive Director finds are reasonably necessary. These measures may include additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. A compliance order may not extend the deadline for compliance established for a pretreatment standard or requirement, or relieve the Permittee of liability for any violation, including a continuing violation. If the Permittee does not come into compliance within the time provided, sewer service may be discontinued. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

12.5 Cease and Desist Orders

When the City and/or Executive Director finds that the Permittee has violated, or continues to violate, any provision of this Permit, an ordinance, an order issued hereunder, or any other pretreatment standard or requirement, or that the Permittee's past violations are likely to recur, the City may, after consultation with the Executive Director, issue an order to the Permittee directing it to cease and desist all such violations and directing the Permittee to:

A. Immediately comply with all requirements; and

B. Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge. Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

12.6 Administrative Fines

A. When the City finds that the Permittee has violated, or continues to violate, any provision of this Permit, an ordinance, an order issued hereunder, or any other pretreatment standard or requirement, the City may, after consultation with the Executive Director, fine such Permittee in an amount not to exceed ten thousand dollars ($10,000). Such fines shall be assessed on a per violation, per day basis. In the case of monthly or other long-term average discharge limits, fines shall be assessed for each day during the period of violation.

B. The City may add the costs of any emergency response, additional monitoring, investigation, and administrative costs related to the noncompliance and the City's response to the situation, to the amount of the fine.

C. The City will consider the economic benefit gained by the Permittee as a result of the noncompliance in cases where there appears to have been a monetary benefit from not complying. In such cases, the City shall ensure that fines, to the maximum amounts allowable, exceed the benefit to the Permittee from the noncompliance.

D. Unpaid charges, fines, and penalties shall, at thirty (30) calendar days past the due date, be assessed an additional penalty of one percent (1%) of the unpaid balance, and interest shall accrue thereafter at a rate of one percent (1%) per month, or at the rate allowed by law if different from the foregoing. After thirty (30) days, the City shall be authorized to file a lien against the Permittee's property for unpaid charges, fines, and penalties.

E. If the Permittee wishes to dispute such fines, the Permittee must file a written request for the City to reconsider the fine along with full payment of the fine amount within fifteen (15) working days of being notified of the fine. Where a request has merit as determined by the City and Executive Director, the City may convene a hearing on the matter pursuant to Section 12.3 of this Permit. In the event the Permittee's appeal is successful, the City shall rebate the difference between the initial and final penalty amounts to the Permittee.

F. Issuance of an administrative fine shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

12.7 Emergency Suspensions

The City may immediately suspend the Permittee's discharge (or threatened discharge) when it reasonably appears to present a substantial danger to the health or welfare of persons. In such cases, the City will first provide informal notice to the Permittee. The City may also immediately suspend the Permittee's discharge, after notice and opportunity to respond, that threatens to interfere with the operation of the POTW, or which presents, or may present, a danger to the environment.

A. The Permittee, when notified of a suspension of its discharge, shall immediately stop or eliminate its contribution. If the Permittee fails to immediately comply voluntarily with the suspension order, the City may take such steps as deemed necessary to protect the public and its interest in the sewer system. Remedies available to the City include immediately severing the sewer connection, at the Permittee's expense, turning off pump stations downstream of the Permittee, and partnering with law enforcement. The City may not allow the Permittee to recommence its discharge until the Permittee has demonstrated to the satisfaction of the City that the situation warranting the suspension has been properly addressed and any proposed Termination proceeding has been resolved.

B. When the Permittee is responsible, in whole or in part, for any discharge presenting imminent endangerment, the Permittee shall submit a detailed written statement, describing the causes of the harmful contribution and the measures taken to prevent any future occurrence. The Permittee shall submit this report to the City prior to the date of any show cause or termination hearing under Sections 12.3 and 12.8 of this Permit.

Nothing in this Section shall be interpreted as requiring a hearing prior to any Emergency Suspension under this Section.

12.8 Termination of Discharge

If the Permittee violates the following conditions, the Permittee is subject to having the privilege of discharging to the public sewer system withdrawn:

A. Discharge of non-domestic wastewater not authorized by this Permit, including

1. Where the appropriate Permit revision has not been requested;

2. Where the appropriate Permit revision has not yet been issued; or

3. Where this Permit has been denied or revoked based on the provisions of Section 8.5, Wastewater Discharge Permit Revocation, of this Permit.

B. Violation of Permit terms and conditions including:

1. Exceeding any Permit limit;

2. Failing to meet other pretreatment standards or requirements;

3. Violating any prohibition; or

4. Failing to properly monitor and report discharges or changed conditions.

C. Refusal of reasonable access to the Permittee's premises for the purpose of inspection, monitoring, or sampling (whether subject to a permit or not).

D. Violation of the pretreatment standards and requirements in Sections 1 and 5 of this Permit, including failure to satisfy Industrial Permittee Survey requirements.

When the City determines this remedy is necessary and appropriate to fulfill the intentions of this Permit, and after consulting with the Executive Director, the Permittee will be notified of the proposed termination of its discharge and be offered an opportunity to show cause, under Section 12.3 of this Permit, why the proposed action should not be taken. Exercise of this option by the City shall not be a bar to, or a prerequisite for, taking any other action against the Permittee.

PART 13 – JUDICIAL ENFORCEMENT REMEDIES

13.1 Injunctive Relief

The City may seek injunctive relief when the Permittee has violated, or continues to violate a provision of this Permit, including an ordinance, pretreatment standard or requirement, or an order issued hereunder. In such cases, the City may petition the Superior Court of Thurston County through the City's Attorney for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels the specific performance of this Permit, an ordinance, order, or other requirement imposed by this Permit on activities of the Permittee. The City may also seek such other action as is appropriate for legal and/or equitable relief, including a requirement for the Permittee to conduct environmental remediation. A petition for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

13.2 Civil Penalties

A. If the Permittee violates, or continues to violate a provision of this Permit, including a pretreatment standard or requirement, Permit, or order issued hereunder shall be liable to the City for a maximum civil penalty of ten thousand dollars ($10,000) per violation, per day. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of the violation.

B. The City may recover reasonable attorneys' fees, court costs, and other expenses associated with any emergency response, enforcement activities, additional monitoring and oversight, and costs of any actual damages to the City or LOTT.

C. Filing a suit for civil penalties shall not be a bar against, or a prerequisite for, any other action the City may take to resolve noncompliance by the Permittee.

13.3 Criminal Prosecution

A. If the Permittee willfully or negligently violates any provision of this Permit, an ordinance, or order issued hereunder, or any other pretreatment standard or requirement, the Permittee shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than ten thousand dollars ($10,000) per violation, per day, or imprisonment for not more than one (1) year, or both.

B. If the Permittee negligently introduces any substance into the POTW, which causes personal injury or property damage, the Permittee shall, upon conviction, be guilty of a misdemeanor. If the Permittee willfully introduces any substance into the POTW, which causes personal injury or property damage, the Permittee shall, upon conviction, be guilty of a gross misdemeanor. The Permittee, if convicted, will also be subject to prosecution for violation of any other laws, which may be applicable.

C. If the Permittee knowingly makes any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to be maintained, pursuant to this Permit, Permit, or order issued hereunder, or falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this Permit, the Permittee shall, upon conviction, be punished by a fine of not more than ten thousand dollars ($10,000) per violation, per day, or imprisonment for not more than one (1) year, or both.

D. In the event of a second conviction, the Permittee shall be punished by a fine of not more than ten thousand dollars ($10,000) per violation, per day, or imprisonment for not more than one (1) year, or both.

13.4 Remedies Nonexclusive

The remedies provided for in this Permit are not exclusive. The City may take any, all, or any combination of these actions against the Permittee if found to be non-compliant. Enforcement of pretreatment violations will generally be in accordance with LOTT's Enforcement Response Plan. However, the City may take other action against the Permittee when the circumstances warrant. Further, the City is empowered to take more than one enforcement action against the Permittee when found to be non-compliant.

PART 14 – SUPPLEMENTAL ENFORCEMENT ACTION

14.1 Penalties for Late Reports

The City may assess a penalty of up to fifty dollars ($50) to the Permittee for each day that a report required by this Permit, an ordinance, or order issued hereunder is late. Penalties accrue beginning the fifth (5th) day after the report is due. The City's actions to collect late reporting penalties shall not limit the City's authority to initiate any other enforcement action.

14.2 Performance Bonds

The City may require a satisfactory bond, payable to the City, in a sum not to exceed a value determined by the City and Executive Director as necessary to assure the Permittee will achieve consistent compliance with this Permit. The Executive Director may require this bond as an enforcement response or as a prerequisite to issue or reissue this Permit. Any Permittee who has failed to comply with any provision of this Permit, a previous permit or order issued hereunder, an ordinance, or any other pretreatment standard or requirement may be subject to this requirement. This bond may also be required of any category of permitted industry, which has led to public burdens in the past regardless of the compliance history of the particular industry. The City may use this bond to pay any fees, costs, or penalties assessed to the Permittee whenever the Permittee's account is in arrears for over thirty (30) days. This includes the costs of cleanup of the site if the Permittee goes out of business, sells the business to a person that does not first assume the bond, or goes bankrupt. The Permittee may petition the City to convert their performance bond to a requirement to provide Liability Insurance, or to forego any such safeguard based on their performance. The Permittee may petition no more frequently than once in any twelve (12) month period.

14.3 Liability Insurance

The City may require the Permittee to provide liability insurance at its discretion. In such cases, the Permittee must provide proof that the insurance is sufficient to cover any liabilities incurred under this Permit, including the cost of damages to the POTW and the environment caused by the Permittee. The City may require the Permittee to provide the proof of such insurance prior to issuing or reissuing this Permit.

14.4 Payment of Outstanding Fees and Penalties

The City may decline to reissue this Permit to the Permittee if the Permittee has failed to pay any outstanding fees, fines, or penalties incurred as a result of any provision of this Permit, a previous permit or order issued hereunder, or an ordinance.

14.5 Water Supply Severance

The City may order water service to the Permittee severed whenever the Permittee has violated or continues to violate any provision of this Permit, an ordinance, or order issued hereunder, or any other pretreatment standard or requirement. If the Permittee wishing to restore their service, the Permittee must first demonstrate their ability to comply with this Permit and pay the related costs of this action.

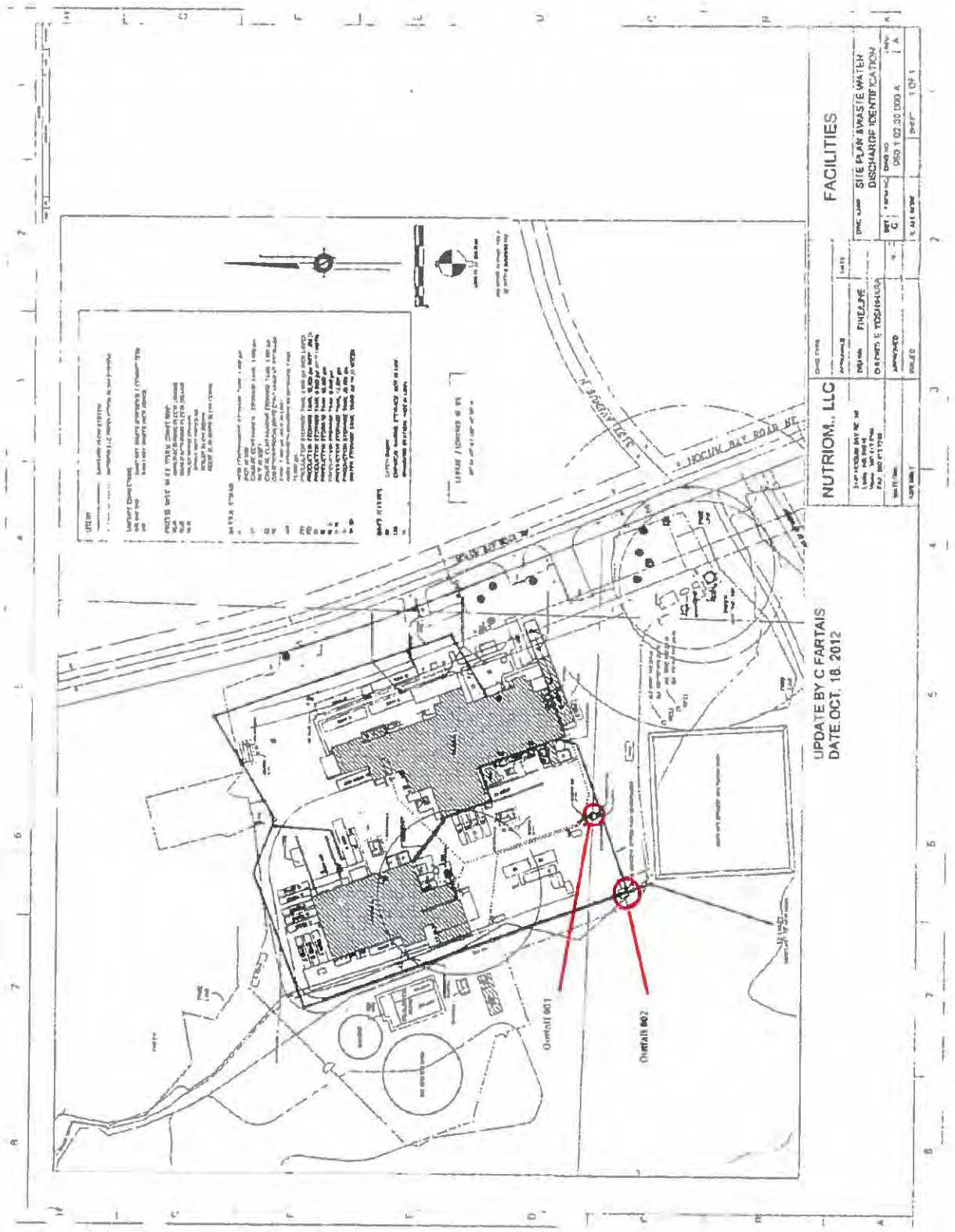
14.6 Public Nuisances

A violation of any provision of this Permit, an ordinance, or order issued hereunder, or any other pretreatment standard or requirement, is hereby declared a public nuisance and shall be corrected or abated as directed by the City. Any person creating a public nuisance shall be subject to the provisions of City's Municipal Code governing such nuisances, including reimbursing the City for any costs incurred in removing, abating, or remedying said nuisance.

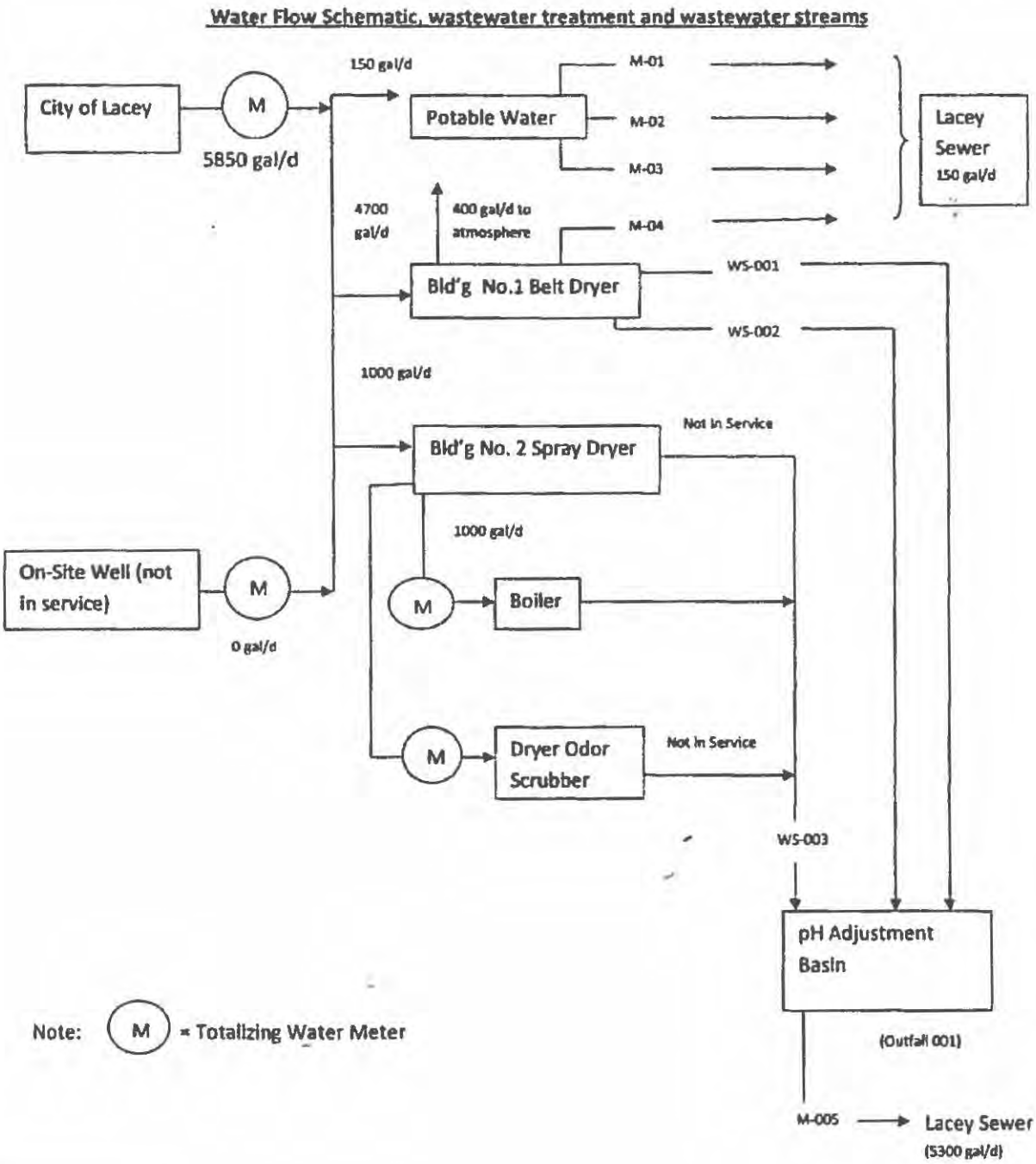
APPENDIX I

SITE PLAN & FLOW CHART

a. Site Plan with Outfall Locations



b. Water Flow Chart



CITY OF LACEY
Shaping our community together
420 COLLEGE STREET SE
LACEY, WA 98503-1238

COPY

WASTEWATER DISCHARGE PERMIT No. LA-004

In accordance with the provisions of Section 13.10 of the Lacey Municipal Code:

Thurston County Public Works
9605 Tilley Road S. STE D
Olympia, WA 98512

hereafter referred to as "Permittee", is hereby authorized to discharge industrial wastewater from the following facility:

Thurston County Waste and Recovery Center located at 2418 Hogum Bay Road NE in Lacey, WA

through the outfalls identified herein into the LOTT Clean Water Alliance (LOTT) Publicly Owned Treatment Works (POTW) via the City of Lacey (City) and/or other LOTT Partner sanitary sewer collection system in accordance with the conditions set forth in this Permit. Compliance with this Permit does not relieve the Permittee of its obligation to comply with any or all applicable pretreatment regulations, standards or requirements under local, state, and federal laws, including any such regulations, standards, requirements, or laws that may become effective during the term of this Permit.

Noncompliance with any term or condition of this Permit shall constitute a violation of the Lacey Municipal Code, Section 13.10.

This Permit shall become effective at 12:01 PM on September 29, 2012, and shall expire at 11:59 PM on September 28, 2017.

If the Permittee wishes to continue to discharge after the expiration date of this Permit, an application must be filed for a renewal permit in accordance with the requirements of Chapter 13.10.010 of the Lacey Municipal Code, and Section 8.6 of this Permit, a minimum of ninety (90) days prior to the expiration date.

By: Scott G

Scott Egger, P.E.
Director of Public Works
City of Lacey

By:

Michael D. Strub, P.E.
Executive Director
LOTT Clean Water Alliance

Issued this 28Th day of September 2012

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SUBMITTAL SCHEDULE

PERMIT SECTION	SUBMITTAL	FREQUENCY	FIRST SUBMITTAL
3.2	Discharge Monitoring Report	Monthly	15th of month following required monitoring
3.3	Reports of Additional Monitoring by the Permittee	As Needed	As Required
3.8	Notification of Violation/Repeat Sampling and Reporting	As Needed	As Required
3.7	Reports of Potential Problems	As Needed	As Required
5.5	Bypass Notification and Reporting	As Needed	As Required
3.9	Notification of Discharge of Hazardous Waste	As Needed	As Required
3.6	Reports of Changed Conditions	As Needed	30 days prior to commencing
6.2	Volatile and Semi-Volatile Organics Sampling	1/Permit Cycle	As required; to occur by November 29, 2012
6.3	Accidental Discharge/Slug Discharge Control Plans	Update current Plan on file whenever significant facility revisions are planned or have been implemented	Whenever significant facility revisions have been implemented
8.6	Permit Application for Renewal	1/Permit Cycle	90 days prior to expiration date of Permit

PART 1 - DISCHARGE REQUIREMENTS

1.1 Description of Outfalls

Beginning on the effective date of this Permit and lasting through the expiration date, the Permittee is authorized to discharge process and/or domestic wastewater to the City of Lacey and LOTT POTW from the outfalls listed below:

Outfall	Descriptions
001	Aerated leachate lagoon effluent discharge pipe, located at: N 47° 03' 58.44" W 122° 44' 55.24"
002	Sanitary sewer pump station wetwell, located at: N 47° 03' 57.6" W 122° 45' 2.0"
003	Sanitary sewer pumping station, located at: N 47° 03' 53.4" W 122° 45' 52.6"
004	Aerated leachate lagoon influent, located at: N 47° 04' 1.4946" W 122° 44' 53.39"
005	Vactor Waste Decant Facility, discharges into Outfall 001, located at: N 47° 04' 0.9685" W 122° 44' 50.4"

1.2 Waste Streams at Each Outfall

During the term of this permit, the discharge from Outfall 001 shall consist of:

1. Leachate extracted from the sealed municipal solid waste landfill cell,
2. Runoff from the yard waste composting pad,
3. Condensate from traps at gas flare station,
4. Precipitation that has fallen directly into the aerated leachate lagoon, and
5. Vactor waste decanted water and liquid from dewatering solids.

During the term of this permit, the discharge from Outfall 002 shall consist of:

1. Domestic wastewater from the inbound scale house and solid waste transfer station, and
2. Process wastewater and other liquids generated from operating the solid waste transfer station.

During the term of this permit, the discharge from Outfall 003 shall consist of:

1. The combined flows of Outfall 001 and Outfall 002.

During the term of this permit, the discharge from Outfall 005 shall consist of:

1. Vactor waste decanted water and liquid from dewatering solids, and
2. Precipitation falling on drainage areas.

1.3 Effluent Limitations

Beginning on the effective date of this Permit, and lasting through the expiration date, the Permittee shall not discharge wastewater from Outfall 003 in excess of the following effluent limitations:

ANALYTE	DAILY MAXIMUM CONCENTRATION LIMIT	DAILY MAXIMUM LOADING LIMITS (1,000 gallons per day or less)
Arsenic	0.2 mg/L	0.002 lbs. per day
Cadmium	0.2 mg/L	0.002 lbs. per day
Chromium	1.0 mg/L	0.008 lbs. per day
Chromium (hexavalent)	0.25 mg/L	0.002 lbs. per day
Copper	0.5 mg/L	0.004 lbs. per day
Cyanide (total)	0.64 mg/L	0.005 lbs. per day
Cyanide (free)	0.25 mg/L	0.002 lbs. per day
Lead	0.4 mg/L	0.004 lbs. per day
Mercury	0.05 mg/L	0.0004 lbs. per day
Nickel	0.5 mg/L	0.004 lbs. per day
Silver	0.2 mg/L	0.002 lbs. per day
Zinc	1.0 mg/L	0.008 lbs. per day
Fats, oils, & greases of animal or vegetable origin	300 mg/L	Any amount
Hydrocarbon-based oils & greases	50 mg/L	Any amount
Minimum pH	5.0 standard units	N/A
Maximum pH	11.0 standard units	N/A
Reduction in POTW effluent ultra violet transmissivity (per cm at 254 nm wavelength)	10% reduction	N/A
Decrease in POTW maximum effluent no observed effect concentration (NOEC) in any whole effluent toxicity test	10% decrease	N/A

WASTE LOADING PARAMETER	DAILY MAXIMUM (with authorization)	DAILY MAXIMUM (without authorization)	MONTHLY AVERAGE (measured over calendar month)
Flow	100,000 Gallons/day	50,000 Gallons/day	50,000 Gallons/day

A. The Permittee shall notify the POTW to request authorization twenty-four hours prior to increasing effluent flows from the aerated leachate lagoon to the sanitary sewer above 50,000 gallons per day. No flows over 50,000 gallons per day are authorized without prior approval from the Industrial Waste Program Supervisor.

B. All concentrations for metallic substances are for total metal unless indicated otherwise. The Executive Director may impose mass limits in addition to concentration-based limits.

C. The Permittee shall be subject to "instantaneous limits" (as determined by a grab sample) of equal to twice the above "daily maximum" concentrations for any pollutant for which a composite sample is required in this Permit. This provision is inapplicable to the Permittee when there is no permit requirement to collect a composite sample for the analyte in question.

ANALYTE	EXCESS STRENGTH CHARGES THRESHOLD LIMIT	PERMITTED DISCHARGE THRESHOLD AMOUNT
Biochemical Oxygen Demand (BOD_5)	300 mg/L	2.5 lbs. per day
Total Suspended Solids	300 mg/L	2.5 lbs. per day
Total Ammonia, as ammonia (NH_3) and ammonium ion (NH_4^+)	60 mg/L	0.5 lbs. per day

D. If the Permittee discharges Biochemical Oxygen Demand, Total Suspended Solids, or Total Ammonia in excess of the concentration limits or threshold amounts listed above, the Permittee will be subject to surcharges as established in and under the authority of Section 14.1 up to any maximum loading limit established by this Permit.

E. The City may use this Permit to establish ceiling limits for compatible pollutants and appropriate discharge limits for all other pollutants not contained in this Section. This includes pollutants subject to regulation under RCRA, volatile or semi-volatile organics, halogenated or brominated compounds, poly-aromatic hydrocarbons, polymers, surfactants, pesticide active ingredients, and any other pollutant.

1.4 Requirement to Apply AKART

The Permittee shall provide all known, available, and reasonable methods of prevention, control and treatment (AKART) as required to comply with this Permit and local, State and Federal regulations, and shall achieve compliance with all applicable pretreatment standards and requirements within the time limitations as specified by appropriate statutes, regulations, chapters and ordinances. Any facilities required to treat wastewater to satisfy applicable pretreatment standards and requirements contained in this Permit, shall be supplied, properly operated, and maintained at the Permittee's expense.

1.5 Best Management Practices

The Executive Director may establish, and the City require, Best Management Practices (BMPs) for any category of industry or type of industrial process, which creates a non-domestic waste stream. Such requirements may be applied either in lieu of or in addition to the effluent limitations contained in Section 1.3. BMPs may also include alternative limits, which may be applied at the end of a specific process or treatment step instead of at the combined effluent.

1.6 Right of Revision

The Executive Director and the City reserves the right to establish, by this Permit, more stringent standards or requirements on discharges to the POTW.

PART 2– MONITORING REQUIREMENTS

2.1 Monitoring Schedule

From the period beginning on the effective date of this Permit and lasting through the expiration date, the Permittee shall monitor Outfall 003 for the following parameters, at the indicated frequency:

Parameter (units)	Locations	Frequency	Sample Type
BOD_5 (mg/L)	003	Three/month[2]	24-hour flow-proportioned composite
TSS (mg/L)	003	Three/month[2]	24-hour flow-proportioned composite
pH	003	Once/Week	Grab/Meter
Fats, oils, & greases of animal or vegetable origin (mg/L)	003	Once/month	Grab
Hydrocarbon-based oils & greases (mg/L)	003	Once/month	Grab
Arsenic, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Cadmium, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Chromium, total [1](mg/L)	003	Once/month	24-hour flow-proportioned composite
Copper, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Lead, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Mercury, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Molybdenum, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Nickel, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Selenium, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Silver, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Zinc, total (mg/L)	003	Once/month	24-hour flow-proportioned composite
Cyanide, total[1] (mg/L)	003	Once/month	Grab
EPA 624 Volatiles	003	1/Permit cycle	Grab
EPA 625 Semi-Volatiles	003	1/Permit cycle	24-hour flow-proportioned composite

From the period beginning on the effective date of the Permit and lasting through the expiration date, the Permittee shall monitor Outfalls 001 and 002 for the following parameters, at the indicated frequency:

Parameter (units)	Locations	Frequency	Sample Type
Flow (gallons/day)	001 & 002	Continuously	Meter
Ammonia (mg/L)	001	Once/month	24-hour flow-proportioned composite
Total Dissolved Solids (mg/L)	001	Once/month	24-hour flow-proportioned composite
pH (SU)	001	Once/month	Grab/Meter
Temperature (degrees Celsius)	001	Once/month	Grab/Meter
Conductivity (*u*mho/cm)	001	Once/month	Grab/Meter
Dissolved Oxygen (mg/L)	001	Once/month	Grab/Meter

[1] If total chromium in excess of 0.25 mg/l is detected, the Permittee shall immediately resample by grab sample and analyze for hexavalent chromium; if total cyanide in excess of 0.25 mg/l is detected, the Permittee shall immediately resample and analyze for free cyanide.

[2] Samples for biochemical oxygen demand (BOD_5) and total suspended solids (TSS) shall be collected during three consecutive days in accordance with Part 2.4 of this permit

No sampling from Outfall 001 will be required during periods when there is no discharge from Outfall 001 for the entire month.

2.2 Analytical Requirements

All pollutant sampling and analyses required under this Permit shall conform to the most current version of 40 CFR Part 136. If 40 CFR Part 136 does not contain sampling or analytical techniques for a pollutant, or the Executive Director determines that the Part 136 sampling and analytical techniques are inconsistent with the goal of the sampling, the Executive Director may specify an analytical method. If neither case applies, the Permittee shall use validated analytical methods or applicable sampling and analytical procedures approved by USEPA.

2.3 Recording of Results

For each measurement or sample taken, the Permittee shall record the following information:

A. The date, exact place, and time of the sampling;

B. The method of sample taking and preservation;

C. The names of the person(s) who performed the sampling or measurements, and each person with custody of the sample until analysis;

D. The date(s) analyses were performed and who performed them;

E. The analytical techniques or methods used;

F. The results of such analyses, and;

G. All quality control/quality assurance results pertaining to the analyses.

This information shall be included in the Discharge Monitoring Report described in Section 3.2 of this Permit. Additional information, such as laboratory raw data, shall be submitted to the Executive Director upon request.

2.4 Representative Sampling

A. The Permittee must ensure that all samples collected to satisfy sampling requirements under this Permit are representative of the range of conditions occurring during the reporting period. Samples and measurements taken to meet the requirements of this Permit shall be representative of the volume and nature of the monitored discharge(s) and the discharges monitored shall be representative of daily operations.

B. All samples shall be taken at the monitoring points specified in this Permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water or substance. All equipment used for sampling and analysis must be routinely calibrated, inspected, and maintained to ensure its accuracy. Monitoring points shall not be changed without notification to and the approval of the Executive Director.

2.5 Sample Collection and Analysis

A. The Permittee must use properly cleaned sample containers appropriate for the sample analysis and sample collection and preservation protocols specified in 40 CFR Part 136 and appropriate USEPA guidance.

B. The Permittee must obtain samples for oil and grease, temperature, pH, cyanide, total, and volatile organic compounds using grab collection techniques.

C. For certain pollutants, the Permittee may composite multiple grab samples taken over a 24-hour period. The Permittee may composite grab samples for cyanide either in the laboratory or in the field, and may composite grab samples for volatile organics and oil & grease in the laboratory prior to analysis.

D. For all other pollutants, the Permittee must be representative of the volume and nature of the monitored discharge(s) and the discharges monitored shall be representative of daily operations.

E. The Executive Director may authorize composite samples for parameters unaffected by the compositing procedures, as appropriate.

F. The Executive Director may require grab samples either in lieu of or in addition to composite sampling to show compliance with instantaneous discharge limits.

G. In all cases, the Permittee must take care to ensure the samples are representative of their wastewater discharges.

2.6 Requirements for Laboratory Accreditation

All required monitoring data shall be analyzed by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, Accreditation of Environmental Laboratories, except for flow, temperature, total suspended solids, conductivity, pH, turbidity, and internal process control parameters. However, if the laboratory analyzing samples for conductivity, pH, and turbidity must otherwise be accredited, it shall be accredited for these parameters as well.

PART 3 – REPORTING REQUIREMENTS

3.1 Where to Send Reports or Make Notifications

All reports required by this Permit shall be submitted to LOTT at the following address:

Environmental Compliance Supervisor
LOTT Clean Water Alliance
500 Adams Street NE
Lacey, WA 98501-1073

Telephone notification shall be made to the LOTT Environmental Compliance Supervisor at phone number (360) 528-5708, or if unavailable, to the LOTT Budd Inlet Treatment Plant at phone (360) 528-5700.

3.2 Scheduled Reports – Discharge Monitoring Reports

The Permittee shall summarize and report the results of all monitoring of pollutants discharged to the POTW. This information shall be compiled each month and reported on a form provided by or approved by the City. Each report shall be submitted, along with the information described in Section 2.3 of this Permit, by the fifteenth (15^{th}) day of the following month. Monitoring shall begin on the effective date of this Permit and each pollutant shall be sampled within the specified sampling interval.

3.3 Reports of Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this Permit using test procedures prescribed in 40 CFR Part 136 or amendments thereto, or otherwise approved by EPA or specified in this Permit, the results of such monitoring shall be included in calculating the daily maximum and monthly average pollutant discharges, and the results of the additional sampling shall be reported in the Discharge Monitoring Report.

3.4 Date of Receipt of Reports

The Executive Director will credit written reports as having been submitted on the date of the post mark when mailed through the United States Postal Service. Reports delivered in any other manner will be credited as having been submitted on the business day received.

3.5 Record Keeping

The Permittee shall retain the information listed in Section 2.3 for all monitoring required by this Permit and for any additional monitoring, which could be used to satisfy minimum monitoring requirements. The Permittee must make these records available for inspection and copying at the location of the discharge. The Permittee must similarly maintain documentation associated with any Best Management Practices required under authority of Section 1.5.

Permittee shall retain quality control and quality assurance information provided by the laboratory and submit this information in routine reporting. For analytes for which Washington State requires use of a certified/accredited laboratory, the Permittee must maintain the scope of accreditation for laboratories performing any analyses for them.

The Permittee shall maintain the above records for at least three (3) years, until any litigation concerning the Permittee or the City, or the Executive Director is complete, or for longer periods when the Permittee has been specifically notified of a longer retention period by the Executive Director.

3.6 Reports of Changed Conditions

The Permittee must notify the Executive Director of any changes to the Permittee's operations or system, which might alter the nature, quality, or volume of its wastewater. This notification must be made at least thirty (30) days before the desired change and be sent to both the Control Authority (Executive Director) and the receiving POTW if they are different. In such cases:

A. The Executive Director may require the Permittee to submit whatever information is needed to evaluate the changed condition. The Executive Director may also require the Permittee to submit a new or revised wastewater discharge permit application.

B. The City may reissue or modify this Permit, applying the procedures of Section 8.3(B) of this Permit, in response to a Permittee's notice under this Section.

3.7 Reports of Potential Problems

A. Any Permittee, which has any unusual discharge that could cause problems to the POTW must immediately notify the Executive Director by telephone of the incident. This notification shall include the location of the discharge, type of waste, concentration and volume, if known, and corrective actions taken by the Permittee to control and curtail the discharge. Such discharges may include spills, slug loads, accidental discharges, or other discharges of a non-routine, episodic nature. Problems to the POTW which require reporting under this Section include violating pretreatment prohibitions, treatment standards, or other requirements of Chapters 1 and 5 of this Permit , including gas vapor toxicity and explosivity limits.

B. Within five (5) days following such discharge, the Permittee shall submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the Permittee to prevent similar future occurrences. Such notification shall not relieve the Permittee of any expense, loss, damage, or other liability, which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the Permittee of any fines, penalties, or other liability, which may be imposed pursuant to this Permit.

C. Regardless of whether the Permittee has been required to submit a Slug Discharge Control Plan per Section 6.3, the Permittee shall post notice in a prominent location advising employees who to call at the POTW to inform the Executive Director of a potential problem discharge as required by Section 3.7(A) above. The Permittee shall ensure that all employees who may cause or witness such a discharge are advised of the emergency notification procedures.

D. The Permittee must immediately notify the Executive Director of any changes at their facility, which might increase their potential for a slug discharge. This includes increasing the volume of materials stored or located on site, which, if discharged to the POTW, would cause problems. The Permittee required to prepare a Slug Discharge Control Plan under Section 6.3 shall also modify their plans to include the new conditions prior to, or immediately after making such changes.

3.8 Notification of Violation/Repeat Sampling and Reporting

If sampling performed by the Permittee indicates a violation, the Permittee must notify the Executive Director within twenty-four (24) hours of becoming aware of the violation. The Permittee shall also repeat the sampling and analysis and submit the results of the repeat analysis to the Executive Director within thirty (30) days after becoming aware of the violation. The Executive Director may waive the repeat sampling requirement where the Executive Director has sampled the effluent for the pollutant in question prior to the Permittee obtaining sampling results.

3.9 Notification of Discharge of Hazardous Waste

A. If the Permittee discharges any substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261, or Chapter 173-303 WAC must also comply with the following requirements:

1. Notify the Executive Director, the USEPA Regional Waste Management Division Director, and State hazardous waste authorities, in writing, of the discharge. Maintain a copy of this notification and include it in all subsequent permit application or re-applications under this Chapter.
2. Include the following information in the notification:
   a. The name of the hazardous waste as found in 40 CFR Part 261;
   b. The USEPA hazardous waste number; and
   c. The type of discharge (continuous, batch, or other).
3. If the discharge totals more than two hundred and twenty (220) pound in any month, also provide:
   a. The hazardous constituents contained in the wastes,
   b. An estimate of the mass and concentration of hazardous constituents in the wastestream discharged during that calendar month, and
   c. An estimate of the mass of constituents in the wastestream expected to be discharged during the following twelve (12) months.
4. This notice shall be repeated for new or increased discharges of substances subject to this reporting requirement.
5. All notifications must take place prior to discharging a substance for which these reporting requirements apply. If this is not possible, the notice must be provide as soon after discharge as practical and describe why prior notice was not possible.
6. The Permittee must provide notifications under this paragraph only once to USEPA and the State for each hazardous waste discharged. However, all of the information of these notices shall be repeated in each new permit application submitted under this Chapter.
7. This requirement does not relieve the Permittee from requirements to provide other notifications, such as of changed conditions under Section 3.6 of this Permit, or applicable Permit conditions, permit application requirements, and prohibitions.
8. The notification requirements in this Section do not apply to pollutants for which routine monitoring and reporting is required in a permit under this Permit.

B. The Permittee must report all discharges of more than thirty-three (33) pounds per month of substances, which, if otherwise disposed of, would be hazardous wastes. The Permittee must also report any discharge of acutely hazardous wastes as specified in 40 CFR Parts 261.30(d) and 261.33(e). Subsequent months during which the Permittee discharges more of a hazardous waste for which notice has already been provided do not require another notification to USEPA or the State, but must be reported to the Executive Director.

C. If new regulations under RCRA describe additional hazardous characteristics or substances as a hazardous waste, the Permittee must provide notifications under paragraphs A, if required by paragraph B within ninety (90) days of the effective date of such regulations.

D. For any notification made under this Section, the Permittee shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical and shall describe that program and reductions obtained through its implementation.

E. This provision does not create a right to discharge any substance not otherwise permitted to be discharged by this Permit, an ordinance, or any applicable Federal or State law.

3.10 Authorized or Duly Authorized Representative of the Permittee

All forms, applications, and reports required by this Permit must be signed by an authorized representative of the Permittee, as defined below:

A. If the Permittee is a corporation:

1. The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

2. The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions, which govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for control mechanism requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

B. If the Permittee is a partnership or sole proprietorship: a general partner or proprietor, respectively.

C. If the Permittee is a Federal, State, or local governmental facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or their designee.

D. The individuals described in Section 3.10(A-C), may designate another authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates, or having overall

responsibility for environmental matters for the company, and the written authorization is submitted to the Executive Director.

The Permittee shall submit a new authorization if the designation of an authorized representative is no longer accurate. This includes when a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company. The User must submit the new authorization prior to or with any reports to be signed by the new authorized representative.

3.11 Certification Statement

In addition to the signatory requirements defined in Section 3.10 above, all forms, applications, and reports required by this Permit must contain the following certification statement:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

PART 4 – DEFINITIONS

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this Permit, shall have the meanings hereinafter designated.

4.1 **Biochemical Oxygen Demand or BOD** – The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures for five (5) days at 20 degrees centigrade, usually expressed as a concentration (e.g., mg/L).

4.2 **Best Management Practices or BMPs** – Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the prohibitions listed in Section 2.1(A) and (B) and 40 CFR Part 403.5(a)(1) and (b). BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage.

4.3 **City** – The City of Lacey, Washington, a municipal corporation organized and existing under and by virtue of the laws of the State of Washington.

4.4 **Composite Sample** – A composite of several samples taken throughout the period of a day when a regulated discharge is occurring. Several brands of electric samplers, some with a refrigerated sample collection area, may be used. Approvable composite samplers may either use a flow paced or time paced algorithm. For example, collecting a same size aliquot every 1,000 gallons (flow paced), or a variable sized aliquot every hour (time paced). In both cases, they must interface with a device, which senses the effluent flow volume to collect a representative sample unless the Executive Director has determined that a flow proportionate sample is not required.

4.5 **Daily Limit or Daily Maximum Limit** – The maximum allowable discharge of a pollutant over a calendar day or equivalent representative 24-hour period. Where daily maximum limits are expressed in units of mass, and the daily discharge is calculated by multiplying the daily average concentration and total flow volumes in the same 24-hour period by a conversion factor to get the desired units. Where daily limits are expressed in terms of a concentration, the daily discharge is the composite sample value, or flow weighted average if more than one discrete sample was collected. Where flow weighting is infeasible, the daily average is the arithmetic average of all samples if analyzed separately, or the sample value if samples are composited prior to analysis.

4.6 **Environmental Compliance Supervisor** – The individual designated by the Executive Director of the LOTT Clean Water Alliance to represent the Executive Director in the implementation of LOTT's Industrial Pretreatment Program.

4.7 **Executive Director** – The Executive Director of the LOTT Clean Water Alliance and shall be considered LOTT Clean Water Alliance personnel or the LOTT Clean Water Alliance's agent for purposes of Article VII of the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999." The term also means a duly authorized representative of the Executive Director.

4.8 **Grab Sample** – A sample, which is taken from a wastestream without regard to the flow in the wastestream and over a period of time not to exceed fifteen (15) minutes.

4.9 **Instantaneous Maximum Discharge Limit or Instantaneous Limit** – The maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of a discrete sample. Where the Permittee is required to take a grab sample for purposes of determining compliance with Local Limits, this standard is the same as the Daily Maximum standard. For pollutants for which Users are required to take composite samples, (or for metals if no permit has been issued) the Instantaneous Limit shall be twice the Daily Limit.

4.10 **Interference** – A discharge that causes (either by itself or in combination with other discharges) a violation of LOTT's NPDES permit, or prevents the intended sewage sludge use or disposal by inhibiting or disrupting the POTW, including its collection systems, pump stations, and wastewater and sludge treatment processes. This includes any discharge from the Permittee that causes a blockage resulting in a discharge at a point not authorized under LOTT's NPDES permit.

4.11 **LOTT Clean Water Alliance or LOTT** – A State of Washington nonprofit corporation created by Interlocal Agreement that operates as a public agency under State of Washington law, providing wastewater management and reclaimed water production services for the urbanized area of north Thurston County, Washington.

4.12 **Medical Waste** – Isolation wastes, infectious agents, human blood and blood products, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes, potentially contaminated laboratory wastes, and dialysis wastes.

4.13 **Monthly Average** – The arithmetic mean of the effluent samples collected during a calendar month or specified 30-day period. Where the Control Authority has taken a sample during the period, it must be included in the monthly average if provided in time. However, where composite samples are required, grab samples taken for process control or by the Control Authority are not to be included in a monthly average.

4.14 **Monthly Average Limit** – The limit to be applied to the Monthly Average to determine compliance with the requirements of this Permit (see Section 1.3 for listing).

4.15 **Non-Contact Cooling Water** – Water used for cooling that does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

4.16 **Pass Through** – A discharge, which exits the POTW into waters of the United States in quantities or concentrations, which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of LOTT's NPDES permit, including an increase in the magnitude or duration of a violation.

4.17 **Person** – Any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity; or their legal representatives, agents, or assigns. This definition includes all Federal, State, and local governmental entities.

4.18 **pH** – A measure of the acidity or alkalinity of a solution, expressed in standard units.

4.19 **Pollutant** – Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, medical wastes, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural and industrial wastes, and certain characteristics of wastewater (e.g., pH, temperature, Total Suspended Solids, turbidity, color, Biochemical Oxygen Demand, Carbonaceous Oxygen Demand, toxicity, or odor).

4.20 **Pretreatment** – The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, introducing such pollutants into the POTW. This reduction or alteration can be obtained by physical, chemical, or biological processes; by process changes; or by other means, except by diluting the concentration of the pollutants unless allowed by an applicable pretreatment standard.

4.21 **Pretreatment Requirements** – Any substantive or procedural requirement related to pretreatment imposed on the Permittee, other than a pretreatment standard.

4.22 **Pretreatment Standards or Standards** – Pretreatment standards shall mean the discharge requirements contained in Part 1, and the Prohibited Discharges contained in Part 5.

4.23 **Publicly Owned Treatment Works or POTW** – A treatment works, as defined by Section 212 of the Act (33 U.S.C. Section 1292), which is owned by LOTT and/or the [City or County] and more fully described in the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999." This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature and any conveyances, including sanitary sewer and storm sewer collection systems, which convey wastewater to a treatment plant.

4.24 **Sewage** – Human excrement and gray water (from household showers, toilets, kitchens, clothes and dish washing, and related domestic activities).

4.25 **Slug Load or Slug Discharge** – Any Discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch Discharge, which has a reasonable potential to cause Interference or Pass Through, or in any other way violate the POTW's regulations, local limits, or Permit conditions. This includes discharges at a flow rate or concentration that could cause a violation of the prohibited discharge standards of Section 1.3 and Part 5 of this Permit.

4.26 **Storm Water** – Any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt.

4.27 **Total Suspended Solids** – The total suspended matter that floats on the surface of, or is suspended in, water, wastewater, or other liquid, and which is removable by laboratory filtering.

4.28 **Wastewater** – Liquid and water-carried industrial wastes and sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, which are contributed to the POTW.

4.29 **Wastewater Treatment Plant or Treatment Plant** – That portion of the POTW, which is designed to provide treatment of municipal sewage and industrial waste.

PART 5 – PROHIBITED DISCHARGES

5.1 General Prohibitions

The Permittee shall not introduce or cause to be introduced into the POTW any pollutant or wastewater, which causes Pass Through or Interference.

5.2 Specific Prohibitions

The Permittee shall not introduce or cause to be introduced into the POTW the following pollutants, substances, or wastewater:

A. Pollutants, which either alone or by interaction may create a fire or explosive hazard in the POTW, a public nuisance or hazard to life, or prevent entry into the sewers for their maintenance and repair or are in any way injurious to the operation of the system or operating personnel. This includes waste streams with a closed-cup flashpoint of less than 140 degrees F (60 degrees C) using the test methods specified in 40 CFR Part 261.21.

B. Wastewater having a pH less than 5.0 or more than 11.0, or otherwise having any other corrosive property capable of causing damage or hazard to structures, equipment, or personnel. Discharges outside this pH range may be authorized by the Executive Director through revisions of this Permit issued by the City pursuant to a finding that the system is specifically designed to accommodate a discharge of that pH.

C. Solid or viscous substances in amounts that may cause obstruction to the flow in the sewer or other interference with the operation of the system. In no case shall solids greater than 1/4 inch (0.64 cm) in any dimension be discharged.

D. Pollutants, including oxygen-demanding pollutants (Biochemical Oxygen Demand, etc.), released in a discharge at a flow rate and/or pollutant concentration, which, either singly or by interaction with other pollutants, will cause interference with the POTW.

E. Wastewater having a temperature that will interfere with the biological activity in the system, has detrimental effects on the collection system, or prevents entry into the sewer. In no case shall wastewater be discharged, which causes the wastewater temperature at the treatment plant to exceed 104 degrees F (40 degrees C).

F. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin, in amounts that will cause Interference or Pass Through.

G. Pollutants, which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

H. Trucked or hauled pollutants, except at discharge points designated by the Executive Director.

I. The following are prohibited unless approved by the Executive Director under extraordinary circumstances, such as lack of direct discharge alternatives due to combined sewer service or need to augment sewage flows due to septic conditions (as required under WAC 173-216-050).

   1. Non-contact cooling water in volumes the Executive Director determines as significant.

   2. Storm water, or other direct inflow sources.

   3. Wastewaters affecting system hydraulic loading which do not require treatment, or would not be afforded a significant degree of treatment by the system, as determined by the Executive Director.

J. Noxious or malodorous liquids, gases, solids, or other wastewater, which, either singly or by interaction with other wastes, are sufficient to create a public nuisance or a hazard to life, or to prevent entry into the sewers for maintenance or repair.

K. Wastewater, which imparts color that cannot be removed by the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions, which consequently imparts color to the treatment plant's effluent, thereby violating LOTT's NPDES permit.

L. Wastewater containing any radioactive wastes or isotopes except in compliance with applicable State or Federal regulations.

M. Storm water, surface water, ground water, artesian well water, roof runoff, subsurface drainage, swimming pool drainage, condensate, deionized water, noncontact cooling water, and unpolluted wastewater, unless specifically authorized by the Executive Director.

N. Sludges, screenings, or other residues from the pretreatment of industrial wastes.

O. Medical wastes, except as specifically authorized by the Executive Director and the City in a revision of this Permit.

P. Wastewater causing, alone or in conjunction with other sources, the treatment plant's effluent to fail a toxicity test.

Q. Detergents, surface-active agents, or other substances, which may cause excessive foaming in the POTW.

R. Fats, oils, or greases of animal or vegetable origin in concentrations greater than three hundred (300) mg/L, or Total Petroleum Hydrocarbon concentrations of no more than fifty (50) mg/L.

S. Wastewater causing two readings on an explosion hazard meter at the point of discharge into the POTW, or at any point in the POTW, of more than ten percent (10%) or any single reading over twenty percent (20%) of the Lower Explosive Limit based on an explosivity meter reading.

Pollutants, substances, or wastewater prohibited by this Section shall not be processed or stored in such a manner that they could be discharged to the POTW.

5.3 Dilution Prohibition

The Permittee shall not increase the use of process water, or in any way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with a discharge limit unless expressly authorized by an applicable pretreatment standard or requirement. The Executive Director may impose mass limitations on the Permittee where deemed appropriate to safeguard against the use of dilution to meet applicable pretreatment standards or requirements, or in other cases when the imposition of mass limitations is appropriate.

5.4 Affirmative Defense to Violating Prohibited Discharge Standards

The Permittee will have an affirmative defense to an enforcement action brought against it for noncompliance with the prohibitions in Section 5.1 and 5.2(A-G) of this Permit in certain cases, pursuant to 40 CFR Part 403.5(a)(2). The Permittee must be able to prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause Pass Through or Interference and that either:

A. A local limit exists for each pollutant discharged and the Permittee was in compliance with each limit directly prior to, and during, the Pass Through or Interference; or

B. No local limit exists, but the discharge did not change substantially in nature or constituents from the Permittee's prior discharge when LOTT was regularly in compliance with its NPDES permit, and in the case of Interference, was in compliance with applicable sludge use or disposal requirements.

5.5 Bypass Notification and Reporting

A. For the purposes of this Section:

1. Bypass means the intentional diversion of wastestreams from any portion of a Permittee's treatment facility.

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, which 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. The Permittee may allow a bypass to occur if it does not cause pretreatment standards or requirements to be violated and is for essential maintenance to assure efficient operation.

C. Any other bypass must meet the following requirements:

1. The Permittee knowing in advance of the need for a bypass must submit prior notice to the Executive Director, at least ten (10) days before the bypass wherever possible; and

2. The Permittee must tell the Executive Director of any unanticipated bypass that exceeds applicable pretreatment standards within twenty-four (24) hours of becoming aware of the bypass. The Permittee must provide a written follow-up report within five (5) days. The Executive Director may waive the written report if the oral report was timely and complete. Unless waived, the written report must contain:

   a. A description of the bypass (volume, pollutants, etc.);

   b. What caused the bypass;

   c. When, specifically, the bypass started and ended;

   d. When the bypass is expected to stop (if ongoing); and

   e. What steps the Permittee has taken or plans to take to reduce, eliminate, and prevent the bypass from reoccurring.

D. Bypass is prohibited, and the City may take an enforcement action against the Permittee for a bypass, unless:

1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2. 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 back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment downtime or preventive maintenance; and

3. The Permittee submitted notices as required under Section 5.5(C) above.

E. The Executive Director may approve an anticipated bypass, after considering its adverse effects, if the Executive Director determines that it will meet the three (3) conditions listed in Section 5.5(D) above.

PART 6 – SPECIAL CONDITIONS

6.1 Excess Strength Charges

For industrial waste or other discharges exceeding the biochemical oxygen demand (BOD), total suspended solids (TSS), or total ammonia (TA) limits defined in Section 1.3(D) of this Permit, the following formula shall be used to determine the equivalent residential units (ERU) equivalency of the waste flow. The Executive Director may determine that all or part of Permittee's industrial waste or other discharge exceeding the limits defined in Section 1.3(D) results in a net benefit to the operation of the POTW, and may grant exemptions to the Permittee from some or all of the resulting surcharges.

This formula applies only to BOD and/or TSS concentrations in excess of 300 mg/L and total ammonia in excess of 60 mg/L.

A. ERU Equivalent for High Strength Waste shall be the sum of the following:

1. Flow Calculation:

$$(\text{P-FLOW}) \times \frac{\text{Industry flow (cu ft/ month)}}{\text{900 cu. ft. /ERU}} = \text{FLOW ERUs}$$

2. Biochemical Oxygen Demand Calculation:

$$(\text{P-BOD}) \times \frac{\text{Industry BOD (mg/L)}}{\text{300 mg/L}} \times \frac{\text{Industry Flow (cu ft/month)}}{\text{900 cu ft/ERU}} = \text{BOD ERUs}$$

3. Total Suspended Solids Calculation:

$$(\text{P-TSS}) \times \frac{\text{Industry TSS (mg/L)}}{\text{300 mg/L}} \times \frac{\text{Industry Flow (cu ft/month)}}{\text{900 cu ft/ERU}} = \text{TSS ERUs}$$

4. Total Ammonia Calculation:

$$(\text{P-TA}) \times \frac{\text{Industry TA (mg/L)}}{\text{60 mg/L}} \times \frac{\text{Industry Flow (cu ft/month)}}{\text{900 cu ft/ERU}} = \text{TA ERUs}$$

B. Explanation of terms:

1. (P-FLOW) = Percentage treatment costs associated with hydraulic flow, equal to twenty-nine percent (29%)
2. (P-BOD) = Percentage treatment costs associated with biochemical oxygen demand, equal to thirty-four percent (34%)
3. (P-TSS) = Percentage treatment costs associated with total suspended solids, equal to twenty-two percent (22%)
4. (P-TA) = Percentage treatment costs associated with total ammonia, equal to fifteen percent (15%)
5. ERU: (Equivalent Residential Unit) = to 900 cubic feet of wastewater containing a maximum of 300 mg/L of total suspended solids, a maximum of 300 mg/L of biochemical oxygen demand, and a maximum of 60 mg/L of total ammonia.
6. The percentage of treatment costs used in items Sections 6.1(B)(1-4) are calculated based on an average of documented treatment costs.

7. All monthly charges per ERU established by the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Clean Water Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999," as amended, shall apply to ERU's calculated by the preceding formulas.

6.2 Volatile and Semi-volatile Organics Sampling

The Permittee shall submit within 60 days of the effective date of this Permit, one-time sampling data for Volatile and Semi-volatile Organic Priority Pollutants. This sampling shall be performed on a typical full process workday and shall include all volatile compounds listed in EPA Method 624 and all semi-volatile compounds listed in EPA Method 625, as published in 40 CFR Part 136.

6.3 Accidental Discharge/Slug Discharge Control Plans

The Permittee shall develop and implement, and revise whenever additions or revisions have been made to the operation of the facility, an Accidental Discharge/Slug Discharge Control Plan (Plan), and take other actions the Executive Director believes are necessary to control discharges, which may be caused by spills or periodic non-routine activities. The Plan and any revisions shall be submitted to the Executive Director for approval prior to being adopted by the Permittee. Upon approval of the Plan by the Executive Director, failure of the Permittee to promptly revised the Plan to reflect changed conditions, or to follow the Plan in the event of a spill is a violation of this Permit. Accidental discharge/slug discharge control plans shall include at least the following:

A. A description of all discharge practices, including any non-routine batch discharges such as from cleaning, replenishment, or disposal;

B. A description of all stored chemicals, disclosing all ingredients in formulations, which could violate a discharge prohibition if discharged to the sewer;

C. The procedures for immediately notifying the Executive Director and the City of any accidental or slug discharge, as required by Section 3.7 of this Permit; and

D. The procedures that will be taken to prevent the occurrence or adverse impact from any accidental or slug discharge. Such procedures shall address the inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment for emergency response.

PART 7 – PRETREATMENT OF WASTEWATER

7.1 Pretreatment Facilities

The Permittee shall provide wastewater treatment as necessary to comply with this Permit and shall achieve compliance with all pretreatment standards, local limits, and the prohibitions set out in Sections 1 and 5 of this Permit within the time limitations specified by USEPA, the State, the City, or the Executive Director, whichever is more stringent. Any facilities necessary for compliance shall be provided, operated, and maintained at the Permittee's expense.

7.2. Proper Operation and Maintenance

The Permittee shall at all times be responsible for the proper operation and maintenance of any facilities or systems of control installed to achieve compliance with the terms and conditions of this Permit. Where design criteria have been established, the Permittee shall not permit flows or waste loadings to exceed approved design criteria. A current and approved Operation and Maintenance Manual shall be maintained by the Permittee to assure that procedures for proper operation and maintenance of the treatment facilities are documented and up to date. Proper operation and maintenance includes but is not limited to: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

7.3 Additional Pretreatment Measures

A. The Executive Director may immediately and effectively halt or prevent any discharge of pollutants to the POTW, which reasonably appear to present an imminent endangerment to the health or welfare of persons. In such cases, the Executive Director will provide the Permittee advance notice if possible, but shall not delay a response to imminent endangerment.

B. The Executive Director may halt or prevent any discharge to the POTW, which presents or may present an endangerment to the environment or, which threatens to interfere with the operation of the POTW (including the collection system and pump stations). In such cases, the Executive Director shall attempt to provide not only notice to the Permittee, but the opportunity to respond.

C. If the Permittee causes the Executive Director to exercise the emergency authorities provided for under Sections 7.3(A) and (B) above, the Permittee shall be responsible for reimbursement of all related costs to the Executive Director and the City.

D. The Executive Director may require the Permittee to reduce or curtail certain discharges to the sewer, designate that certain wastewater be discharged only into specific sewers, relocate and/or consolidate points of discharge, separate sewage wastestreams from industrial wastestreams, and take all other measures to protect the POTW and determine the Permittee's compliance with the requirements of this Permit.

E. The Executive Director and the City, based on the determination that such devices are necessary for implementation of pretreatment requirements, may require any Permittee to install and maintain, on their property and at their expense the following devices:

1. A sample taking facility accessible to the Executive Director
2. A suitable storage and/or flow equalization tank
3. Grease, oil, and/or grit interceptors

4. An approved combustible gas detection meter

F. The Permittee installing any of the above devices shall ensure they are of the type and capacity approved by the City, meet applicable building and plumbing codes, and conform to any separate requirements established by the City and the Executive Director. The Permittee shall locate units in areas easily accessible for cleaning and inspection by representatives of the City or Executive Director. The Permittee shall be responsible for all periodic inspection, cleaning, and repair of such devices.

7.4 Treatment Facility Plan Approval

The Permittee must comply with the regulations contained in Chapter 173-240 WAC, Submission of Plans and Reports for Construction of Wastewater Facilities, prior to the Permittee constructing or modifying, or proposing to construct or modify, any wastewater treatment facilities. Such plans and reports (Engineering Report, Plans and Specifications, and Operation and Maintenance Manuals) shall be submitted as required by Chapter 173-240 WAC to the Executive Director, the City, and the Department of Ecology for review, and the Permittee shall obtain approval from the Department of Ecology prior to construction. The review of such plans and operating procedures shall in no way relieve the Permittee from the responsibility of modifying such facilities as necessary to produce a discharge acceptable to the Executive Director and the City under the provisions of this Permit. To ensure conformance with this requirement, proof of the approval of such plans and one copy of each approved plan shall be provided by the Permittee to the Executive Director and the City before commencing any such construction or modification.

PART 8 – PERMIT ADMINISTRATION

8.1 Discharge Permit Fees

Annual discharge permit fees shall be levied on the Permittee based on three criteria: (1) permitted flow rate; (2) permit complexity; and (3) potential danger to the collection system or POTW. The Permittee will be evaluated annually by the Executive Director and placed in one of three categories; with Category III having the highest combination of flow, complexity, and risk. The Executive Director shall use the Permit Fee Category Criteria set forth in the following table.

PERMIT FEE CATEGORY CRITERIA

CRITERION	RANGE	DESCRIPTION	SCORE
Flow	High	>25,000 gpd	3
	Medium	1,000 - 25,000 gpd	2
	Low	<1,000 gpd	1
Complexity	High	Categorical SIU	3
	Medium	Non-Categorical SIU	2
	Low	MIU	1
Potential Danger	High	Excess Strength Discharge, High Spill Potential, Large Quantity Of Toxic Materials, High Flows	3
	Medium	All Others	2
	Low	Low Spill Potential, No Excess Strength, Low Or No Toxics On Site, Low Flows	1

The total scores for all criteria determine the permit category and fee according to the following table. The Executive Director has determined that the Permittee designates as permit category 2.

PERMIT FEES
2012

SCORE	CATEGORY	FEE
3-4	I	$285
5-7	II	$428
8-9	III	$570

These fees shall be adjusted each calendar year for inflation by an amount equal to ninety (90) percent of the change in the Seattle-Tacoma-Bremerton area Consumer Price Index for Urban Wage and Clerical Workers (CPI-W), as published by the United States Department of Commerce Bureau of Labor Statistics, for the preceding twelve (12) month period. These discharge permit fees are in addition to the excess strength charges required in Section 6.1.

8.2 Permit Issuance Process

A. Public Notice: The Permittee shall follow the procedures for public notice found in Section 8.6. The Executive Director shall consider and respond to public input as appropriate prior to issuance of a permit.

B. Permit Appeals: The Executive Director shall provide public notice of the issuance of a wastewater discharge permit. The Permittee may petition the City to reconsider the terms of this Permit within thirty (30) days of notice of its issuance. Failure to submit a timely petition for review shall be deemed to be a waiver of the administrative appeal. In its petition, the appealing party must indicate the wastewater discharge permit provisions objected to, the reasons for this objection, and the alternative condition, if any, it seeks to place in the wastewater discharge permit. The effectiveness of the wastewater discharge permit shall not be stayed pending the appeal. If the City fails to act within thirty (30) days, a request for reconsideration shall be deemed to be denied. Decisions not to reconsider this Permit, not to issue this Permit, or not to modify this Permit shall be considered final administrative actions for purposes of judicial review. Aggrieved parties seeking judicial review of the final administrative wastewater discharge permit decision must do so by filing a complaint with the Superior Court of Thurston County within ten (10) days of the final administrative action.

8.3 Wastewater Discharge Permit Modification

The City, after consulting with the Executive Director, may modify this Permit for good cause, including, but not limited to, the following reasons:

A. To incorporate any new or revised Federal, State, or local pretreatment standards or requirements including new or revised local limits;

B. To address new or changed operations, processes, production rates, waste streams, or changes in water volume or character;

C. To reflect conditions at the POTW requiring an authorized discharge to be reduced or curtailed. Such requirements may be either temporary or permanent;

D. Based on information indicating that a permitted discharge poses a threat to the Executive Director's and/or City's POTW or staff, the receiving waters, or to violate a prohibition of this Chapter;

E. To address violations of any terms or conditions of this Permit;

F. To address misrepresentations or failure to fully disclose all relevant facts in this Permit application or in any required report;

G. To incorporate revisions based on a variance from categorical pretreatment standards approved pursuant to 40 CFR Part 403.13;

H. To correct typographical or other errors in this Permit; or

I. To reflect a transfer of the facility ownership or operation to a new owner or operator as required under Section 8.4.

8.4 Wastewater Discharge Permit Transfer

This Permit may be transferred to a new owner or operator only if the Permittee gives at least thirty (30) days advance notice to the Executive Director and the City, and the Executive Director and the City approves the Permit transfer. Failure to provide advance notice of a transfer renders this Permit void as of the date of facility transfer. The notice to the Executive Director and the City must include a written certification by the new owner or operator, which:

A. States that the new owner and/or operator have no immediate intent to change the facility's operations and processes;

B. Identifies the specific date on which the transfer is to occur; and

C. Acknowledges full responsibility for complying with this Permit.

8.5 Wastewater Discharge Permit Revocation

The City may revoke this Permit for good cause, including, but not limited to, when the Permittee has:

A. Failed to notify the Executive Director of changes to the wastewater deemed significant by the Executive Director, prior to the changed discharge;

B. Failed to provide prior notification to the Executive Director of changed conditions pursuant to Section 3.6 of this Permit;

C. Misrepresented or failed to fully disclose all relevant facts in the wastewater discharge permit application;

D. Falsified self-monitoring reports or tampered with monitoring equipment;

E. Refused to allow the Executive Director timely access to the facility premises and records;

F. Failed to meet effluent limitations or Permit conditions;

G. Failed to pay applicable fines or sewer charges;

H. Failed to meet compliance schedule deadline dates;

I. Failed to complete a wastewater survey or wastewater discharge permit application;

J. Failed to provide advance notice of the transfer of business ownership;

K. Violated any pretreatment standard or requirement, or any terms of this Permit, or Permit;

L. Ceased operations; or

M. Transferred business ownership.

This Permit is void upon the issuance of a new wastewater discharge permit to the Permittee.

8.6 Permit Application For Renewal

A. The Permittee shall apply for wastewater discharge permit reissuance by submitting a complete permit application, using the form provided by the Executive Director, a minimum of ninety (90) days prior to the expiration of this Permit.

B. Persons applying for a new permit or a permit renewal or modification, which allows a new or increased pollutant loading shall publish notice for each application in the format provided by the Executive Director. Such notices shall fulfill the requirements of WAC 173-216-090. These requirements include publishing:

1. The name and address of the applicant and facility/activity to be permitted;

2. A brief description of the activities or operations, which result in the discharge;

3. Whether any tentative determination, which has been reached with respect to allowing the discharge;

4. The address and phone number of the office of the Executive Director where persons can obtain additional information;

5. The dates of the comment period (which shall be at least 30 days); and

6. How and where to submit comments or have any other input into the permitting process, including requesting a public hearing.

C. The Executive Director and the City may require the applicant to also mail this notice to persons who have expressed an interest in being notified, to State agencies and local governments with a regulatory interest, and to post the notice on the premises. If the Executive Director or the City determined there is sufficient public interest the City shall hold a public meeting following the rules of WAC 173-216-100.

D. The Executive Director or the City may assume responsibility for the public notice requirements for the Permittee contained in this Section.

PART 9 – COMPLIANCE MONITORING

9.1 Right of Entry: Inspection and Sampling

The Executive Director shall have the right to enter the premises of the Permittee to determine whether the Permittee is complying with all requirements of this Permit, Permit, or order issued hereunder. The Permittee shall allow the Executive Director ready access to all parts of the premises for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties.

A. Where the Permittee has security measures in force, which require proper identification and clearance before entry into its premises, the Permittee shall make necessary arrangements with its security guards so that, upon presentation of suitable identification, the Executive Director will be permitted to enter without delay for the purposes of performing specific responsibilities.

B. The Executive Director shall have the right to set-up on the Permittee's property, or require installation of, such devices as are necessary to conduct sampling and/or metering of the Permittee's operations.

C. The Permittee shall provide full access to the Executive Director to use any monitoring facilities and utilities available or required in accordance with Sections 7.1 and 7.3(E) and (F) to confirm that the standards or treatment required for discharge to the sewer are being met.

D. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the Permittee at the written or verbal request of the Executive Director and shall not be replaced. The costs of clearing such access shall be borne by the Permittee.

E. Any unreasonable delay in allowing the Executive Director full access to the Permittee's premises and wastewater operations shall be a violation of this Permit.

9.2 Search Warrants

The City, on behalf of the Executive Director, may seek issuance of a search warrant from the Superior Court of Thurston County. Such warrants may be secured when:

A. The Executive Director has been refused access or is unable to locate a representative who can authorize access to a building, structure, or property, or any part thereof, and has probable cause that a violation of this Permit is occurring on the premises;

B. The Executive Director has been denied access to inspect and/or sample as part of a routine inspection and sampling program of the Executive Director designed to verify compliance with this Permit, Permit, or order issued hereunder; or

C. The Executive Director has cause to believe there is imminent endangerment of the overall public health, safety, and welfare of the community by an activity on the premises.

PART 10– CONFIDENTIAL INFORMATION

Generally, information submitted to demonstrate compliance with pretreatment standards and requirements will be freely available to the public. To the extent such is consistent with State and Federal laws, the Permittee may have certain information treated as confidential if the following process is followed.

A. When the Permittee submits information to the City or Executive Director, or provides information to inspectors, the Permittee may request that specific information be maintained as confidential. The Permittee must promptly identify the specific information in writing, and describe why the release would divulge information, processes, or methods of production entitled to protection as trade secrets or confidential business information under applicable State or Federal laws.

B. Dependent on the agency receiving the request, the Executive Director or the City shall review and approve or deny such requests. When approved, the information shall not be publicized by the City unless required by State or Federal law.

C. All other information submitted to the Executive Director or the City and obtained from the Executive Director's or the City's oversight shall be available to the public subject to the Executive Director or the City records review policy.

D. Information held as confidential may not be withheld from governmental agencies for uses related to the NPDES program or pretreatment program, or in enforcement proceedings involving the Permittee.

E. Federal rules prevent wastewater constituents and characteristics and other effluent data, as defined by 40 CFR Part 2.302 from being recognized as confidential information.

PART 11 – PUBLICATION OF SIGNIFICANT NONCOMPLIANCE

11.1 Publishing

The Executive Director must annually publish a list of permitted industries, which, at any time during the previous twelve (12) months, were in Significant Noncompliance with applicable pretreatment standards and requirements. The list will be published in a newspaper of general circulation that provides meaningful public notice within the jurisdictions served by the POTW.

11.2 Definition of Significant Noncompliance

For the purposes of this Section, the term **Significant Noncompliance** means:

A. Any violation of a pretreatment standard or requirement including numerical limits, narrative standards, and prohibitions, that the Executive Director determines has caused, alone or in combination with other discharges, Interference or Pass Through, including endangering the health of POTW personnel or the general public.

B. Any discharge of a pollutant that has caused imminent endangerment to the public or to the environment, or has resulted in the Executive Director's or City's exercise of its emergency authority to halt or prevent such a discharge.

C. Any violation(s), including of Best Management Practices, which the Executive Director determines will adversely affect the operation or implementation of the local pretreatment program.

D. Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent (66%) or more of all of the measurements taken for the same pollutant parameter taken during a rolling six (6) month period exceed, by any magnitude, a numeric pretreatment standard or requirement, including instantaneous limits of Section 1.3(C).

E. Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent (33%) or more of wastewater measurements taken for each pollutant parameter during a rolling six (6) month period equal or exceed the product of the numeric pretreatment standard or requirement, (including instantaneous limits, as defined by Section 1.3(C)), multiplied by the applicable criteria. Applicable criteria are 1.4 for Biochemical Oxygen Demand, Total Suspended Solids, fats, oils and greases, and 1.2 for all other pollutants except pH.

F. Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in this Permit or enforcement order for starting construction, completing construction, or attaining final compliance.

G. Failure to provide any required report within forty-five (45) calendar days after the due date. This includes initial and periodic monitoring reports, and reports on initial compliance and on meeting compliance schedules.

H. Failure to accurately report noncompliance.

11.3 Applicability

The criteria in Sections 11.2(A-C) are applicable to all permitted industries, whereas the criteria in Sections 11.2(D-H) are only applicable to Significant Industrial Users.

PART 12– ADMINISTRATIVE ENFORCEMENT REMEDIES

12.1 Notification of Violation

The City may serve a written Notice of Violation on the Permittee that the City and/or the Executive Director finds the Permittee has violated any provision of this Permit, including terms or requirements of an ordinance, order, or a pretreatment standard or requirement. In all cases in this Permit, a continuation of a violation of a provision of this Permit is a "violation." The Permittee shall, in response to a Notice of Violation, provide the City a written explanation of the violation, its cause, and a corrective action plan within thirty (30) days of the receiving this notice. The Permittee submitting plans to correct noncompliance must include the specific actions they will take to correct ongoing and prevent future violations at the soonest practicable date. The City's acceptance of a plan does not relieve the Permittee of liability for any violations. The City may also take any action, including emergency actions or any other enforcement action, without first issuing a Notice of Violation.

12.2 Consent Orders

The City may enter into a Consent Order or other voluntary agreement to memorialize agreements with the Permittee for violating any requirement of this Permit after consultation with the Executive Director. Such agreements must include the specific action(s) required and date(s) they are to be completed to correct the noncompliance. Such documents must be constructed in a judicially enforceable manner, and have the same force and effect as administrative orders issued pursuant to Sections 12.4 and 12.5 of this Permit.

12.3 Show Cause Hearing

After consultation with the Executive Director, the City may propose actions in response to a violation of any provision of this Permit, including a provision of an ordinance, order, or a pretreatment standard or requirement. The City will notify the Permittee of the violation, the proposed action, the rationale, and the Permittee's rights and obligations to provide evidence why the proposed enforcement action should not be taken, and to provide its support for any alternative it proposes at this meeting. The Permittee shall have the right to a show cause hearing to contest the City's action provided for by this Permit or determination that the Permittee has violated a compliance schedule order.

Any hearing pursuant to this Section must be requested by the Permittee in writing within fifteen (15) business days after the Permittee receives notice of the City's proposed action. The Permittee's written request for hearing shall be filed with the Executive Director.

The hearing authorized by this Section shall be held before the LOTT Technical Sub-Committee (TSC). Formal rules of evidence shall not apply, but the Permittee and the City shall have the right to present witnesses and other evidence. The TSC shall issue a written decision within fourteen (14) business days of the conclusion of the hearing.

The Permittee shall have the right to make an electronic or stenographic record of the proceedings. Such record shall be made at the Permittee's expense.

The TSC may, by resolution or Permit, adopt additional rules for the conduct of hearings pursuant to this Section.

A show cause hearing shall not be a bar against, or prerequisite for, taking any other action against the Permittee.

12.4 Compliance Orders

The City, after consulting with the Executive Director, may issue a compliance order to the Permittee, if the Permittee has violated any provision of this Permit including a requirement of a Permit, order, or a pretreatment standard or requirement. The compliance order may direct that the Permittee come into compliance within a specified time, install and properly operate adequate treatment facilities or devices, or take such measures as the City or Executive Director finds are reasonably necessary. These measures may include additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. A compliance order may not extend the deadline for compliance established for a pretreatment standard or requirement, or relieve the Permittee of liability for any violation, including a continuing violation. If the Permittee does not come into compliance within the time provided, sewer service may be discontinued. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

12.5 Cease and Desist Orders

When the City and/or Executive Director finds that the Permittee has violated, or continues to violate, any provision of this Permit, an ordinance, an order issued hereunder, or any other pretreatment standard or requirement, or that the Permittee's past violations are likely to recur, the City may, after consultation with the Executive Director, issue an order to the Permittee directing it to cease and desist all such violations and directing the Permittee to:

A. Immediately comply with all requirements; and

B. Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge. Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

12.6 Administrative Fines

A. When the City finds that the Permittee has violated, or continues to violate, any provision of this Permit, an ordinance, an order issued hereunder, or any other pretreatment standard or requirement, the City may, after consultation with the Executive Director, fine such Permittee in an amount not to exceed ten thousand dollars ($10,000). Such fines shall be assessed on a per violation, per day basis. In the case of monthly or other long-term average discharge limits, fines shall be assessed for each day during the period of violation.

B. The City may add the costs of any emergency response, additional monitoring, investigation, and administrative costs related to the noncompliance and the City's response to the situation, to the amount of the fine.

C. The City will consider the economic benefit gained by the Permittee as a result of the noncompliance in cases where there appears to have been a monetary benefit from not complying. In such cases, the City shall ensure that fines, to the maximum amounts allowable, exceed the benefit to the Permittee from the noncompliance.

D. Unpaid charges, fines, and penalties shall, at thirty (30) calendar days past the due date, be assessed an additional penalty of one percent (1%) of the unpaid balance, and interest shall accrue thereafter at a rate of one percent (1%) per month, or at the rate allowed by law if different from

the foregoing. After thirty (30) days, the City shall be authorized to file a lien against the Permittee's property for unpaid charges, fines, and penalties.

E. If the Permittee wishes to dispute such fines, the Permittee must file a written request for the City to reconsider the fine along with full payment of the fine amount within fifteen (15) working days of being notified of the fine. Where a request has merit as determined by the City and Executive Director, the City may convene a hearing on the matter pursuant to Section 12.3 of this Permit. In the event the Permittee's appeal is successful, the City shall rebate the difference between the initial and final penalty amounts to the Permittee.

F. Issuance of an administrative fine shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

12.7 Emergency Suspensions

The City may immediately suspend the Permittee's discharge (or threatened discharge) when it reasonably appears to present a substantial danger to the health or welfare of persons. In such cases, the City will first provide informal notice to the Permittee. The City may also immediately suspend the Permittee's discharge, after notice and opportunity to respond, that threatens to interfere with the operation of the POTW, or which presents, or may present, a danger to the environment.

A. The Permittee, when notified of a suspension of its discharge, shall immediately stop or eliminate its contribution. If the Permittee fails to immediately comply voluntarily with the suspension order, the City may take such steps as deemed necessary to protect the public and its interest in the sewer system. Remedies available to the City include immediately severing the sewer connection, at the Permittee's expense, turning off pump stations downstream of the Permittee, and partnering with law enforcement. The City may not allow the Permittee to recommence its discharge until the Permittee has demonstrated to the satisfaction of the City that the situation warranting the suspension has been properly addressed and any proposed Termination proceeding has been resolved.

B. When the Permittee is responsible, in whole or in part, for any discharge presenting imminent endangerment, the Permittee shall submit a detailed written statement, describing the causes of the harmful contribution and the measures taken to prevent any future occurrence. The Permittee shall submit this report to the City prior to the date of any show cause or termination hearing under Sections 12.3 and 12.8 of this Permit.

Nothing in this Section shall be interpreted as requiring a hearing prior to any Emergency Suspension under this Section.

12.8 Termination of Discharge

If the Permittee violates the following conditions, the Permittee is subject to having the privilege of discharging to the public sewer system withdrawn:

A. Discharge of non-domestic wastewater not authorized by this Permit, including

1. Where the appropriate Permit revision has not been requested;
2. Where the appropriate Permit revision has not yet been issued; or
3. Where this Permit has been denied or revoked based on the provisions of Section 8.5,

Permit Revocation, of this Permit.

B. Violation of Permit terms and conditions including:

1. Exceeding any Permit limit;
2. Failing to meet other pretreatment standards or requirements;
3. Violating any prohibition; or
4. Failing to properly monitor and report discharges or changed conditions.

C. Refusal of reasonable access to the Permittee's premises for the purpose of inspection, monitoring, or sampling (whether subject to a permit or not).

D. Violation of the pretreatment standards and requirements in Sections 1 and 5 of this Permit, including failure to satisfy Industrial Permittee Survey requirements.

When the City determines this remedy is necessary and appropriate to fulfill the intentions of this Permit, and after consulting with the Executive Director, the Permittee will be notified of the proposed termination of its discharge and be offered an opportunity to show cause, under Section 12.3 of this Permit, why the proposed action should not be taken. Exercise of this option by the City shall not be a bar to, or a prerequisite for, taking any other action against the Permittee.

PART 13 – JUDICIAL ENFORCEMENT REMEDIES

13.1 Injunctive Relief

The City may seek injunctive relief when the Permittee has violated, or continues to violate a provision of this Permit, including an ordinance, pretreatment standard or requirement, or an order issued hereunder. In such cases, the City may petition the Superior Court of Thurston County through the City's Attorney for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels the specific performance of this Permit, an ordinance, order, or other requirement imposed by this Permit on activities of the Permittee. The City may also seek such other action as is appropriate for legal and/or equitable relief, including a requirement for the Permittee to conduct environmental remediation. A petition for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

13.2 Civil Penalties

A. If the Permittee violates, or continues to violate a provision of this Permit, including a pretreatment standard or requirement, Permit, or order issued hereunder shall be liable to the City for a maximum civil penalty of ten thousand dollars ($10,000) per violation, per day. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of the violation.

B. The City may recover reasonable attorneys' fees, court costs, and other expenses associated with any emergency response, enforcement activities, additional monitoring and oversight, and costs of any actual damages to the City or LOTT.

C. Filing a suit for civil penalties shall not be a bar against, or a prerequisite for, any other action the City may take to resolve noncompliance by the Permittee.

13.3 Criminal Prosecution

A. If the Permittee willfully or negligently violates any provision of this Permit, an ordinance, or order issued hereunder, or any other pretreatment standard or requirement, the Permittee shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than ten thousand dollars ($10,000) per violation, per day, or imprisonment for not more than one (1) year, or both.

B. If the Permittee negligently introduces any substance into the POTW, which causes personal injury or property damage, the Permittee shall, upon conviction, be guilty of a misdemeanor. If the Permittee willfully introduces any substance into the POTW, which causes personal injury or property damage, the Permittee shall, upon conviction, be guilty of a gross misdemeanor. The Permittee, if convicted, will also be subject to prosecution for violation of any other laws, which may be applicable.

C. If the Permittee knowingly makes any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to be maintained, pursuant to this Permit, Permit, or order issued hereunder, or falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this Permit, the Permittee shall, upon conviction, be punished by a fine of not more than ten thousand dollars ($10,000) per violation, per day, or imprisonment for not more than one (1) year, or both.

D. In the event of a second conviction, the Permittee shall be punished by a fine of not more than ten thousand dollars ($10,000) per violation, per day, or imprisonment for not more than one (1) year, or both.

13.4 Remedies Nonexclusive

The remedies provided for in this Permit are not exclusive. The City may take any, all, or any combination of these actions against the Permittee if found to be non-compliant. Enforcement of pretreatment violations will generally be in accordance with LOTT's Enforcement Response Plan. However, the City may take other action against the Permittee when the circumstances warrant. Further, the City is empowered to take more than one enforcement action against the Permittee when found to be non-compliant.

PART 14 – SUPPLEMENTAL ENFORCEMENT ACTION

14.1 Penalties for Late Reports

The City may assess a penalty of up to fifty dollars ($50) to the Permittee for each day that a report required by this Permit, an ordinance, or order issued hereunder is late. Penalties accrue beginning the fifth (5th) day after the report is due. The City's actions to collect late reporting penalties shall not limit the City's authority to initiate any other enforcement action.

14.2 Performance Bonds

The City may require a satisfactory bond, payable to the City, in a sum not to exceed a value determined by the City and Executive Director as necessary to assure the Permittee will achieve consistent compliance with this Permit. The Executive Director may require this bond as an enforcement response or as a prerequisite to issue or reissue this Permit. Any Permittee who has failed to comply with any provision of this Permit, a previous permit or order issued hereunder, an ordinance, or any other pretreatment standard or requirement may be subject to this requirement. This bond may also be required of any category of permitted industry, which has led to public burdens in the past regardless of the compliance history of the particular industry. The City may use this bond to pay any fees, costs, or penalties assessed to the Permittee whenever the Permittee's account is in arrears for over thirty (30) days. This includes the costs of cleanup of the site if the Permittee goes out of business, sells the business to a person that does not first assume the bond, or goes bankrupt. The Permittee may petition the City to convert their performance bond to a requirement to provide Liability Insurance, or to forego any such safeguard based on their performance. The Permittee may petition no more frequently than once in any twelve (12) month period.

14.3 Liability Insurance

The City may require the Permittee to provide liability insurance at its discretion. In such cases, the Permittee must provide proof that the insurance is sufficient to cover any liabilities incurred under this Permit, including the cost of damages to the POTW and the environment caused by the Permittee. The City may require the Permittee to provide the proof of such insurance prior to issuing or reissuing this Permit.

14.4 Payment of Outstanding Fees and Penalties

The City may decline to reissue this Permit to the Permittee if the Permittee has failed to pay any outstanding fees, fines, or penalties incurred as a result of any provision of this Permit, a previous permit or order issued hereunder, or an ordinance.

14.5 Water Supply Severance

The City may order water service to the Permittee severed whenever the Permittee has violated or continues to violate any provision of this Permit, an ordinance, or order issued hereunder, or any other pretreatment standard or requirement. If the Permittee wishing to restore their service, the Permittee must first demonstrate their ability to comply with this Permit and pay the related costs of this action.

14.6 Public Nuisances

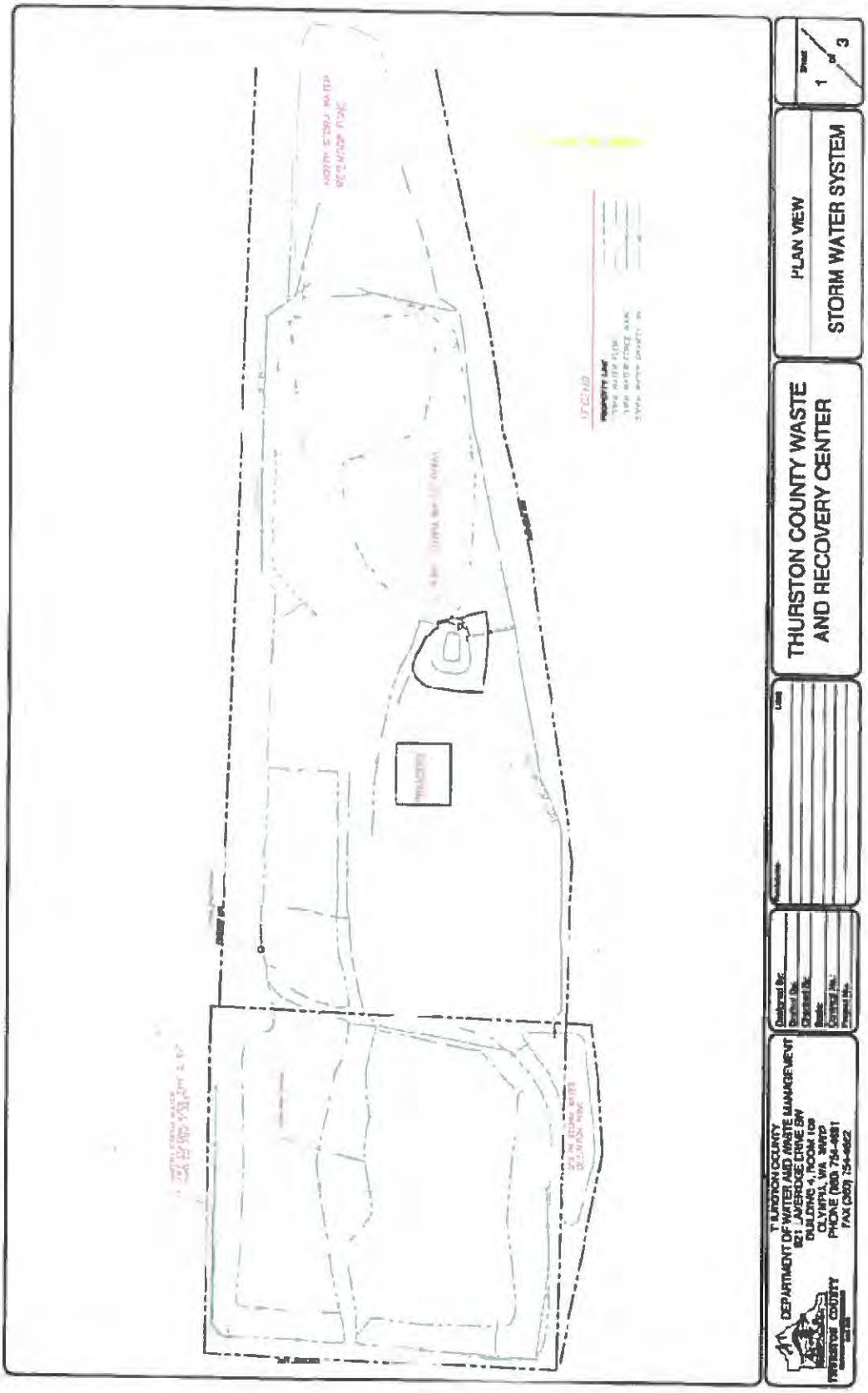
A violation of any provision of this Permit, an ordinance, or order issued hereunder, or any other pretreatment standard or requirement, is hereby declared a public nuisance and shall be corrected or

abated as directed by the City. Any person creating a public nuisance shall be subject to the provisions of City's Municipal Code governing such nuisances, including reimbursing the City for any costs incurred in removing, abating, or remedying said nuisance.

APPENDIX I

SCHEMATIC DIAGRAM, SITE PLAN, & FLOW DIAGRAMS

a Storm Water System Plan



b Facility Aerial

CITY OF LACEY
Shaping our community together
420 COLLEGE STREET SE
LACEY, WA 98503-1238

COPY

WASTEWATER DISCHARGE PERMIT No. LA-003

In accordance with the provisions of Section 13.10 of the Lacey Municipal Code:

International Paper Olympia Container
P. O. Box 101
7727 Union Mills Rd SE
Olympia, WA 98507

hereafter referred to as "Permittee", is hereby authorized to discharge industrial wastewater from the above identified facility and through the outfalls identified herein into the LOTT Clean Water Alliance (LOTT) Publicly Owned Treatment Works (POTW) via the City of Lacey (City) and/or other LOTT Partner sanitary sewer collection system in accordance with the conditions set forth in this Permit. Compliance with this Permit does not relieve the Permittee of its obligation to comply with any or all applicable pretreatment regulations, standards or requirements under local, state, and federal laws, including any such regulations, standards, requirements, or laws that may become effective during the term of this Permit.

Noncompliance with any term or condition of this Permit shall constitute a violation of the Lacey Municipal Code, Section 13.10.

This Permit shall become effective at 12:01 PM on September 29, 2012, and shall expire at 11:59 PM on September 28, 2017.

If the Permittee wishes to continue to discharge after the expiration date of this Permit, an application must be filed for a renewal permit in accordance with the requirements of Chapter 13.10.010 of the Lacey Municipal Code, and Section 8.6 of this Permit, a minimum of ninety (90) days prior to the expiration date.

By: _____
Scott Egger, P.E.
Director of Public Works
City of Lacey

By: _____
Michael D. Strub, P.E.
Executive Director
LOTT Clean Water Alliance

Issued this 28th day of September 2012

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SUBMITTAL SCHEDULE

PERMIT SECTION	SUBMITTAL	FREQUENCY	FIRST SUBMITTAL
3.2	Discharge Monitoring Reports	Monthly	15th of month following required monitoring
3.3	Reports of Additional Monitoring by the Permittee	As Needed	As Required
3.8	Notification of Violation/Repeat Sampling and Reporting	As Needed	As Required
3.7	Reports of Potential Problems	As Needed	As Required
5.5	Bypass Notification and Reporting	As Needed	As Required
3.9	Notification of Discharge of Hazardous Waste	As Needed	As Required
3.6	Reports of Changed Conditions	As Needed	30 days prior to commencing
6.3	Volatile and Semi-volatile Organics Sampling	1/Permit Cycle	As required; to occur by November 29, 2012
6.2	Semi-annual Sampling and Reporting	January and July of every year	January 15, 2013
6.4	Accidental Discharge/Slug Discharge Control Plans	Update current Plan on file whenever significant facility revisions are planned or have been implemented	Whenever significant facility revisions have been implemented
8.6	Permit Application for Renewal	1/Permit Cycle	90 days prior to expiration date of Permit

PART 1 - DISCHARGE REQUIREMENTS

1.1 Description of Outfalls

Beginning on the effective date of this Permit and lasting through the expiration date, the Permittee is authorized to discharge process and/or domestic wastewater to the City of Lacey and LOTT POTW from the outfalls listed below:

Outfall	Descriptions
001	Treated Water Holding Tank (Tank #26)
002	Discharge point of 2 inch sanitary sewer line into City of Lacey 15-inch sanitary sewer main on Union Mills Road

1.2 Waste Streams at Each Outfall

During the term of this permit, the discharge from Outfall 001 shall consist of all process wastewater treated by the ALAR™ pretreatment system only.

During the term of this permit, the discharge from Outfall 002 shall consist of domestic and non-process wastewater, and boiler blow-down, in combination with the treated process wastewaters discharged from Outfall 001. No process wastewater other than that discharged through Outfall 001 shall enter Outfall 002.

1.3 Effluent Limitations

Beginning on the effective date of this Permit, and lasting through the expiration date, the Permittee shall not discharge wastewater from Outfall 001 in excess of the following effluent limitations:

ANALYTE	DAILY MAXIMUM CONCENTRATION LIMIT	DAILY MAXIMUM LOADING LIMITS (1,000 gallons per day or less)
Arsenic	0.2 mg/L	0.002 lbs. per day
Cadmium	0.2 mg/L	0.002 lbs. per day
Chromium	1.0 mg/L	0.008 lbs. per day
Chromium (hexavalent)	0.25 mg/L	0.002 lbs. per day
Copper	0.5 mg/L	0.004 lbs. per day
Cyanide	0.64 mg/L	0.005 lbs. per day
Cyanide (Free)	0.25 mg/L	0.002 lbs. per day
Lead	0.4 mg/L	0.004 lbs. per day
Mercury	0.05 mg/L	0.0004 lbs. per day
Nickel	0.5 mg/L	0.004 lbs. per day
Silver	0.2 mg/L	0.002 lbs. per day
Zinc	1.0 mg/L	0.008 lbs. per day
Fats, oils, & greases of animal or vegetable origin	300 mg/L	Any amount
Hydrocarbon-based oils & greases	50 mg/L	Any amount
Minimum pH	5.0 standard units	N/A
Maximum pH	11.0 standard units	N/A

Reduction in POTW effluent ultra violet transmissivity (per cm at 254 nm wavelength)	10% reduction	N/A
Decrease in POTW maximum effluent no observed effect concentration (NOEC) in any whole effluent toxicity test	10% decrease	N/A

WASTE LOADING PARAMETER	DAILY MAXIMUM	MONTHLY AVERAGE (measured over calendar month)
Flow	15,000 Gallons per day	10,000 Gallons per day

A. All concentrations for metallic substances are for total metal unless indicated otherwise. The Executive Director may impose mass limits in addition to concentration-based limits.

B. The Permittee shall be subject to "instantaneous limits" (as determined by a grab sample) of equal to twice the above "daily maximum" concentrations for any pollutant for which a composite sample is required in this Permit. This provision is inapplicable to the Permittee when there is no permit requirement to collect a composite sample for the analyte in question.

C. If the Permittee discharges Biochemical Oxygen Demand, Total Suspended Solids, or Total Ammonia in excess of the concentration limits or threshold amounts listed below, the Permittee will be subject to surcharges as established in and under the authority of Section 14.1 up to any maximum loading limit established by this Permit.

ANALYTE	EXCESS STRENGTH CHARGES THRESHOLD LIMIT	PERMITTED DISCHARGE THRESHOLD AMOUNT
Biochemical Oxygen Demand (BOD_5)	300 mg/L	2.5 lbs. per day
Total Suspended Solids	300 mg/L	2.5 lbs. per day
Total Ammonia, as ammonia (NH_3) and ammonium ion (NH_4^+)	60 mg/L	0.5 lbs. per day

D. The City may use this Permit to establish ceiling limits for compatible pollutants and appropriate discharge limits for all other pollutants not contained in this Section. This includes pollutants subject to regulation under RCRA, volatile or semi-volatile organics, halogenated or brominated compounds, poly-aromatic hydrocarbons, polymers, surfactants, pesticide active ingredients, and any other pollutant.

1.4 Requirement to Apply AKART

The Permittee shall provide all known, available, and reasonable methods of prevention, control and treatment (AKART) as required to comply with this Permit and local, State and Federal regulations, and shall achieve compliance with all applicable pretreatment standards and requirements within the time limitations as specified by appropriate statutes, regulations, chapters and ordinances. Any facilities required to treat wastewater to satisfy applicable pretreatment standards and requirements contained in this Permit, shall be supplied, properly operated, and maintained at the Permittee's expense.

1.5 Best Management Practices

The Executive Director may establish, and the City require, Best Management Practices (BMPs) for any category of industry or type of industrial process, which creates a non-domestic waste stream. Such requirements may be applied either in lieu of or in addition to the effluent limitations contained in Section 1.3. BMPs may also include alternative limits, which may be applied at the end of a specific process or treatment step instead of at the combined effluent.

1.6 Right of Revision

The Executive Director and the City reserves the right to establish, by this Permit, more stringent standards or requirements on discharges to the POTW.

PART 2– MONITORING REQUIREMENTS

2.1 Monitoring Schedule

From the period beginning on the effective date of this Permit and lasting through the expiration date, the Permittee shall monitor Outfall 001 for the following parameters, at the indicated frequency:

Parameter (units)	Locations	Frequency	Sample Type
Flow (gpd)	001	Continuously	Meter
BOD_5 (mg/L)	001	Three per month[2]	Grab
TSS (mg/L)	001	Three per month[2]	Grab
pH	001	Prior to each batch discharge	Meter
Fats, oils, & greases of animal or vegetable origin (mg/L)	001	Once per month	Grab
Hydrocarbon-based oils & greases (mg/L)	001	Once per month	Grab
Arsenic, total (mg/L)	001	Twice per year	Grab
Cadmium, total (mg/L)	001	Twice per year	Grab
Chromium, total [1](mg/L)	001	Twice per year	Grab
Copper, total (mg/L)	001	Twice per year	Grab
Lead, total (mg/L)	001	Twice per year	Grab
Mercury, total (mg/L)	001	Twice per year	Grab
Molybdenum, total (mg/L)	001	Twice per year	Grab
Nickel, total (mg/L)	001	Twice per year	Grab
Selenium, total (mg/L)	001	Twice per year	Grab
Silver, total (mg/L)	001	Twice per year	Grab
Zinc, total (mg/L)	001	Twice per year	Grab
Cyanide, total[1] (mg/L)	001	Twice per year	Grab
EPA 624 Volatiles	001	1/Permit cycle	Grab
EPA 625 Semi-Volatiles	001	1/Permit cycle	Grab

2.2 Analytical Requirements

All pollutant sampling and analyses required under this Permit shall conform to the most current version of 40 CFR Part 136. If 40 CFR Part 136 does not contain sampling or analytical techniques for a pollutant, or the Executive Director determines that the Part 136 sampling and analytical techniques are inconsistent with the goal of the sampling, the Executive Director may specify an analytical method. If neither case applies, the Permittee shall use validated analytical methods or applicable sampling and analytical procedures approved by USEPA.

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1 If total chromium in excess of 0.25 mg/l is detected, the Permittee shall immediately resample by grab sample and analyze for hexavalent chromium; if total cyanide in excess of 0.25 mg/l is detected, the Permittee shall immediately resample and analyze for free cyanide.

2 Samples for biochemical oxygen demand (BOD_5) and total suspended solids (TSS) shall be collected during three random days in accordance with Part 2.4 of this permit

2.3 Recording of Results

For each measurement or sample taken, the Permittee shall record the following information:

A. The date, exact place, and time of the sampling;

B. The method of sample taking and preservation;

C. The names of the person(s) who performed the sampling or measurements, and each person with custody of the sample until analysis;

D. The date(s) analyses were performed and who performed them;

E. The analytical techniques or methods used;

F. The results of such analyses, and;

G. All quality control/quality assurance results pertaining to the analyses.

This information shall be included in the Discharge Monitoring Report described in Section 3.2 of this Permit. Additional information, such as laboratory raw data, shall be submitted to the Executive Director upon request.

2.4 Representative Sampling

A. The Permittee must ensure that all samples collected to satisfy sampling requirements under this Permit are representative of the range of conditions occurring during the reporting period. Samples and measurements taken to meet the requirements of this Permit shall be representative of the volume and nature of the monitored discharge(s) and the discharges monitored shall be representative of daily operations.

B. All samples shall be taken at the monitoring points specified in this Permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water or substance. All equipment used for sampling and analysis must be routinely calibrated, inspected, and maintained to ensure its accuracy. Monitoring points shall not be changed without notification to and the approval of the Executive Director.

2.5 Sample Collection and Analysis

A. The Permittee must use properly cleaned sample containers appropriate for the sample analysis and sample collection and preservation protocols specified in 40 CFR Part 136 and appropriate USEPA guidance.

B. The Permittee must obtain samples for oil and grease, temperature, pH, cyanide, total, and volatile organic compounds using grab collection techniques.

C. For certain pollutants, the Permittee may composite multiple grab samples taken over a 24-hour period. The Permittee may composite grab samples for cyanide either in the laboratory or in the field, and may composite grab samples for volatile organics and oil & grease in the laboratory prior to analysis.

D. For all other pollutants, the Permittee must be representative of the volume and nature of the monitored discharge(s) and the discharges monitored shall be representative of daily operations.

E. The Executive Director may authorize composite samples for parameters unaffected by the compositing procedures, as appropriate.

F. The Executive Director may require grab samples either in lieu of or in addition to composite sampling to show compliance with instantaneous discharge limits.

G. In all cases, the Permittee must take care to ensure the samples are representative of their wastewater discharges.

2.6 Requirements for Laboratory Accreditation

All required monitoring data shall be analyzed by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, Accreditation of Environmental Laboratories, except for flow, temperature, total suspended solids, conductivity, pH, turbidity, and internal process control parameters. However, if the laboratory analyzing samples for conductivity, pH, and turbidity must otherwise be accredited, it shall be accredited for these parameters as well.

PART 3 – REPORTING REQUIREMENTS

3.1 Where to Send Reports or Make Notifications

All reports required by this Permit shall be submitted to LOTT at the following address:

Environmental Compliance Supervisor
LOTT Clean Water Alliance
500 Adams Street NE
Lacey, WA 98501-1073

Telephone notification shall be made to the LOTT Environmental Compliance Supervisor at phone number (360) 528-5708, or if unavailable, to the LOTT Budd Inlet Treatment Plant at phone (360) 528-5700.

3.2 Scheduled Reports – Discharge Monitoring Reports

The Permittee shall summarize and report the results of all monitoring of pollutants discharged to the POTW. This information shall be compiled each month and reported on a form provided by or approved by the City. Each report shall be submitted, along with the information described in Section 2.3 of this Permit, by the fifteenth (15^{th}) day of the following month. Monitoring shall begin on the effective date of this Permit and each pollutant shall be sampled within the specified sampling interval.

3.3 Reports of Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this Permit using test procedures prescribed in 40 CFR Part 136 or amendments thereto, or otherwise approved by EPA or specified in this Permit, the results of such monitoring shall be included in calculating the daily maximum and monthly average pollutant discharges, and the results of the additional sampling shall be reported in the Discharge Monitoring Report.

3.4 Date of Receipt of Reports

The Executive Director will credit written reports as having been submitted on the date of the post mark when mailed through the United States Postal Service. Reports delivered in any other manner will be credited as having been submitted on the business day received.

3.5 Record Keeping

The Permittee shall retain the information listed in Section 2.3 for all monitoring required by this Permit and for any additional monitoring, which could be used to satisfy minimum monitoring requirements. The Permittee must make these records available for inspection and copying at the location of the discharge. The Permittee must similarly maintain documentation associated with any Best Management Practices required under authority of Section 1.5.

Permittee shall retain quality control and quality assurance information provided by the laboratory and submit this information in routine reporting. For analytes for which Washington State requires use of a certified/accredited laboratory, the Permittee must maintain the scope of accreditation for laboratories performing any analyses for them.

The Permittee shall maintain the above records for at least three (3) years, until any litigation concerning the Permittee or the City, or the Executive Director is complete, or for longer periods when the Permittee has been specifically notified of a longer retention period by the Executive Director.

3.6 Reports of Changed Conditions

The Permittee must notify the Executive Director of any changes to the Permittee's operations or system, which might alter the nature, quality, or volume of its wastewater. This notification must be made at least thirty (30) days before the desired change and be sent to both the Control Authority (Executive Director) and the receiving POTW if they are different. In such cases:

A. The Executive Director may require the Permittee to submit whatever information is needed to evaluate the changed condition. The Executive Director may also require the Permittee to submit a new or revised wastewater discharge permit application.

B. The City may reissue or modify this Permit, applying the procedures of Section 8.3(B) of this Permit, in response to a Permittee's notice under this Section.

3.7 Reports of Potential Problems

A. Any Permittee, which has any unusual discharge that could cause problems to the POTW must immediately notify the Executive Director by telephone of the incident. This notification shall include the location of the discharge, type of waste, concentration and volume, if known, and corrective actions taken by the Permittee to control and curtail the discharge. Such discharges may include spills, slug loads, accidental discharges, or other discharges of a non-routine, episodic nature. Problems to the POTW which require reporting under this Section include violating pretreatment prohibitions, treatment standards, or other requirements of Chapters 1 and 5 of this Permit , including gas vapor toxicity and explosivity limits.

B. Within five (5) days following such discharge, the Permittee shall submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the Permittee to prevent similar future occurrences. Such notification shall not relieve the Permittee of any expense, loss, damage, or other liability, which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the Permittee of any fines, penalties, or other liability, which may be imposed pursuant to this Permit.

C. Regardless of whether the Permittee has been required to submit a Slug Discharge Control Plan per Section 6.4, the Permittee shall post notice in a prominent location advising employees who to call at the POTW to inform the Executive Director of a potential problem discharge as required by Section 3.7(A) above. The Permittee shall ensure that all employees who may cause or witness such a discharge are advised of the emergency notification procedures.

D. The Permittee must immediately notify the Executive Director of any changes at their facility, which might increase their potential for a slug discharge. This includes increasing the volume of materials stored or located on site, which, if discharged to the POTW, would cause problems. The Permittee required to prepare a Slug Discharge Control Plan under Section 6.4 shall also modify their plans to include the new conditions prior to, or immediately after making such changes.

3.8 Notification of Violation/Repeat Sampling and Reporting

If sampling performed by the Permittee indicates a violation, the Permittee must notify the Executive Director within twenty-four (24) hours of becoming aware of the violation. The Permittee shall also repeat the sampling and analysis and submit the results of the repeat analysis to the Executive Director within thirty (30) days after becoming aware of the violation. The Executive Director may waive the repeat sampling requirement where the Executive Director has sampled the effluent for the pollutant in question prior to the Permittee obtaining sampling results.

3.9 Notification of Discharge of Hazardous Waste

A. If the Permittee discharges any substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261, or Chapter 173-303 WAC must also comply with the following requirements:

1. Notify the Executive Director, the USEPA Regional Waste Management Division Director, and State hazardous waste authorities, in writing, of the discharge. Maintain a copy of this notification and include it in all subsequent permit application or re-applications under this Chapter.
2. Include the following information in the notification:
   a. The name of the hazardous waste as found in 40 CFR Part 261;
   b. The USEPA hazardous waste number; and
   c. The type of discharge (continuous, batch, or other).
3. If the discharge totals more than two hundred and twenty (220) pound in any month, also provide:
   a. The hazardous constituents contained in the wastes,
   b. An estimate of the mass and concentration of hazardous constituents in the wastestream discharged during that calendar month, and
   c. An estimate of the mass of constituents in the wastestream expected to be discharged during the following twelve (12) months.
4. This notice shall be repeated for new or increased discharges of substances subject to this reporting requirement.
5. All notifications must take place prior to discharging a substance for which these reporting requirements apply. If this is not possible, the notice must be provide as soon after discharge as practical and describe why prior notice was not possible.
6. The Permittee must provide notifications under this paragraph only once to USEPA and the State for each hazardous waste discharged. However, all of the information of these notices shall be repeated in each new permit application submitted under this Chapter.
7. This requirement does not relieve the Permittee from requirements to provide other notifications, such as of changed conditions under Section 3.6 of this Permit, or applicable Permit conditions, permit application requirements, and prohibitions.
8. The notification requirements in this Section do not apply to pollutants for which routine monitoring and reporting is required in a permit under this Permit.

B. The Permittee must report all discharges of more than thirty-three (33) pounds per month of substances, which, if otherwise disposed of, would be hazardous wastes. The Permittee must also report any discharge of acutely hazardous wastes as specified in 40 CFR Parts 261.30(d) and 261.33(e). Subsequent months during which the Permittee discharges more of a hazardous waste for which notice has already been provided do not require another notification to USEPA or the State, but must be reported to the Executive Director.

C. If new regulations under RCRA describe additional hazardous characteristics or substances as a hazardous waste, the Permittee must provide notifications under paragraphs A, if required by paragraph B within ninety (90) days of the effective date of such regulations.

D. For any notification made under this Section, the Permittee shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical and shall describe that program and reductions obtained through its implementation.

E. This provision does not create a right to discharge any substance not otherwise permitted to be discharged by this Permit, an ordinance, or any applicable Federal or State law.

3.10 Authorized or Duly Authorized Representative of the Permittee

All forms, applications, and reports required by this Permit must be signed by an authorized representative of the Permittee, as defined below:

A. If the Permittee is a corporation:

1. The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

2. The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions, which govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for control mechanism requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

B. If the Permittee is a partnership or sole proprietorship: a general partner or proprietor, respectively.

C. If the Permittee is a Federal, State, or local governmental facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or their designee.

D. The individuals described in Section 3.10(A-C), may designate another authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates, or having overall responsibility for environmental matters for the company, and the written authorization is submitted to the Executive Director.

The Permittee shall submit a new authorization if the designation of an authorized representative is no longer accurate. This includes when a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company. The User must submit the new authorization prior to or with any reports to be signed by the new authorized representative.

3.11 Certification Statement

In addition to the signatory requirements defined in Section 3.10 above, all forms, applications, and reports required by this Permit must contain the following certification statement:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

PART 4 – DEFINITIONS

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this Permit, shall have the meanings hereinafter designated.

4.1 **Biochemical Oxygen Demand or BOD** – The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures for five (5) days at 20 degrees centigrade, usually expressed as a concentration (e.g., mg/L).

4.2 **Best Management Practices or BMPs** – Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the prohibitions listed in Section 2.1(A) and (B) and 40 CFR Part 403.5(a)(1) and (b). BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage.

4.3 **City** – The City of Lacey, Washington, a municipal corporation organized and existing under and by virtue of the laws of the State of Washington.

4.4 **Composite Sample** – A composite of several samples taken throughout the period of a day when a regulated discharge is occurring. Several brands of electric samplers, some with a refrigerated sample collection area, may be used. Approvable composite samplers may either use a flow paced or time paced algorithm. For example, collecting a same size aliquot every 1,000 gallons (flow paced), or a variable sized aliquot every hour (time paced). In both cases, they must interface with a device, which senses the effluent flow volume to collect a representative sample unless the Executive Director has determined that a flow proportionate sample is not required.

4.5 **Daily Limit or Daily Maximum Limit** – The maximum allowable discharge of a pollutant over a calendar day or equivalent representative 24-hour period. Where daily maximum limits are expressed in units of mass, and the daily discharge is calculated by multiplying the daily average concentration and total flow volumes in the same 24-hour period by a conversion factor to get the desired units. Where daily limits are expressed in terms of a concentration, the daily discharge is the composite sample value, or flow weighted average if more than one discrete sample was collected. Where flow weighting is infeasible, the daily average is the arithmetic average of all samples if analyzed separately, or the sample value if samples are composited prior to analysis.

4.6 **Environmental Compliance Supervisor** – The individual designated by the Executive Director of the LOTT Clean Water Alliance to represent the Executive Director in the implementation of LOTT's Industrial Pretreatment Program.

4.7 **Executive Director** – The Executive Director of the LOTT Clean Water Alliance and shall be considered LOTT Clean Water Alliance personnel or the LOTT Clean Water Alliance's agent for purposes of Article VII of the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999." The term also means a duly authorized representative of the Executive Director.

4.8 **Grab Sample** – A sample, which is taken from a wastestream without regard to the flow in the wastestream and over a period of time not to exceed fifteen (15) minutes.

4.9 **Instantaneous Maximum Discharge Limit or Instantaneous Limit** – The maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of a discrete sample. Where the Permittee is required to take a grab sample for purposes of determining compliance with Local Limits, this standard is the same as the Daily Maximum standard. For pollutants for which Users are required to take composite samples, (or for metals if no permit has been issued) the Instantaneous Limit shall be twice the Daily Limit.

4.10 **Interference** – A discharge that causes (either by itself or in combination with other discharges) a violation of LOTT's NPDES permit, or prevents the intended sewage sludge use or disposal by inhibiting or disrupting the POTW, including its collection systems, pump stations, and wastewater and sludge treatment processes. This includes any discharge from the Permittee that causes a blockage resulting in a discharge at a point not authorized under LOTT's NPDES permit.

4.11 **LOTT Clean Water Alliance or LOTT** – A State of Washington nonprofit corporation created by Interlocal Agreement that operates as a public agency under State of Washington law, providing wastewater management and reclaimed water production services for the urbanized area of north Thurston County, Washington.

4.12 **Medical Waste** – Isolation wastes, infectious agents, human blood and blood products, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes, potentially contaminated laboratory wastes, and dialysis wastes.

4.13 **Monthly Average** – The arithmetic mean of the effluent samples collected during a calendar month or specified 30-day period. Where the Control Authority has taken a sample during the period, it must be included in the monthly average if provided in time. However, where composite samples are required, grab samples taken for process control or by the Control Authority are not to be included in a monthly average.

4.14 **Monthly Average Limit** – The limit to be applied to the Monthly Average to determine compliance with the requirements of this Permit (see Section 1.3 for listing).

4.15 **Non-Contact Cooling Water** – Water used for cooling that does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

4.16 **Pass Through** – A discharge, which exits the POTW into waters of the United States in quantities or concentrations, which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of LOTT's NPDES permit, including an increase in the magnitude or duration of a violation.

4.17 **Person** – Any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity; or their legal representatives, agents, or assigns. This definition includes all Federal, State, and local governmental entities.

4.18 **pH** – A measure of the acidity or alkalinity of a solution, expressed in standard units.

4.19 **Pollutant** – Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, medical wastes, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural and industrial wastes, and certain characteristics of wastewater (e.g., pH, temperature, Total Suspended Solids, turbidity, color, Biochemical Oxygen Demand, Carbonaceous Oxygen Demand, toxicity, or odor).

4.20 **Pretreatment** – The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, introducing such pollutants into the POTW. This reduction or alteration can be obtained by physical, chemical, or biological processes; by process changes; or by other means, except by diluting the concentration of the pollutants unless allowed by an applicable pretreatment standard.

4.21 **Pretreatment Requirements** – Any substantive or procedural requirement related to pretreatment imposed on the Permittee, other than a pretreatment standard.

4.22 **Pretreatment Standards or Standards** – Pretreatment standards shall mean the discharge requirements contained in Part 1, and the Prohibited Discharges contained in Part 5.

4.23 **Publicly Owned Treatment Works or POTW** – A treatment works, as defined by Section 212 of the Act (33 U.S.C. Section 1292), which is owned by LOTT and/or the [City or County] and more fully described in the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999." This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature and any conveyances, including sanitary sewer and storm sewer collection systems, which convey wastewater to a treatment plant.

4.24 **Sewage** – Human excrement and gray water (from household showers, toilets, kitchens, clothes and dish washing, and related domestic activities).

4.25 **Slug Load or Slug Discharge** – Any Discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch Discharge, which has a reasonable potential to cause Interference or Pass Through, or in any other way violate the POTW's regulations, local limits, or Permit conditions. This includes discharges at a flow rate or concentration that could cause a violation of the prohibited discharge standards of Section 1.3 and Part 5 of this Permit.

4.26 **Storm Water** – Any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt.

4.27 **Total Suspended Solids** – The total suspended matter that floats on the surface of, or is suspended in, water, wastewater, or other liquid, and which is removable by laboratory filtering.

4.28 **Wastewater** – Liquid and water-carried industrial wastes and sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, which are contributed to the POTW.

4.29 **Wastewater Treatment Plant or Treatment Plant** – That portion of the POTW, which is designed to provide treatment of municipal sewage and industrial waste.

PART 5 – PROHIBITED DISCHARGES

5.1 General Prohibitions

The Permittee shall not introduce or cause to be introduced into the POTW any pollutant or wastewater, which causes Pass Through or Interference.

5.2 Specific Prohibitions

The Permittee shall not introduce or cause to be introduced into the POTW the following pollutants, substances, or wastewater:

A. Pollutants, which either alone or by interaction may create a fire or explosive hazard in the POTW, a public nuisance or hazard to life, or prevent entry into the sewers for their maintenance and repair or are in any way injurious to the operation of the system or operating personnel. This includes waste streams with a closed-cup flashpoint of less than 140 degrees F (60 degrees C) using the test methods specified in 40 CFR Part 261.21.

B. Wastewater having a pH less than 5.0 or more than 11.0, or otherwise having any other corrosive property capable of causing damage or hazard to structures, equipment, or personnel. Discharges outside this pH range may be authorized by the Executive Director through revisions of this Permit issued by the City pursuant to a finding that the system is specifically designed to accommodate a discharge of that pH.

C. Solid or viscous substances in amounts that may cause obstruction to the flow in the sewer or other interference with the operation of the system. In no case shall solids greater than 1/4 inch (0.64 cm) in any dimension be discharged.

D. Pollutants, including oxygen-demanding pollutants (Biochemical Oxygen Demand, etc.), released in a discharge at a flow rate and/or pollutant concentration, which, either singly or by interaction with other pollutants, will cause interference with the POTW.

E. Wastewater having a temperature that will interfere with the biological activity in the system, has detrimental effects on the collection system, or prevents entry into the sewer. In no case shall wastewater be discharged, which causes the wastewater temperature at the treatment plant to exceed 104 degrees F (40 degrees C).

F. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin, in amounts that will cause Interference or Pass Through.

G. Pollutants, which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

H. Trucked or hauled pollutants, except at discharge points designated by the Executive Director.

I. The following are prohibited unless approved by the Executive Director under extraordinary circumstances, such as lack of direct discharge alternatives due to combined sewer service or need to augment sewage flows due to septic conditions (as required under WAC 173-216-050).

   1. Non-contact cooling water in volumes the Executive Director determines as significant.
   2. Storm water, or other direct inflow sources.
   3. Wastewaters affecting system hydraulic loading which do not require treatment, or would not be afforded a significant degree of treatment by the system, as determined by the Executive Director.

J. Noxious or malodorous liquids, gases, solids, or other wastewater, which, either singly or by interaction with other wastes, are sufficient to create a public nuisance or a hazard to life, or to prevent entry into the sewers for maintenance or repair.

K. Wastewater, which imparts color that cannot be removed by the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions, which consequently imparts color to the treatment plant's effluent, thereby violating LOTT's NPDES permit.

L. Wastewater containing any radioactive wastes or isotopes except in compliance with applicable State or Federal regulations.

M. Storm water, surface water, ground water, artesian well water, roof runoff, subsurface drainage, swimming pool drainage, condensate, deionized water, noncontact cooling water, and unpolluted wastewater, unless specifically authorized by the Executive Director.

N. Sludges, screenings, or other residues from the pretreatment of industrial wastes.

O. Medical wastes, except as specifically authorized by the Executive Director and the City in a revision of this Permit.

P. Wastewater causing, alone or in conjunction with other sources, the treatment plant's effluent to fail a toxicity test.

Q. Detergents, surface-active agents, or other substances, which may cause excessive foaming in the POTW.

R. Fats, oils, or greases of animal or vegetable origin in concentrations greater than three hundred (300) mg/L, or Total Petroleum Hydrocarbon concentrations of no more than fifty (50) mg/L.

S. Wastewater causing two readings on an explosion hazard meter at the point of discharge into the POTW, or at any point in the POTW, of more than ten percent (10%) or any single reading over twenty percent (20%) of the Lower Explosive Limit based on an explosivity meter reading.

Pollutants, substances, or wastewater prohibited by this Section shall not be processed or stored in such a manner that they could be discharged to the POTW.

5.3 Dilution Prohibition

The Permittee shall not increase the use of process water, or in any way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with a discharge limit unless expressly authorized by an applicable pretreatment standard or requirement. The Executive Director may impose mass limitations on the Permittee where deemed appropriate to safeguard against the use of dilution to meet applicable pretreatment standards or requirements, or in other cases when the imposition of mass limitations is appropriate.

5.4 Affirmative Defense to Violating Prohibited Discharge Standards

The Permittee will have an affirmative defense to an enforcement action brought against it for noncompliance with the prohibitions in Section 5.1 and 5.2(A-G) of this Permit in certain cases, pursuant to 40 CFR Part 403.5(a)(2). The Permittee must be able to prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause Pass Through or Interference and that either:

A. A local limit exists for each pollutant discharged and the Permittee was in compliance with each limit directly prior to, and during, the Pass Through or Interference; or

B. No local limit exists, but the discharge did not change substantially in nature or constituents from the Permittee's prior discharge when LOTT was regularly in compliance with its NPDES permit, and in the case of Interference, was in compliance with applicable sludge use or disposal requirements.

5.5 Bypass Notification and Reporting

A. For the purposes of this Section:

1. Bypass means the intentional diversion of wastestreams from any portion of a Permittee's treatment facility.

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, which 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. The Permittee may allow a bypass to occur if it does not cause pretreatment standards or requirements to be violated and is for essential maintenance to assure efficient operation.

C. Any other bypass must meet the following requirements:

1. The Permittee knowing in advance of the need for a bypass must submit prior notice to the Executive Director, at least ten (10) days before the bypass wherever possible; and

2. The Permittee must tell the Executive Director of any unanticipated bypass that exceeds applicable pretreatment standards within twenty-four (24) hours of becoming aware of the bypass. The Permittee must provide a written follow-up report within five (5) days. The Executive Director may waive the written report if the oral report was timely and complete. Unless waived, the written report must contain:

   a. A description of the bypass (volume, pollutants, etc.);

   b. What caused the bypass;

   c. When, specifically, the bypass started and ended;

   d. When the bypass is expected to stop (if ongoing); and

   e. What steps the Permittee has taken or plans to take to reduce, eliminate, and prevent the bypass from reoccurring.

D. Bypass is prohibited, and the City may take an enforcement action against the Permittee for a bypass, unless:

1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2. 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 back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment downtime or preventive maintenance; and

3. The Permittee submitted notices as required under Section 5.5(C) above.

E. The Executive Director may approve an anticipated bypass, after considering its adverse effects, if the Executive Director determines that it will meet the three (3) conditions listed in Section 5.5(D) above.

PART 6 – SPECIAL CONDITIONS

6.1 Excess Strength Charges

For industrial waste or other discharges exceeding the biochemical oxygen demand (BOD), total suspended solids (TSS), or total ammonia (TA) limits defined in Section 1.3(C) of this Permit, the following formula shall be used to determine the equivalent residential units (ERU) equivalency of the waste flow. The Executive Director may determine that all or part of Permittee's industrial waste or other discharge exceeding the limits defined in Section 1.3(C) results in a net benefit to the operation of the POTW, and may grant exemptions to the Permittee from some or all of the resulting surcharges.

This formula applies only to BOD and/or TSS concentrations in excess of 300 mg/L and total ammonia in excess of 60 mg/L.

A. ERU Equivalent for High Strength Waste shall be the sum of the following:

1. Flow Calculation:

$$(\text{P-FLOW}) \times \frac{\text{Industry flow (cu ft/ month)}}{\text{900 cu. ft. /ERU}} = \text{FLOW ERUs}$$

2. Biochemical Oxygen Demand Calculation:

$$(\text{P-BOD}) \times \frac{\text{Industry BOD (mg/L)}}{\text{300 mg/L}} \times \frac{\text{Industry Flow (cu ft/month)}}{\text{900 cu ft/ERU}} = \text{BOD ERUs}$$

3. Total Suspended Solids Calculation:

$$(\text{P-TSS}) \times \frac{\text{Industry TSS (mg/L)}}{\text{300 mg/L}} \times \frac{\text{Industry Flow (cu ft/month)}}{\text{900 cu ft/ERU}} = \text{TSS ERUs}$$

4. Total Ammonia Calculation:

$$(\text{P-TA}) \times \frac{\text{Industry TA (mg/L)}}{\text{60 mg/L}} \times \frac{\text{Industry Flow (cu ft/month)}}{\text{900 cu ft/ERU}} = \text{TA ERUs}$$

B. Explanation of terms:

1. (P-FLOW) = Percentage treatment costs associated with hydraulic flow, equal to twenty-nine percent (29%)
2. (P-BOD) = Percentage treatment costs associated with biochemical oxygen demand, equal to thirty-four percent (34%)
3. (P-TSS) = Percentage treatment costs associated with total suspended solids, equal to twenty-two percent (22%)
4. (P-TA) = Percentage treatment costs associated with total ammonia, equal to fifteen percent (15%)
5. ERU: (Equivalent Residential Unit) = to 900 cubic feet of wastewater containing a maximum of 300 mg/L of total suspended solids, a maximum of 300 mg/L of biochemical oxygen demand, and a maximum of 60 mg/L of total ammonia.
6. The percentage of treatment costs used in items Sections 6.1(B)(1-4) are calculated based on an average of documented treatment costs.

7. All monthly charges per ERU established by the "Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Clean Water Alliance by and among City of Lacey, City of Olympia, City of Tumwater, and Thurston County, dated November 5, 1999," as amended, shall apply to ERU's calculated by the preceding formulas.

6.2 Semi-annual Sampling and Reporting

Semi-annual sampling from Outfall 001 shall occur at least every six months and commence by December 15, 2012, consisting of the following:

Twice each calendar year the Permittee shall sample for the following total metals: Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, and Zinc. These samplings shall be performed on a typical full process workday. Samples shall be 24-hour flow-proportioned composite samples. If Total Chromium in excess of 0.25 mg/L is detected, the Permittee shall immediately resample by grab sample and analyze for Hexavalent Chromium.

In addition, twice each calendar year the Permittee shall sample for Total Cyanide. This sampling shall be performed on a typical full process workday. This shall be a series of four grab samples taken over the course of the workday. If Total Cyanide in excess of 0.25 mg/L is detected, the Permittee shall immediately resample by grab sample and analyze for Free Cyanide.

6.3 Volatile and Semi-volatile Organics Sampling

The Permittee shall submit within 60 days of the effective date of this Permit, one-time sampling data for Volatile and Semi-volatile Organic Priority Pollutants. This sampling shall be performed on a typical full process workday and shall include all volatile compounds listed in EPA Method 624 and all semi-volatile compounds listed in EPA Method 625, as published in 40 CFR Part 136.

6.4 Accidental Discharge/Slug Discharge Control Plans

The Permittee shall develop and implement, and revise whenever additions or revisions have been made to the operation of the facility, an Accidental Discharge/Slug Discharge Control Plan (Plan), and take other actions the Executive Director believes are necessary to control discharges, which may be caused by spills or periodic non-routine activities. The Plan and any revisions shall be submitted to the Executive Director for approval prior to being adopted by the Permittee. Upon approval of the Plan by the Executive Director, failure of the Permittee to promptly revised the Plan to reflect changed conditions, or to follow the Plan in the event of a spill is a violation of this Permit. Accidental discharge/slug discharge control plans shall include at least the following:

A. A description of all discharge practices, including any non-routine batch discharges such as from cleaning, replenishment, or disposal;

B. A description of all stored chemicals, disclosing all ingredients in formulations, which could violate a discharge prohibition if discharged to the sewer;

C. The procedures for immediately notifying the Executive Director and the City of any accidental or slug discharge, as required by Section 3.7 of this Permit; and

D. The procedures that will be taken to prevent the occurrence or adverse impact from any accidental or slug discharge. Such procedures shall address the inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment for emergency response.

PART 7 – PRETREATMENT OF WASTEWATER

7.1 Pretreatment Facilities

The Permittee shall provide wastewater treatment as necessary to comply with this Permit and shall achieve compliance with all pretreatment standards, local limits, and the prohibitions set out in Sections 1 and 5 of this Permit within the time limitations specified by USEPA, the State, the City, or the Executive Director, whichever is more stringent. Any facilities necessary for compliance shall be provided, operated, and maintained at the Permittee's expense.

7.2. Proper Operation and Maintenance

The Permittee shall at all times be responsible for the proper operation and maintenance of any facilities or systems of control installed to achieve compliance with the terms and conditions of this Permit. Where design criteria have been established, the Permittee shall not permit flows or waste loadings to exceed approved design criteria. A current and approved Operation and Maintenance Manual shall be maintained by the Permittee to assure that procedures for proper operation and maintenance of the treatment facilities are documented and up to date. Proper operation and maintenance includes but is not limited to: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

7.3 Additional Pretreatment Measures

A. The Executive Director may immediately and effectively halt or prevent any discharge of pollutants to the POTW, which reasonably appear to present an imminent endangerment to the health or welfare of persons. In such cases, the Executive Director will provide the Permittee advance notice if possible, but shall not delay a response to imminent endangerment.

B. The Executive Director may halt or prevent any discharge to the POTW, which presents or may present an endangerment to the environment or, which threatens to interfere with the operation of the POTW (including the collection system and pump stations). In such cases, the Executive Director shall attempt to provide not only notice to the Permittee, but the opportunity to respond.

C. If the Permittee causes the Executive Director to exercise the emergency authorities provided for under Sections 7.3(A) and (B) above, the Permittee shall be responsible for reimbursement of all related costs to the Executive Director and the City.

D. The Executive Director may require the Permittee to reduce or curtail certain discharges to the sewer, designate that certain wastewater be discharged only into specific sewers, relocate and/or consolidate points of discharge, separate sewage wastestreams from industrial wastestreams, and take all other measures to protect the POTW and determine the Permittee's compliance with the requirements of this Permit.

E. The Executive Director and the City, based on the determination that such devices are necessary for implementation of pretreatment requirements, may require any Permittee to install and maintain, on their property and at their expense the following devices:

1. A sample taking facility accessible to the Executive Director

2. A suitable storage and/or flow equalization tank

3. Grease, oil, and/or grit interceptors

4. An approved combustible gas detection meter

F. The Permittee installing any of the above devices shall ensure they are of the type and capacity approved by the City, meet applicable building and plumbing codes, and conform to any separate requirements established by the City and the Executive Director. The Permittee shall locate units in areas easily accessible for cleaning and inspection by representatives of the City or Executive Director. The Permittee shall be responsible for all periodic inspection, cleaning, and repair of such devices.

7.4 Treatment Facility Plan Approval

The Permittee must comply with the regulations contained in Chapter 173-240 WAC, Submission of Plans and Reports for Construction of Wastewater Facilities, prior to the Permittee constructing or modifying, or proposing to construct or modify, any wastewater treatment facilities. Such plans and reports (Engineering Report, Plans and Specifications, and Operation and Maintenance Manuals) shall be submitted as required by Chapter 173-240 WAC to the Executive Director, the City, and the Department of Ecology for review, and the Permittee shall obtain approval from the Department of Ecology prior to construction. The review of such plans and operating procedures shall in no way relieve the Permittee from the responsibility of modifying such facilities as necessary to produce a discharge acceptable to the Executive Director and the City under the provisions of this Permit. To ensure conformance with this requirement, proof of the approval of such plans and one copy of each approved plan shall be provided by the Permittee to the Executive Director and the City before commencing any such construction or modification.

PART 8 – PERMIT ADMINISTRATION

8.1 Discharge Permit Fees

Annual discharge permit fees shall be levied on the Permittee based on three criteria: (1) permitted flow rate; (2) permit complexity; and (3) potential danger to the collection system or POTW. The Permittee will be evaluated annually by the Executive Director and placed in one of three categories; with Category III having the highest combination of flow, complexity, and risk. The Executive Director shall use the Permit Fee Category Criteria set forth in the following table.

PERMIT FEE CATEGORY CRITERIA

CRITERION	RANGE	DESCRIPTION	SCORE
Flow	High	>25,000 gpd	3
	Medium	1,000 – 25,000 gpd	2
	Low	<1,000 gpd	1
Complexity	High	Categorical SIU	3
	Medium	Non-Categorical SIU	2
	Low	MIU	1
Potential Danger	High	Excess Strength Discharge, High Spill Potential, Large Quantity Of Toxic Materials, High Flows	3
	Medium	All Others	2
	Low	Low Spill Potential, No Excess Strength, Low Or No Toxics On Site, Low Flows	1

The total scores for all criteria determine the permit category and fee according to the following table. The Executive Director has determined that the Permittee designates as permit category 2.

PERMIT FEES
2012

SCORE	CATEGORY	FEE
3-4	I	$285
5-7	II	$428
8-9	III	$570

These fees shall be adjusted each calendar year for inflation by an amount equal to ninety (90) percent of the change in the Seattle-Tacoma-Bremerton area Consumer Price Index for Urban Wage and Clerical Workers (CPI-W), as published by the United States Department of Commerce Bureau of Labor Statistics, for the preceding twelve (12) month period. These discharge permit fees are in addition to the excess strength charges required in Section 6.1.

8.2 Permit Issuance Process

A. Public Notice: The Permittee shall follow the procedures for public notice found in Section 8.6. The Executive Director shall consider and respond to public input as appropriate prior to issuance of a permit.

B. Permit Appeals: The Executive Director shall provide public notice of the issuance of a wastewater discharge permit. The Permittee may petition the City to reconsider the terms of this Permit within thirty (30) days of notice of its issuance. Failure to submit a timely petition for review shall be deemed to be a waiver of the administrative appeal. In its petition, the appealing party must indicate the wastewater discharge permit provisions objected to, the reasons for this objection, and the alternative condition, if any, it seeks to place in the wastewater discharge permit. The effectiveness of the wastewater discharge permit shall not be stayed pending the appeal. If the City fails to act within thirty (30) days, a request for reconsideration shall be deemed to be denied. Decisions not to reconsider this Permit, not to issue this Permit, or not to modify this Permit shall be considered final administrative actions for purposes of judicial review. Aggrieved parties seeking judicial review of the final administrative wastewater discharge permit decision must do so by filing a complaint with the Superior Court of Thurston County within ten (10) days of the final administrative action.

8.3 Wastewater Discharge Permit Modification

The City, after consulting with the Executive Director, may modify this Permit for good cause, including, but not limited to, the following reasons:

A. To incorporate any new or revised Federal, State, or local pretreatment standards or requirements including new or revised local limits;

B. To address new or changed operations, processes, production rates, waste streams, or changes in water volume or character;

C. To reflect conditions at the POTW requiring an authorized discharge to be reduced or curtailed. Such requirements may be either temporary or permanent;

D. Based on information indicating that a permitted discharge poses a threat to the Executive Director's and/or City's POTW or staff, the receiving waters, or to violate a prohibition of this Chapter;

E. To address violations of any terms or conditions of this Permit;

F. To address misrepresentations or failure to fully disclose all relevant facts in this Permit application or in any required report;

G. To incorporate revisions based on a variance from categorical pretreatment standards approved pursuant to 40 CFR Part 403.13;

H. To correct typographical or other errors in this Permit; or

I. To reflect a transfer of the facility ownership or operation to a new owner or operator as required under Section 8.4.

8.4 Wastewater Discharge Permit Transfer

This Permit may be transferred to a new owner or operator only if the Permittee gives at least thirty (30) days advance notice to the Executive Director and the City, and the Executive Director and the City approves the Permit transfer. Failure to provide advance notice of a transfer renders this Permit void as of the date of facility transfer. The notice to the Executive Director and the City must include a written certification by the new owner or operator, which:

A. States that the new owner and/or operator have no immediate intent to change the facility's operations and processes;

B. Identifies the specific date on which the transfer is to occur; and

C. Acknowledges full responsibility for complying with this Permit.

8.5 Wastewater Discharge Permit Revocation

The City may revoke this Permit for good cause, including, but not limited to, when the Permittee has:

A. Failed to notify the Executive Director of changes to the wastewater deemed significant by the Executive Director, prior to the changed discharge;

B. Failed to provide prior notification to the Executive Director of changed conditions pursuant to Section 3.6 of this Permit;

C. Misrepresented or failed to fully disclose all relevant facts in the wastewater discharge permit application;

D. Falsified self-monitoring reports or tampered with monitoring equipment;

E. Refused to allow the Executive Director timely access to the facility premises and records;

F. Failed to meet effluent limitations or Permit conditions;

G. Failed to pay applicable fines or sewer charges;

H. Failed to meet compliance schedule deadline dates;

I. Failed to complete a wastewater survey or wastewater discharge permit application;

J. Failed to provide advance notice of the transfer of business ownership;

K. Violated any pretreatment standard or requirement, or any terms of this Permit, or Permit;

L. Ceased operations; or

M. Transferred business ownership.

This Permit is void upon the issuance of a new wastewater discharge permit to the Permittee.

8.6 Permit Application for Renewal

A. The Permittee shall apply for wastewater discharge permit reissuance by submitting a complete permit application, using the form provided by the Executive Director, a minimum of ninety (90) days prior to the expiration of this Permit.

B. Persons applying for a new permit or a permit renewal or modification, which allows a new or increased pollutant loading shall publish notice for each application in the format provided by the Executive Director. Such notices shall fulfill the requirements of WAC 173-216-090. These requirements include publishing:

1. The name and address of the applicant and facility/activity to be permitted;
2. A brief description of the activities or operations, which result in the discharge;
3. Whether any tentative determination, which has been reached with respect to allowing the discharge;
4. The address and phone number of the office of the Executive Director where persons can obtain additional information;
5. The dates of the comment period (which shall be at least 30 days); and

6. How and where to submit comments or have any other input into the permitting process, including requesting a public hearing.

C. The Executive Director and the City may require the applicant to also mail this notice to persons who have expressed an interest in being notified, to State agencies and local governments with a regulatory interest, and to post the notice on the premises. If the Executive Director or the City determined there is sufficient public interest the City shall hold a public meeting following the rules of WAC 173-216-100.

D. The Executive Director or the City may assume responsibility for the public notice requirements for the Permittee contained in this Section.

PART 9 – COMPLIANCE MONITORING

9.1 Right of Entry: Inspection and Sampling

The Executive Director shall have the right to enter the premises of the Permittee to determine whether the Permittee is complying with all requirements of this Permit, Permit, or order issued hereunder. The Permittee shall allow the Executive Director ready access to all parts of the premises for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties.

A. Where the Permittee has security measures in force, which require proper identification and clearance before entry into its premises, the Permittee shall make necessary arrangements with its security guards so that, upon presentation of suitable identification, the Executive Director will be permitted to enter without delay for the purposes of performing specific responsibilities.

B. The Executive Director shall have the right to set-up on the Permittee's property, or require installation of, such devices as are necessary to conduct sampling and/or metering of the Permittee's operations.

C. The Permittee shall provide full access to the Executive Director to use any monitoring facilities and utilities available or required in accordance with Sections 7.1 and 7.3(E) and (F) to confirm that the standards or treatment required for discharge to the sewer are being met.

D. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the Permittee at the written or verbal request of the Executive Director and shall not be replaced. The costs of clearing such access shall be borne by the Permittee.

E. Any unreasonable delay in allowing the Executive Director full access to the Permittee's premises and wastewater operations shall be a violation of this Permit.

9.2 Search Warrants

The City, on behalf of the Executive Director, may seek issuance of a search warrant from the Superior Court of Thurston County. Such warrants may be secured when:

A. The Executive Director has been refused access or is unable to locate a representative who can authorize access to a building, structure, or property, or any part thereof, and has probable cause that a violation of this Permit is occurring on the premises;

B. The Executive Director has been denied access to inspect and/or sample as part of a routine inspection and sampling program of the Executive Director designed to verify compliance with this Permit, Permit, or order issued hereunder; or

C. The Executive Director has cause to believe there is imminent endangerment of the overall public health, safety, and welfare of the community by an activity on the premises.

PART 10– CONFIDENTIAL INFORMATION

Generally, information submitted to demonstrate compliance with pretreatment standards and requirements will be freely available to the public. To the extent such is consistent with State and Federal laws, the Permittee may have certain information treated as confidential if the following process is followed.

A. When the Permittee submits information to the City or Executive Director, or provides information to inspectors, the Permittee may request that specific information be maintained as confidential. The Permittee must promptly identify the specific information in writing, and describe why the release would divulge information, processes, or methods of production entitled to protection as trade secrets or confidential business information under applicable State or Federal laws.

B. Dependent on the agency receiving the request, the Executive Director or the City shall review and approve or deny such requests. When approved, the information shall not be publicized by the City unless required by State or Federal law.

C. All other information submitted to the Executive Director or the City and obtained from the Executive Director's or the City's oversight shall be available to the public subject to the Executive Director or the City records review policy.

D. Information held as confidential may not be withheld from governmental agencies for uses related to the NPDES program or pretreatment program, or in enforcement proceedings involving the Permittee.

E. Federal rules prevent wastewater constituents and characteristics and other effluent data, as defined by 40 CFR Part 2.302 from being recognized as confidential information.

PART 11 – PUBLICATION OF SIGNIFICANT NONCOMPLIANCE

11.1 Publishing

The Executive Director must annually publish a list of permitted industries, which, at any time during the previous twelve (12) months, were in Significant Noncompliance with applicable pretreatment standards and requirements. The list will be published in a newspaper of general circulation that provides meaningful public notice within the jurisdictions served by the POTW.

11.2 Definition of Significant Noncompliance

For the purposes of this Section, the term **Significant Noncompliance** means:

A. Any violation of a pretreatment standard or requirement including numerical limits, narrative standards, and prohibitions, that the Executive Director determines has caused, alone or in combination with other discharges, Interference or Pass Through, including endangering the health of POTW personnel or the general public.

B. Any discharge of a pollutant that has caused imminent endangerment to the public or to the environment, or has resulted in the Executive Director's or City's exercise of its emergency authority to halt or prevent such a discharge.

C. Any violation(s), including of Best Management Practices, which the Executive Director determines will adversely affect the operation or implementation of the local pretreatment program.

D. Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent (66%) or more of all of the measurements taken for the same pollutant parameter taken during a rolling six (6) month period exceed, by any magnitude, a numeric pretreatment standard or requirement, including instantaneous limits of Section 1.3.

E. Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent (33%) or more of wastewater measurements taken for each pollutant parameter during a rolling six (6) month period equal or exceed the product of the numeric pretreatment standard or requirement, (including instantaneous limits, as defined by Section 1.3(B)), multiplied by the applicable criteria. Applicable criteria are 1.4 for Biochemical Oxygen Demand, Total Suspended Solids, fats, oils and greases, and 1.2 for all other pollutants except pH.

F. Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in this Permit or enforcement order for starting construction, completing construction, or attaining final compliance.

G. Failure to provide any required report within forty-five (45) calendar days after the due date. This includes initial and periodic monitoring reports, and reports on initial compliance and on meeting compliance schedules.

H. Failure to accurately report noncompliance.

11.3 Applicability

The criteria in Sections 11.2(A-C) are applicable to all permitted industries, whereas the criteria in Sections 11.2(D-H) are only applicable to Significant Industrial Users.

PART 12– ADMINISTRATIVE ENFORCEMENT REMEDIES

12.1 Notification of Violation

The City may serve a written Notice of Violation on the Permittee that the City and/or the Executive Director finds the Permittee has violated any provision of this Permit, including terms or requirements of an ordinance, order, or a pretreatment standard or requirement. In all cases in this Permit, a continuation of a violation of a provision of this Permit is a "violation." The Permittee shall, in response to a Notice of Violation, provide the City a written explanation of the violation, its cause, and a corrective action plan within thirty (30) days of the receiving this notice. The Permittee submitting plans to correct noncompliance must include the specific actions they will take to correct ongoing and prevent future violations at the soonest practicable date. The City's acceptance of a plan does not relieve the Permittee of liability for any violations. The City may also take any action, including emergency actions or any other enforcement action, without first issuing a Notice of Violation.

12.2 Consent Orders

The City may enter into a Consent Order or other voluntary agreement to memorialize agreements with the Permittee for violating any requirement of this Permit after consultation with the Executive Director. Such agreements must include the specific action(s) required and date(s) they are to be completed to correct the noncompliance. Such documents must be constructed in a judicially enforceable manner, and have the same force and effect as administrative orders issued pursuant to Sections 12.4 and 12.5 of this Permit.

12.3 Show Cause Hearing

After consultation with the Executive Director, the City may propose actions in response to a violation of any provision of this Permit, including a provision of an ordinance, order, or a pretreatment standard or requirement. The City will notify the Permittee of the violation, the proposed action, the rationale, and the Permittee's rights and obligations to provide evidence why the proposed enforcement action should not be taken, and to provide its support for any alternative it proposes at this meeting. The Permittee shall have the right to a show cause hearing to contest the City's action provided for by this Permit or determination that the Permittee has violated a compliance schedule order.

Any hearing pursuant to this Section must be requested by the Permittee in writing within fifteen (15) business days after the Permittee receives notice of the City's proposed action. The Permittee's written request for hearing shall be filed with the Executive Director.

The hearing authorized by this Section shall be held before the LOTT Technical Sub-Committee (TSC). Formal rules of evidence shall not apply, but the Permittee and the City shall have the right to present witnesses and other evidence. The TSC shall issue a written decision within fourteen (14) business days of the conclusion of the hearing.

The Permittee shall have the right to make an electronic or stenographic record of the proceedings. Such record shall be made at the Permittee's expense.

The TSC may, by resolution or Permit, adopt additional rules for the conduct of hearings pursuant to this Section.

A show cause hearing shall not be a bar against, or prerequisite for, taking any other action against the Permittee.

12.4 Compliance Orders

The City, after consulting with the Executive Director, may issue a compliance order to the Permittee, if the Permittee has violated any provision of this Permit including a requirement of a Permit, order, or a pretreatment standard or requirement. The compliance order may direct that the Permittee come into compliance within a specified time, install and properly operate adequate treatment facilities or devices, or take such measures as the City or Executive Director finds are reasonably necessary. These measures may include additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. A compliance order may not extend the deadline for compliance established for a pretreatment standard or requirement, or relieve the Permittee of liability for any violation, including a continuing violation. If the Permittee does not come into compliance within the time provided, sewer service may be discontinued. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

12.5 Cease and Desist Orders

When the City and/or Executive Director finds that the Permittee has violated, or continues to violate, any provision of this Permit, an ordinance, an order issued hereunder, or any other pretreatment standard or requirement, or that the Permittee's past violations are likely to recur, the City may, after consultation with the Executive Director, issue an order to the Permittee directing it to cease and desist all such violations and directing the Permittee to:

A. Immediately comply with all requirements; and

B. Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge. Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

12.6 Administrative Fines

A. When the City finds that the Permittee has violated, or continues to violate, any provision of this Permit, an ordinance, an order issued hereunder, or any other pretreatment standard or requirement, the City may, after consultation with the Executive Director, fine such Permittee in an amount not to exceed ten thousand dollars ($10,000). Such fines shall be assessed on a per violation, per day basis. In the case of monthly or other long-term average discharge limits, fines shall be assessed for each day during the period of violation.

B. The City may add the costs of any emergency response, additional monitoring, investigation, and administrative costs related to the noncompliance and the City's response to the situation, to the amount of the fine.

C. The City will consider the economic benefit gained by the Permittee as a result of the noncompliance in cases where there appears to have been a monetary benefit from not complying. In such cases, the City shall ensure that fines, to the maximum amounts allowable, exceed the benefit to the Permittee from the noncompliance.

D. Unpaid charges, fines, and penalties shall, at thirty (30) calendar days past the due date, be assessed an additional penalty of one percent (1%) of the unpaid balance, and interest shall accrue thereafter at a rate of one percent (1%) per month, or at the rate allowed by law if different from the foregoing. After thirty (30) days, the City shall be authorized to file a lien against the Permittee's property for unpaid charges, fines, and penalties.

E. If the Permittee wishes to dispute such fines, the Permittee must file a written request for the City to reconsider the fine along with full payment of the fine amount within fifteen (15) working days of being notified of the fine. Where a request has merit as determined by the City and Executive Director, the City may convene a hearing on the matter pursuant to Section 12.3 of this Permit. In the event the Permittee's appeal is successful, the City shall rebate the difference between the initial and final penalty amounts to the Permittee.

F. Issuance of an administrative fine shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

12.7 Emergency Suspensions

The City may immediately suspend the Permittee's discharge (or threatened discharge) when it reasonably appears to present a substantial danger to the health or welfare of persons. In such cases, the City will first provide informal notice to the Permittee. The City may also immediately suspend the Permittee's discharge, after notice and opportunity to respond, that threatens to interfere with the operation of the POTW, or which presents, or may present, a danger to the environment.

A. The Permittee, when notified of a suspension of its discharge, shall immediately stop or eliminate its contribution. If the Permittee fails to immediately comply voluntarily with the suspension order, the City may take such steps as deemed necessary to protect the public and its interest in the sewer system. Remedies available to the City include immediately severing the sewer connection, at the Permittee's expense, turning off pump stations downstream of the Permittee, and partnering with law enforcement. The City may not allow the Permittee to recommence its discharge until the Permittee has demonstrated to the satisfaction of the City that the situation warranting the suspension has been properly addressed and any proposed Termination proceeding has been resolved.

B. When the Permittee is responsible, in whole or in part, for any discharge presenting imminent endangerment, the Permittee shall submit a detailed written statement, describing the causes of the harmful contribution and the measures taken to prevent any future occurrence. The Permittee shall submit this report to the City prior to the date of any show cause or termination hearing under Sections 12.3 and 12.8 of this Permit.

Nothing in this Section shall be interpreted as requiring a hearing prior to any Emergency Suspension under this Section.

12.8 Termination of Discharge

If the Permittee violates the following conditions, the Permittee is subject to having the privilege of discharging to the public sewer system withdrawn:

A. Discharge of non-domestic wastewater not authorized by this Permit, including

1. Where the appropriate Permit revision has not been requested;

2. Where the appropriate Permit revision has not yet been issued; or

3. Where this Permit has been denied or revoked based on the provisions of Section 8.5, Permit Revocation, of this Permit.

B. Violation of Permit terms and conditions including:

1. Exceeding any Permit limit;

2. Failing to meet other pretreatment standards or requirements;

3. Violating any prohibition; or

4. Failing to properly monitor and report discharges or changed conditions.

C. Refusal of reasonable access to the Permittee's premises for the purpose of inspection, monitoring, or sampling (whether subject to a permit or not).

D. Violation of the pretreatment standards and requirements in Sections 1 and 5 of this Permit, including failure to satisfy Industrial Permittee Survey requirements.

When the City determines this remedy is necessary and appropriate to fulfill the intentions of this Permit, and after consulting with the Executive Director, the Permittee will be notified of the proposed termination of its discharge and be offered an opportunity to show cause, under Section 12.3 of this Permit, why the proposed action should not be taken. Exercise of this option by the City shall not be a bar to, or a prerequisite for, taking any other action against the Permittee.

PART 13 – JUDICIAL ENFORCEMENT REMEDIES

13.1 Injunctive Relief

The City may seek injunctive relief when the Permittee has violated, or continues to violate a provision of this Permit, including an ordinance, pretreatment standard or requirement, or an order issued hereunder. In such cases, the City may petition the Superior Court of Thurston County through the City's Attorney for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels the specific performance of this Permit, an ordinance, order, or other requirement imposed by this Permit on activities of the Permittee. The City may also seek such other action as is appropriate for legal and/or equitable relief, including a requirement for the Permittee to conduct environmental remediation. A petition for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against the Permittee.

13.2 Civil Penalties

A. If the Permittee violates, or continues to violate a provision of this Permit, including a pretreatment standard or requirement, Permit, or order issued hereunder shall be liable to the City for a maximum civil penalty of ten thousand dollars ($10,000) per violation, per day. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of the violation.

B. The City may recover reasonable attorneys' fees, court costs, and other expenses associated with any emergency response, enforcement activities, additional monitoring and oversight, and costs of any actual damages to the City or LOTT.

C. Filing a suit for civil penalties shall not be a bar against, or a prerequisite for, any other action the City may take to resolve noncompliance by the Permittee.

13.3 Criminal Prosecution

A. If the Permittee willfully or negligently violates any provision of this Permit, an ordinance, or order issued hereunder, or any other pretreatment standard or requirement, the Permittee shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than ten thousand dollars ($10,000) per violation, per day, or imprisonment for not more than one (1) year, or both.

B. If the Permittee negligently introduces any substance into the POTW, which causes personal injury or property damage, the Permittee shall, upon conviction, be guilty of a misdemeanor. If the Permittee willfully introduces any substance into the POTW, which causes personal injury or property damage, the Permittee shall, upon conviction, be guilty of a gross misdemeanor. The Permittee, if convicted, will also be subject to prosecution for violation of any other laws, which may be applicable.

C. If the Permittee knowingly makes any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to be maintained, pursuant to this Permit, Permit, or order issued hereunder, or falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this Permit, the Permittee shall, upon conviction, be punished by a fine of not more than ten thousand dollars ($10,000) per violation, per day, or imprisonment for not more than one (1) year, or both.

D. In the event of a second conviction, the Permittee shall be punished by a fine of not more than ten thousand dollars ($10,000) per violation, per day, or imprisonment for not more than one (1) year, or both.

13.4 Remedies Nonexclusive

The remedies provided for in this Permit are not exclusive. The City may take any, all, or any combination of these actions against the Permittee if found to be non-compliant. Enforcement of pretreatment violations will generally be in accordance with LOTT's Enforcement Response Plan. However, the City may take other action against the Permittee when the circumstances warrant. Further, the City is empowered to take more than one enforcement action against the Permittee when found to be non-compliant.

PART 14 – SUPPLEMENTAL ENFORCEMENT ACTION

14.1 Penalties for Late Reports

The City may assess a penalty of up to fifty dollars ($50) to the Permittee for each day that a report required by this Permit, an ordinance, or order issued hereunder is late. Penalties accrue beginning the fifth (5th) day after the report is due. The City's actions to collect late reporting penalties shall not limit the City's authority to initiate any other enforcement action.

14.2 Performance Bonds

The City may require a satisfactory bond, payable to the City, in a sum not to exceed a value determined by the City and Executive Director as necessary to assure the Permittee will achieve consistent compliance with this Permit. The Executive Director may require this bond as an enforcement response or as a prerequisite to issue or reissue this Permit. Any Permittee who has failed to comply with any provision of this Permit, a previous permit or order issued hereunder, an ordinance, or any other pretreatment standard or requirement may be subject to this requirement. This bond may also be required of any category of permitted industry, which has led to public burdens in the past regardless of the compliance history of the particular industry. The City may use this bond to pay any fees, costs, or penalties assessed to the Permittee whenever the Permittee's account is in arrears for over thirty (30) days. This includes the costs of cleanup of the site if the Permittee goes out of business, sells the business to a person that does not first assume the bond, or goes bankrupt. The Permittee may petition the City to convert their performance bond to a requirement to provide Liability Insurance, or to forego any such safeguard based on their performance. The Permittee may petition no more frequently than once in any twelve (12) month period.

14.3 Liability Insurance

The City may require the Permittee to provide liability insurance at its discretion. In such cases, the Permittee must provide proof that the insurance is sufficient to cover any liabilities incurred under this Permit, including the cost of damages to the POTW and the environment caused by the Permittee. The City may require the Permittee to provide the proof of such insurance prior to issuing or reissuing this Permit.

14.4 Payment of Outstanding Fees and Penalties

The City may decline to reissue this Permit to the Permittee if the Permittee has failed to pay any outstanding fees, fines, or penalties incurred as a result of any provision of this Permit, a previous permit or order issued hereunder, or an ordinance.

14.5 Water Supply Severance

The City may order water service to the Permittee severed whenever the Permittee has violated or continues to violate any provision of this Permit, an ordinance, or order issued hereunder, or any other pretreatment standard or requirement. If the Permittee wishing to restore their service, the Permittee must first demonstrate their ability to comply with this Permit and pay the related costs of this action.

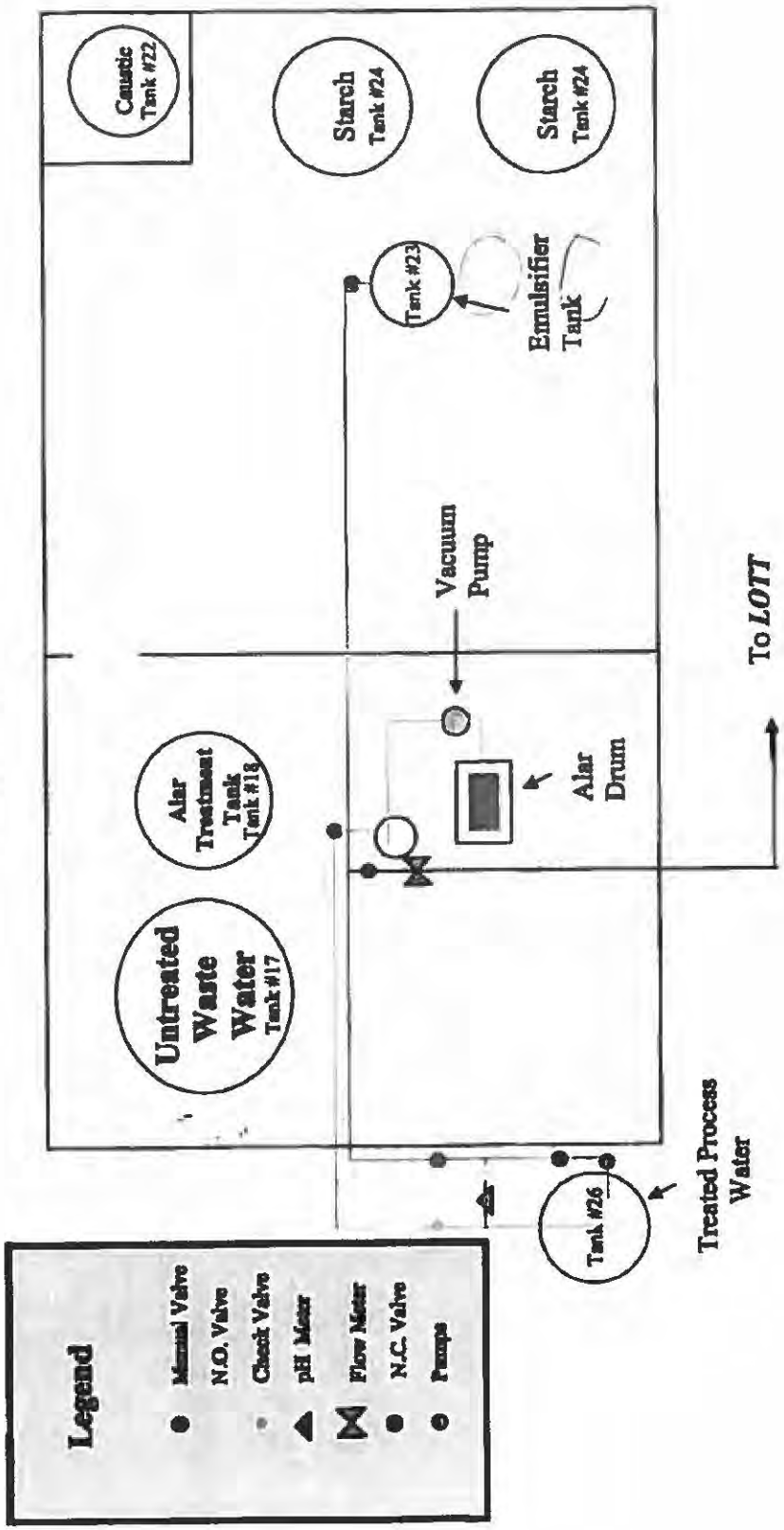
14.6 Public Nuisances

A violation of any provision of this Permit, an ordinance, or order issued hereunder, or any other pretreatment standard or requirement, is hereby declared a public nuisance and shall be corrected or abated as directed by the City. Any person creating a public nuisance shall be subject to the provisions of City's Municipal Code governing such nuisances, including reimbursing the City for any costs incurred in removing, abating, or remedying said nuisance.

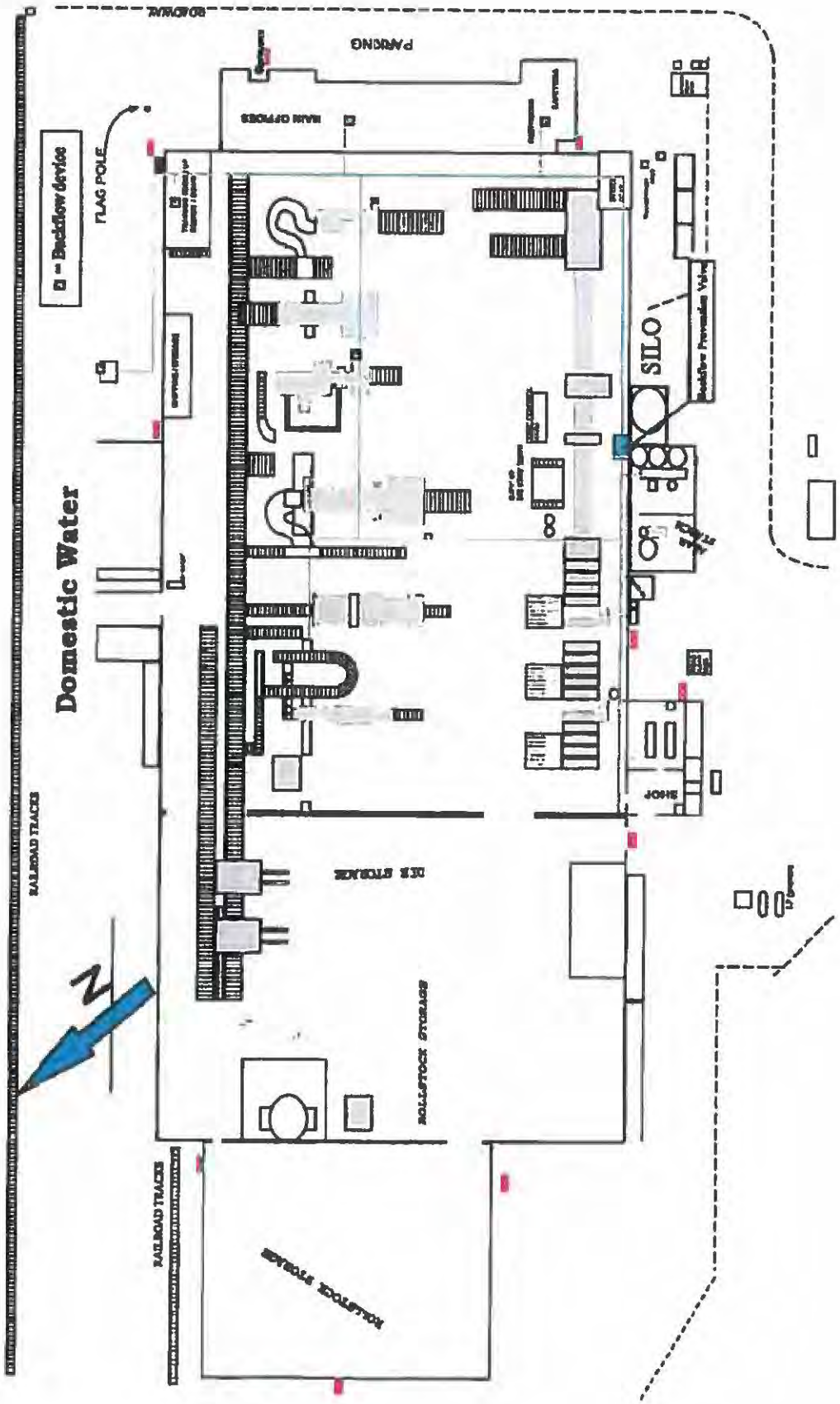
APPENDIX I

SCHEMATIC DIAGRAM, SITE PLAN, & FLOW DIAGRAMS

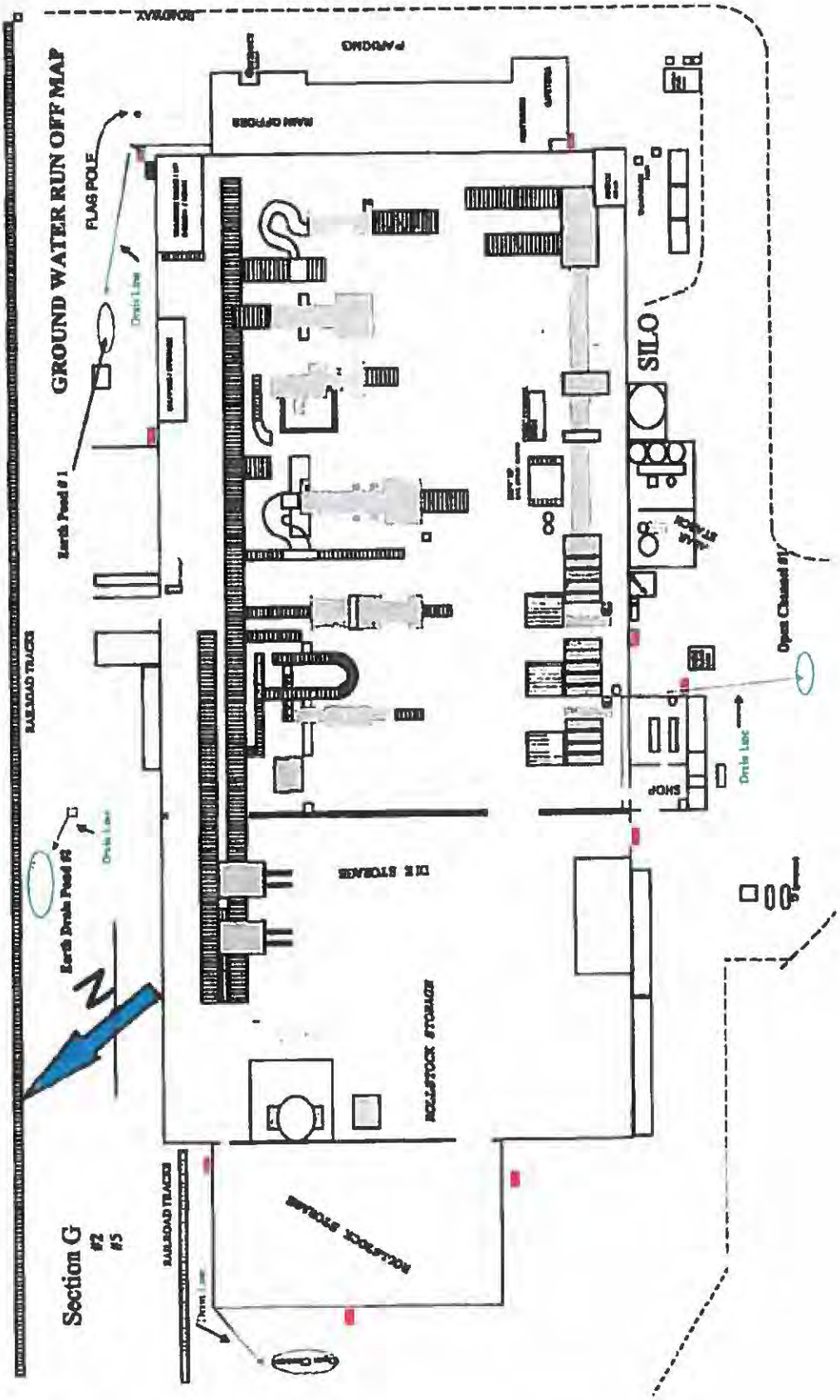
a Treated Waste Water Layout



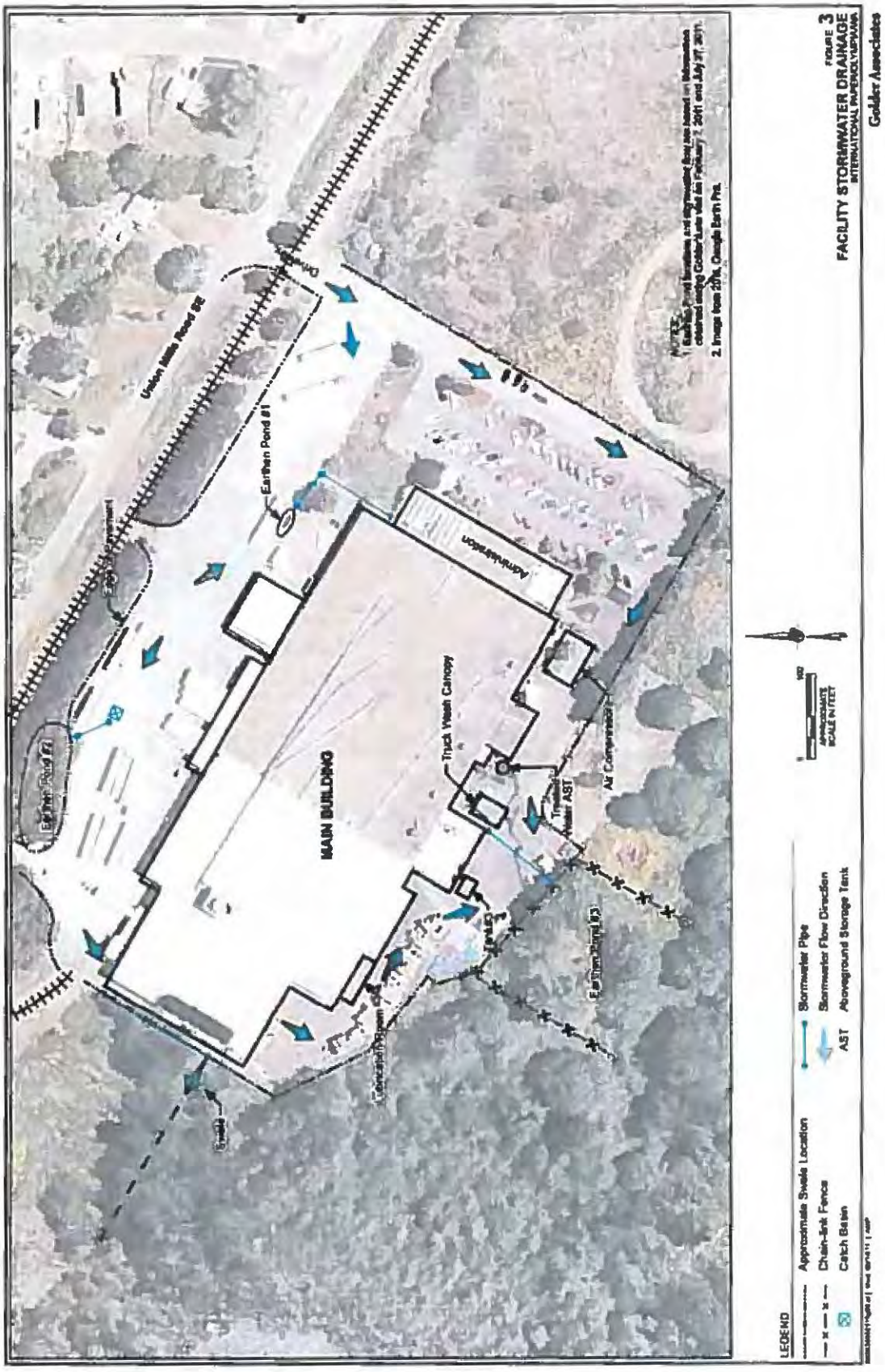
b Domestic Waste Water Flow Plan



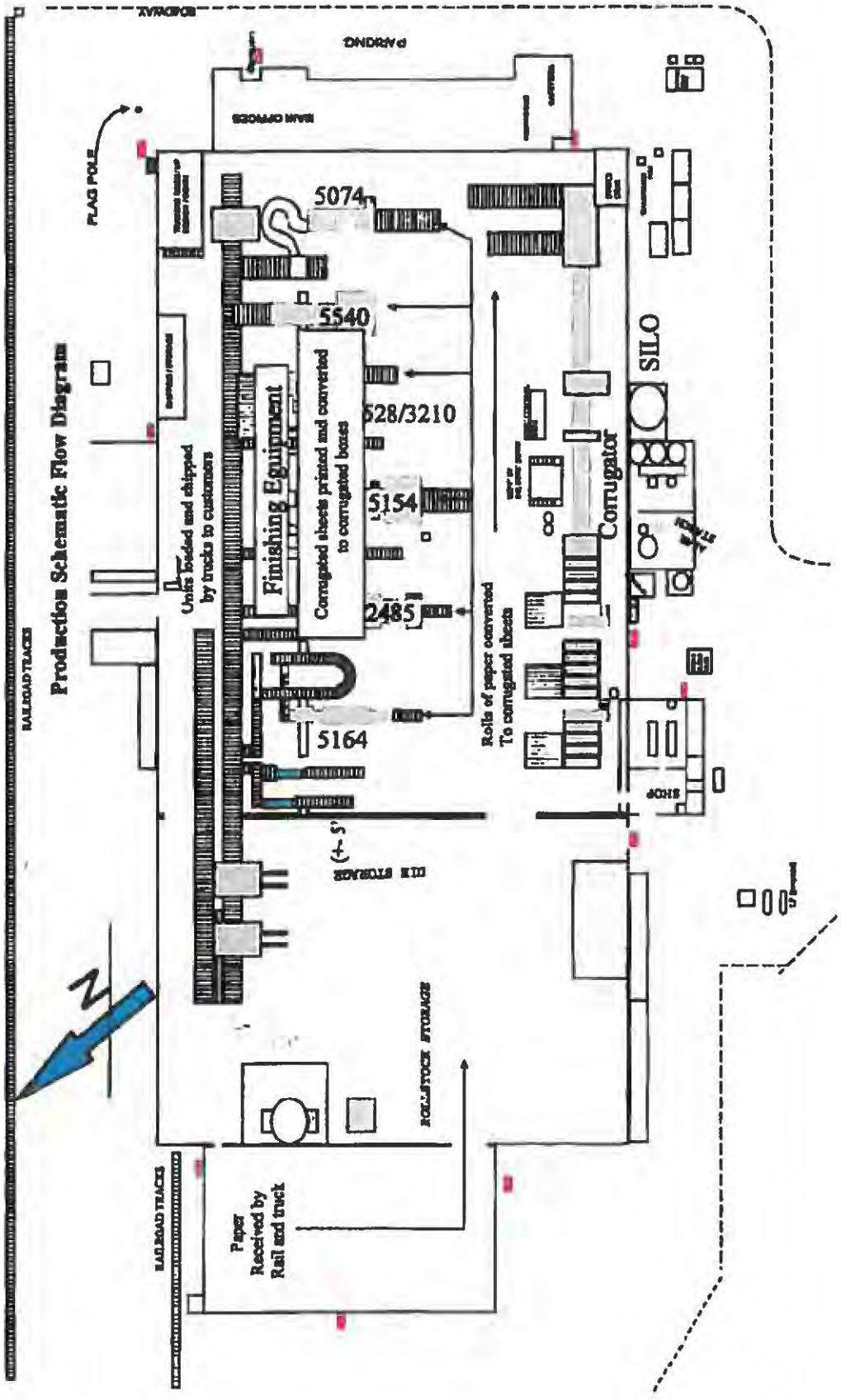
c Ground Water Run Off Plan



d Facility Stormwater Drainage Aerial



e Production Schematic Flow Plan



Appendix H

CIP Projects

CIP Abbreviations	
Abbreviation	**Definition**
CIP	Capital Improvement Program
City	City of Lacey
Dr	Drive
FM	Force Main
LF	Lineal Feet
LOSS	Large On-site Septic System
LS	Lift Station
MH	Manholes
NE	Northeast
O&M	Operations and Maintenance
Rd	Road
SE	Southeast
St	Street
STEP	Septic Tank Effluent Pumping
ULID	Utility Local Improvement District

Table H-1 6-Year CIP (2014-2019)

CIP No.	Project	Type	Replacement	Upgrade	Expansion	Project Description
1	Wastewater Comprehensive Plan Update (recurring)	General		☑	☑	▪ Update the Wastewater Comprehensive Plan as necessary to address the needs of the City's sewer collection system.
2	Lift Station 25 & 31 Retrofit	Capacity	☑	☑		▪ Convert from solids handling submersible pumps to Orenco STEP pumps. ▪ Upgrade electrical equipment. ▪ Repair wet well coating.
3	Steilacoom Road Lift Station	General		☑	☑	▪ Replace community STEP stations LS-26, LS-28, LS-29, LS-36, and LS-38 with a single lift station. ▪ Construct approximately 3,700 lf of gravity sewer to convey wastewater to the new lift station. ▪ Construct approximately 4,500 lf of force main from the new lift station to the Martin Way Interceptor.
4	Tanglewilde East ULID	General			☑	▪ Abandon the community septic system serving the Tanglewilde East area and connect the piping to Lacey sewer through a Utility Local Improvement District (ULID).
5	College Street and Martin Way ULID	General			☑	▪ Convert the parcels on the southeast corner of College Street and Martin Way from Olympia's sewer system to Lacey's. This would be done through a ULID.
6	STEP Main Air Release/Vacuum Relief Valves	O&M		☑		▪ Install air release/vacuum relief valves to remove air trapped in the Union Mills STEP area and to reduce operating pressures.
7	Lift Station 18 Retrofit	O&M	☑		☑	▪ Convert from above ground vacuum prime to submersible pumps.
8	Lakeview Dr Gravity Upsize (Phase 1)	Capacity			☑	▪ Upsize approximately 850 lf of pipe MH VZD01 to MH VSV01 from 10-inch to 12-inch.
9	Lift Station 15 Generator/Flow Meter	General		☑		▪ Install a backup generator set. ▪ Install a flow meter and pressure transducer and connect to SCADA.
10	Avonlea Odor Control	O&M		☑		▪ Replacement of existing odor control facility.
11	Train Depot	Capacity			☑	▪ Construct new 8-inch gravity sewer in Lebanon St to serve the future Train Depot/Lacey Museum
12	Carpenter Road STEP Upgrades	O&M	☑			▪ Replace air release/vacuum relief valves at Roo-Lan Road and 26th Street. ▪ Replace manholes.
13	Lift Station 2 - Lift Station, Gravity, and Force Main Replacement	O&M	☑			▪ Replace Lift Station #2 ▪ Reroute force main for easier access and reduced liability. ▪ Replace approximately 900 lf of gravity pipe and manholes in Westlake drive to reduce infiltration and inflow.
14	Rumac St STEP Main	General		☑		▪ Install approximately 4,400 lf of 6-inch STEP main along Rumac Street. ▪ Reduce the number of odor control facilities and operating costs.
15	Mullen Rd STEP Main	Capacity			☑	▪ Install approximately 1,200 lf of missing 6-inch force main in Mullen Road from the city limits to Rumac Street. ▪ Include odor control facility.
16	College St / 26th Ave Gravity Repair	O&M	☑			▪ Install approximately 1,300 lf of 8-inch CIPP to address deterioration in pipeline. ▪ Spot repairs in 2 locations to address root problems in pipeline.

Table H-1 6-Year CIP (2014-2019)

CIP No.	Project	Type	Replacement	Upgrade	Expansion	Project Description
17	Annual Sewer Line Replacement	Obsolescence	☑			▪ Annual program to repair and replace deteriorating sewer mains
18	FOG / Fibrous Wipes Program	General		☑		▪ Conduct a second FOG pilot program to confirm preliminary findings of first program. ▪ If successful, expand program to other high-FOG areas. ▪ Coordinate program with other jurisdictions. ▪ Include fibrous wipes.
19	Generators / Flow Meters (LS-22, LS-23, LS-17, LS-20)	General		☑		▪ Install backup generator set. ▪ Install flow meter and pressure transducer and connect to SCADA.
20	Lift Station 49 Land Purchase	General		☑		▪ Purchase adjacent lot before it develops to prevent future odor and noise complaints from future resident
21	Lift Station 12 Abandonment	Obsolescence Capacity		☑	☑	▪ Replace LS-12 with gravity sewer. ▪ Abandon LS-12.
22	Sleater Kinney Gravity Main Improvements	Capacity			☑	▪ Upsize approximately 2,100 lf of pipe between MH VQD02 to MH VGE01 from 15-inch to 21-inch.
23	Lift Station Rehabilitation (Phase 1)	Obsolescence	☑			▪ Upgrade mechanical and electrical equipment in LS-15, and LS-17.
24	Lift Station Rehabilitation (Phase 2)	Obsolescence	☑			▪ Upgrade mechanical and electrical equipment in LS-21, LS-20, and LS-19.
25	Lift Station and STEP System Flow Meters	General		☑		▪ Install 21 flow meters and pressure transducers at lift stations that do not currently have them and connect to SCADA. ▪ Install 3 flow meters and pressure transducers in STEP mains and connect to SCADA.
26	Sewer Main Replacement (50th Ave)	General		☑		▪ Replace approximately 350 lf of 18-inch pipe with adverse grade, and install a manhole where the Cottages connect with the main.
27	Chemical Storage Tank Replacement	O&M	☑			▪ Replace 3 existing odor control chemical storage tanks with new double containment tanks.
28	Sewer Main Replacement (34th Ave)	Capacity		☑		▪ Replace approximately 100 lf of existing 6-inch sewer with 8-inch sewer.

Wastewater Comprehensive Plan Update Summary		
CIP Number: 1		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	☑
Project Description: Update the Wastewater Comprehensive Plan as necessary to address the needs of the City's sewer collection system.		
Project Benefit: These planning efforts provide the basis for the City's policies, capital improvements, and financing of the wastewater utility and allow the City to periodically reevaluate existing and projected flows, condition of existing infrastructure, the need future improvements, and the utility's financing plan. This ensures a long lasting and reliable utility.		
Comments: Scheduled on an 8-year cycle according to RCW 36.70A-130.		

Schedule and Opinion of Probable Cost	
Project Year	Recurring 8-year Cycle
Engineering and Allied Cost	-----
Construction Cost	-----
Contingency (35%)	-----
Total Project Cost	$500,000

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Lift Station 25 & 31 Retrofit Summary		
CIP Number: 2		
Project Type: Capacity	Replacement	☑
	Upgrade	☑
	Expansion	

Project Description: For Lift Stations 25 and 31, replace existing solids handling pumps with new Orenco high-head pumps and replace electrical and mechanical equipment as needed.

Project Benefit: The new pumps will greatly improve the lift stations' ability to operate in variable head conditions and will also improve overall efficiency.

Comments: These lift stations were originally designed to be converted to conventional solids handling lift stations, but the City has determined it is not cost effective to do so.

Schedule and Opinion of Probable Cost	
Project Year	2014
Engineering and Allied Cost	$245,000
Construction Cost	$697,000
Contingency (35%)	$330,000
Total Project Cost	$1,270,000

CIP 2: Lift Station 25 & 31 Retrofit

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$48,600	2	ls	$97,200
2	Temporary Erosion & Sediment Control	$9,700	2	ls	$19,400
3	Sandblast, Caulk Jts and Coat Int Wet Well, Pipe & Equip.	$10,000	2	ls	$20,000
4	SST Pump Rails	$3,500	2	ls	$7,000
5	Disch Piping in Wet Well, incl. support/thrust restraint	$6,000	2	ls	$12,000
6	Duplex Submersible Pumps	$42,500	4	ea	$170,000
7	UG Power & Controls to Wet Well & Vaults	$7,500	2	ls	$15,000
8	Level Controls in Wet Well	$1,500	2	ls	$3,000
9	Pump Inst. & Controls in NEMA 3R Enclosures	$30,000	2	ls	$60,000
10	MCC in NEMA 3R Enclosures	$15,000	2	ls	$30,000
11	Eng-Generator Foundation	$2,500	2	ls	$5,000
12	Weather/Acoustical Enclosure w/Eng-Gen, fuel tank, critical silencer, ATS)	$40,000	2	ls	$80,000
13	Telemetry	$10,000	2	ls	$20,000
14	Flow Meter Vault	$21,000	2	ls	$42,000
15	Misc. Yard Piping (water, vault drains, site SD)	$6,000	2	ls	$12,000
16	Minor Landscaping	$5,000	2	ls	$10,000
17	Traffic Control	$9,700	2	ls	$19,400
18	General Restoration	$9,700	2	ls	$19,400
	Subtotal				$641,400
	Sales Tax	8.7%			$55,802
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$697,202

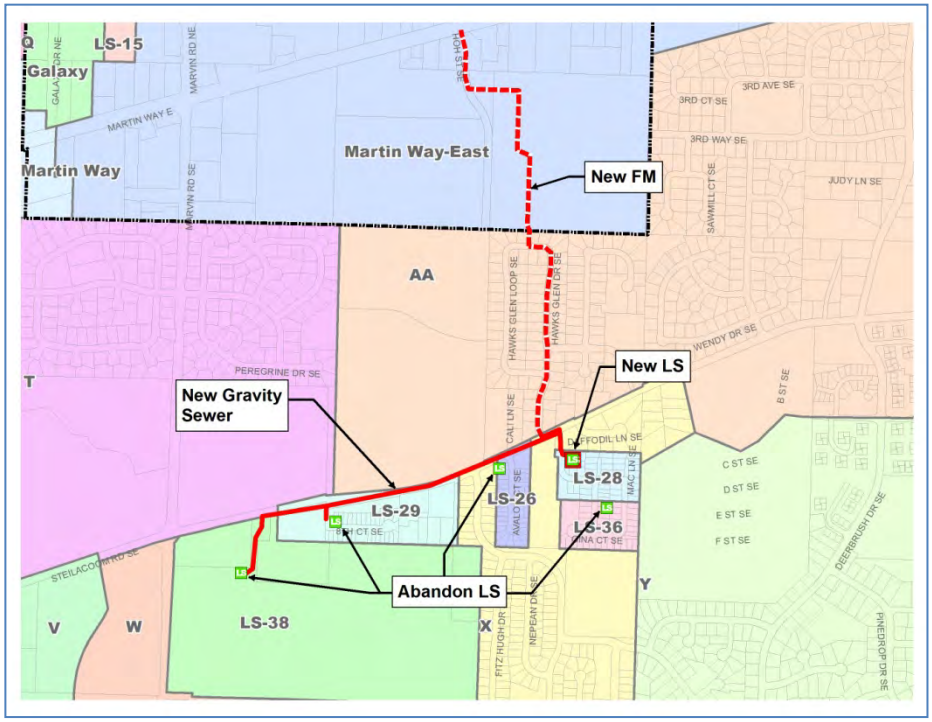
Planning	5%	$35,000
Design and Permitting	15%	$105,000
Services During Construction	15%	$105,000
TOTAL OPINION OF PROBABLE ALLIED COST		$245,000
Contingency	35%	$330,000
TOTAL OPINION OF PROBABLE PROJECT		$1,270,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Steilacoom Road Lift Station Summary		
CIP Number: 3		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	☑
Project Description: Replace community STEP Stations LS-26, LS-28, LS-29, LS-36, and LS-38 with a single lift station. Construct approximately 3,700 lf of new gravity sewers to convey wastewater to the new lift station. Construct approximately 4,500 lf of new force main from the new lift station to the Martin Way Interceptor.		
Project Benefit: Reduced number of lift stations and reduced maintenance cost. Increased capacity for future connections. Reduced flow and system pressures in the Union Mills STEP system.		
Comments: This project is currently under design. Costs were provided by the City.		

Schedule and Opinion of Probable Cost	
Project Year	2013-2017
Engineering and Allied Cost	$800,000
Construction Cost	$2,850,000
Contingency (35%)	N/A
Total Project Cost	$3,650,000



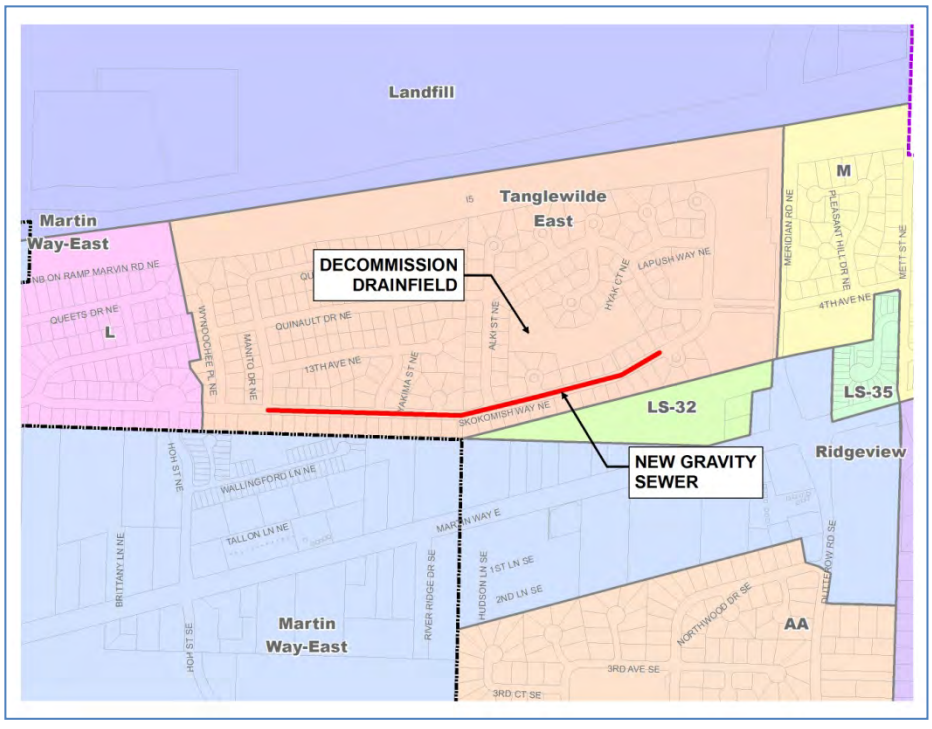
CIP 3: Steilacoom Road Lift Station

Year	2013	2014	2015	2016	2017	Total
Cost	$40,136	$110,000	$650,000	$2,250,000	$600,000	$3,650,136

Notes
1. Costs for CIP 3 were provided by the City in an email dated 6/2/2014
2. Costs are in 2014 dollars

Tanglewilde East ULID Summary		
CIP Number: 4		
Project Type: General	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Abandon the community septic system serving the Tanglewilde East area and connect the piping to Lacey gravity sewer through a Utility Local Improvement District (ULID).		
Project Benefit: The large on-site septic system (LOSS) has been directed by the State Department of Health to take corrective actions related to the operation of their system. The most favorable option for this system is to connect directly to Lacey's collection system and decommission the LOSS		
Comments: This project will be done as a ULID; in which the beneficiaries would reimburse the City for work done. This project will also be coordinated with a City water line replacement project to promote mutual cost savings. Costs were provided by the City.		

Schedule and Opinion of Probable Cost	
Project Year	2013-2015
Engineering and Allied Cost	$200,000
Construction Cost	$3,576,000
Contingency (35%)	-----
Total Project Cost	$3,776,000



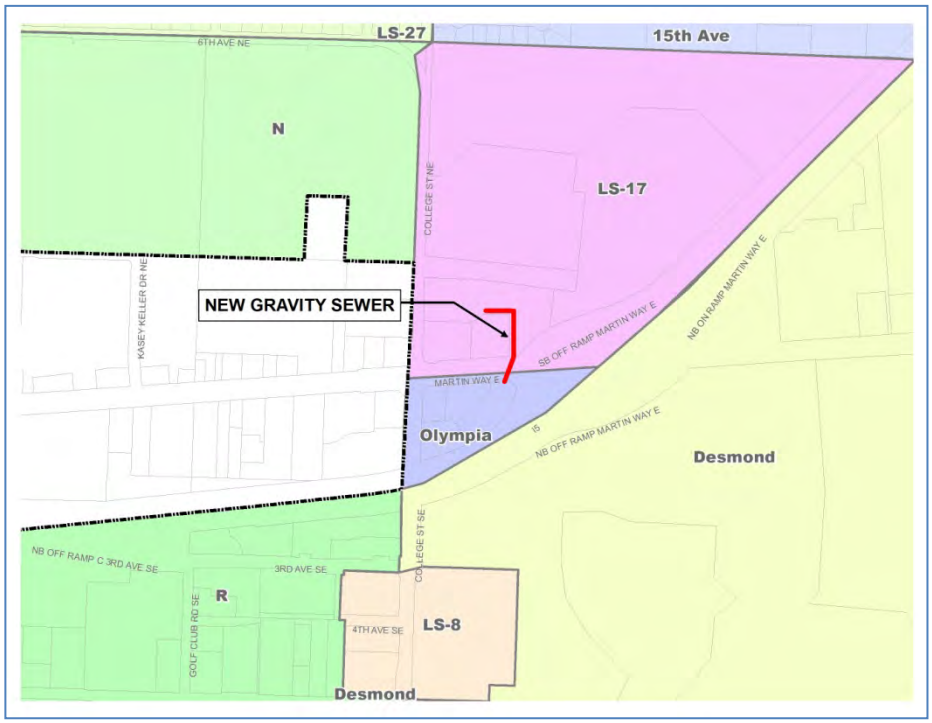
CIP 4: Tanglewilde East ULID

Year	2013	2014	2015	Total
Cost	$11,977	$188,023	$3,576,410	$3,776,410

Notes
1. Costs for CIP 4 were provided by the City in an email dated 6/2/2014
2. Costs are in 2014 dollars

College Street and Martin Way ULID Summary		
CIP Number: 5		
Project Type: General	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Convert the parcels on the southeast corner of College Street and Martin Way from City of Olympia's sewer system to City of Lacey's. This will be done through a ULID.		
Project Benefit: The City of Olympia currently serves four businesses, and has exercised its authority through the service agreement to terminate service. They must now connect to the City of Lacey's collection system.		
Comments: The City has offered to take the lead on this project through the ULID process, were the beneficiaries would reimburse the City for its work. Costs were provided by the City.		

Schedule and Opinion of Probable Cost	
Project Year	2013-2014
Engineering and Allied Cost	-----
Construction Cost	-----
Contingency (35%)	-----
Total Project Cost	$758,000



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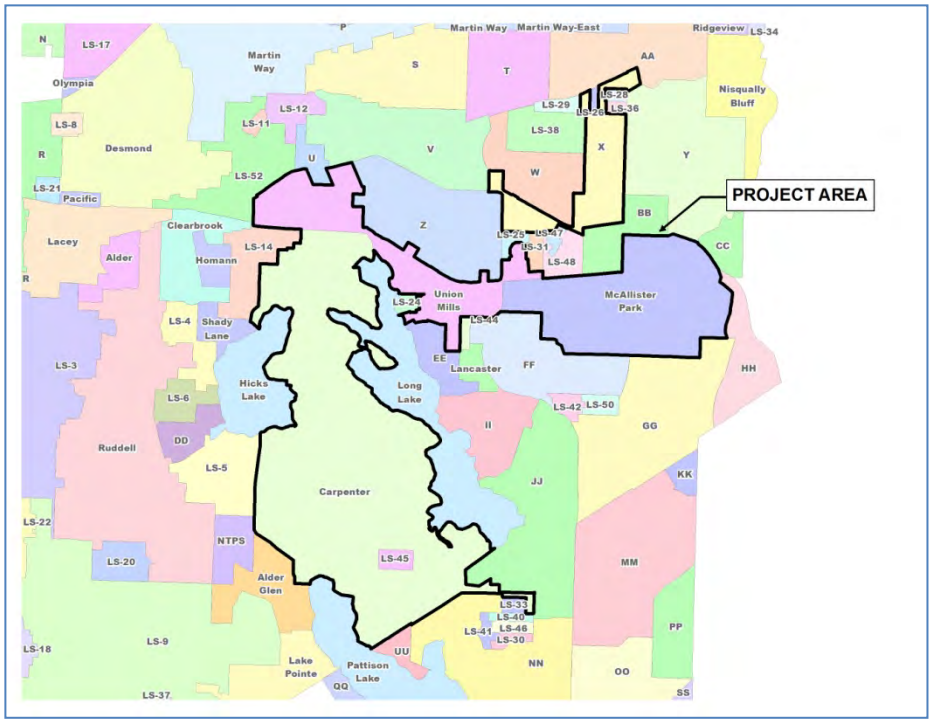
STEP Main Air Release/Vacuum Relief Valve Summary		
CIP Number: 6		
Project Type: O&M	Replacement	
	Upgrade	☑
	Expansion	

Project Description: Install air release/vacuum relief valves to remove air trapped in the Union Mills STEP area. Evaluate performance of the existing system to determine if existing air release/vacuum relief valves need to be replaced, and where to locate additional valves.

Project Benefit: Air release/vacuum relief valves will remove air trapped in the Union Mills STEP area that is causing air binding; higher system pressures are required to overcome air binding. By reducing air binding, this project will allow the pumps to operate more effectively and more efficiently, and increase the capacity in the system.

Comments: Costs were provided by the City.

Schedule and Opinion of Probable Cost	
Project Year	2013-2015
Engineering and Allied Cost	-----
Construction Cost	-----
Contingency (35%)	-----
Total Project Cost	$232,000



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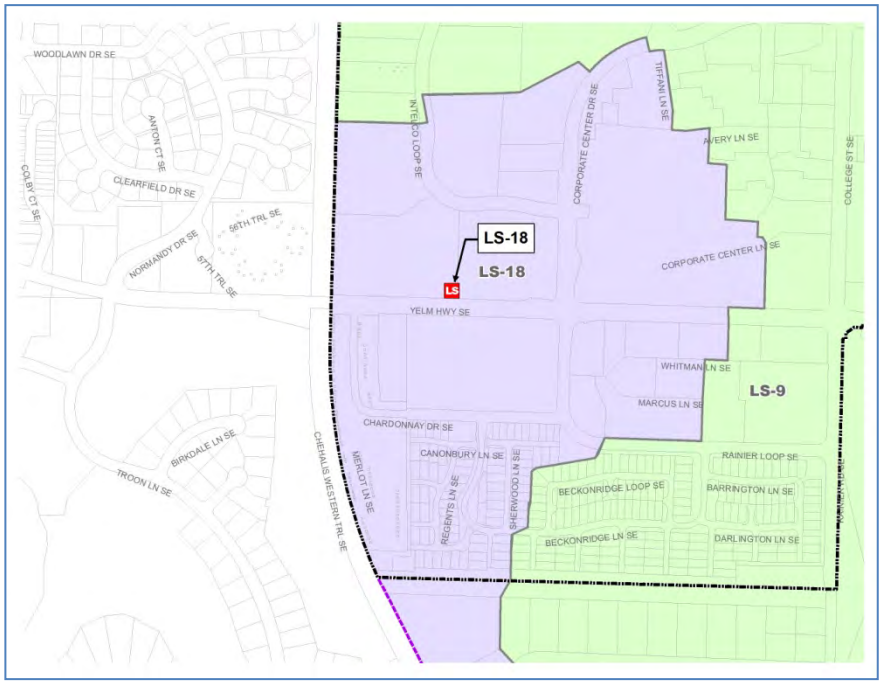
Lift Station 18 Retrofit Summary		
CIP Number: 7		
Project Type: O&M	Replacement	☑
	Upgrade	
	Expansion	☑
Project Description: Convert LS-18 from above ground vacuum prime station to submersible pump station.		
Project Benefit: This station experiences an abnormally heavy FOG and fibrous debris load, requiring frequent maintenance and wet well cleaning. New chopper style pumps will better handle this waste stream and reduce maintenance requirements.		
Comments: This project was bid in April 2014. The construction cost is the low bid from Cherokee Construction Services, LLC.		

Schedule and Opinion of Probable Cost	
Project Year	2013-2014
Engineering and Allied Cost	-----
Construction Cost	$470,000
Contingency (35%)	-----
Total Project Cost	$470,000



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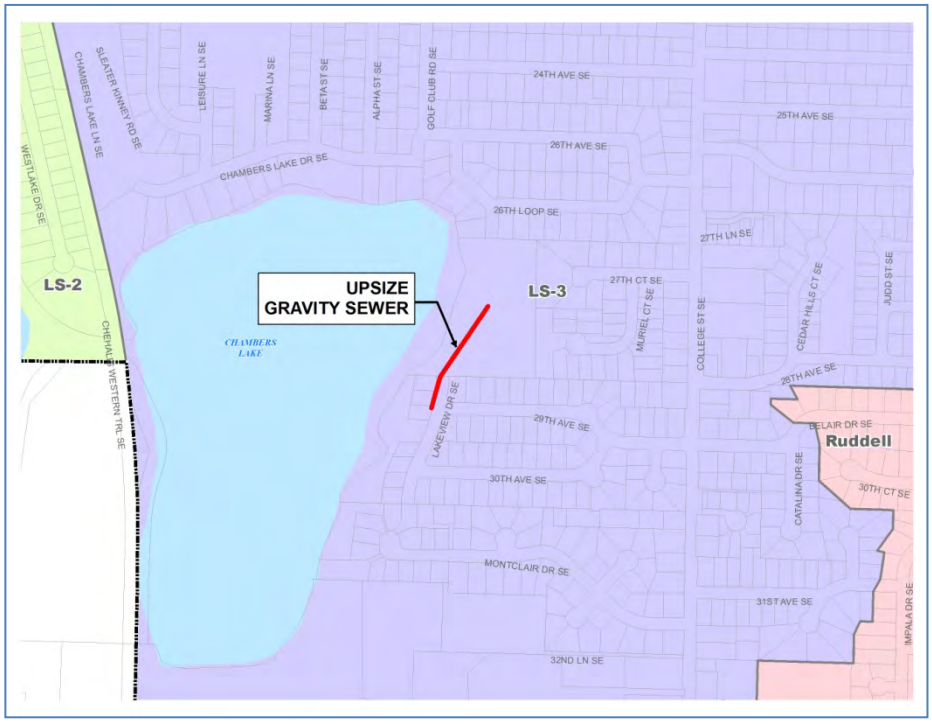
Lakeview Dr Gravity Upsize (Phase 1) Summary		
CIP Number: 8		
Project Type: Capacity	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Upsize approximately 850 lf of pipe from MH VZD01 to MH VSV01 from 10-inch diameter to 12-inch diameter.		
Project Benefit: The existing Lakeview Dr gravity main which serves a large area adjacent to Chambers Lake is nearing its maximum capacity and needs to be upsized to reduce the risk of surcharging and to serve future growth. This project will provide sufficient capacity for the build-out conditions.		
Comments: This project will be done in phases, the first and most urgent phase is the northern portion of the main between 29th Ave and 26th Ave, the southern portion (Phase 2) will be completed in subsequent years. This project will be coordinated with the City's Chambers Lake Regional Stormwater Treatment Facility project.		

Schedule and Opinion of Probable Cost	
Project Year	2014
Engineering and Allied Cost	$82,000
Construction Cost	$232,000
Contingency (35% + $80,000 per the City)	$190,000
Total Project Cost	$500,000



CIP 8: Lakeview Dr Gravity Upsize (Phase 1)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$18,100	1	ls	$18,100
2	Temporary Erosion & Sediment Control	$3,600	1	ls	$3,600
3	Dewatering	$3,600	1	ls	$3,600
4	12-inch PVC Sewer Pipe, SDR 35	$125	850	lf	$106,250
5	48-inch Manhole	$5,000	5	ea	$25,000
6	Side Sewer Connections	$500	21	ea	$10,625
7	HMA Trench Patch	$200	194	tn	$38,722
8	Traffic Control	$3,600	1	ls	$3,600
9	General Restoration	$3,600	1	ls	$3,600
	Subtotal				$213,097
	Sales Tax	8.7%			$18,539
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$231,637

Planning	5%	$12,000
Design and Permitting	15%	$35,000
Services During Construction	15%	$35,000
TOTAL OPINION OF PROBABLE ALLIED COST		$82,000
Contingency	35%	$110,000
City of Lacey Additional Contingency		$80,000
TOTAL OPINION OF PROBABLE PROJECT		$500,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

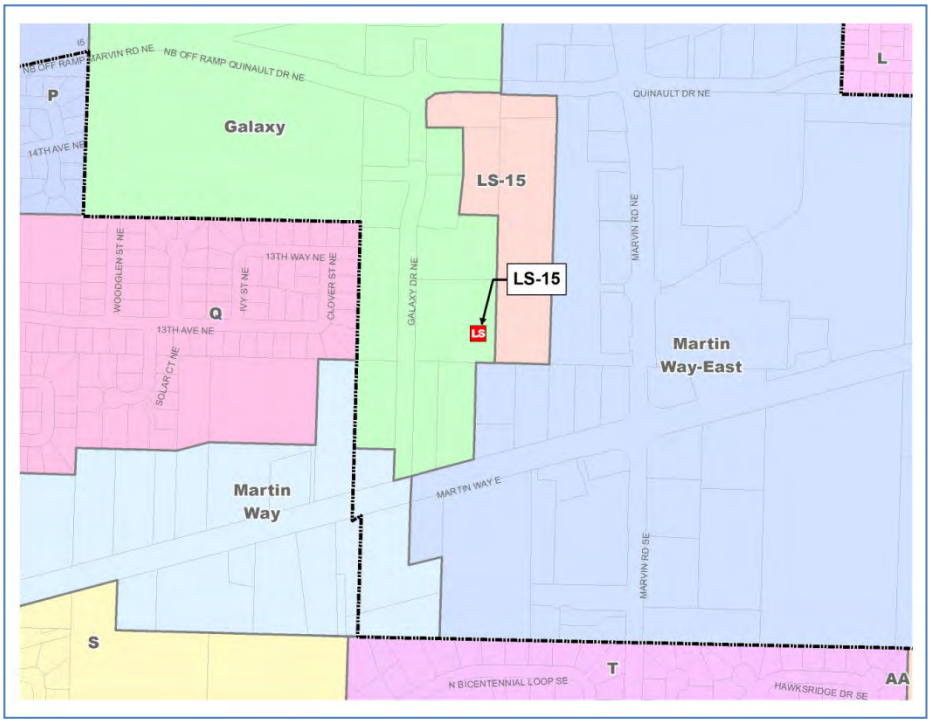
Lift Station 15 Generator/Flow Meter Summary		
CIP Number: 9		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	

Project Description: Install a backup generator set, flow meter, pressure transducer, and connect to SCADA at LS-15.

Project Benefit: LS-15 serves and active commercial area and has relatively little emergency storage capacity in the wet well and no on-site auxiliary power. This project will reduce the risk of upstream surcharging during a power outage. The flow meter will allow the City to accurately track flow from this basin and monitor pump performance.

Comments: City requested additional contingency for this project. This project may be combined with CIP 23.

Schedule and Opinion of Probable Cost	
Project Year	2014
Engineering and Allied Cost	$40,000
Construction Cost	$110,000
Contingency (35% + $150,000 per the City)	$200,000
Total Project Cost	$350,000



CIP 9: Lift Station 15 Generator/Flow Meter

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$8,600	1	ls	$8,600
2	Temporary Erosion & Sediment Control	$1,720	1	ls	$1,720
3	Flow Meter Vault	$21,000	1	ea	$21,000
4	Generator Set	$60,000	1	ls	$60,000
5	Equipment Pad	$5,000	1	ls	$5,000
6	Traffic Control	$1,720	1	ls	$1,720
7	Dewatering	$1,720	1	ls	$1,720
8	General Restoration	$1,720	1	ls	$1,720
	Subtotal				$101,480
	Sales Tax	8.7%			$8,829
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$110,309

Planning	5%	$6,000
Design and Permitting	15%	$17,000
Services During Construction	15%	$17,000
TOTAL OPINION OF PROBABLE ALLIED COST		$40,000
Contingency	35%	$50,000
City of Lacey Additional Contingency		$150,000
TOTAL OPINION OF PROBABLE PROJECT		$350,000

Notes
1. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
2. Mobilization is assumed to be 10% of Construction
3. Vault includes piping, fittings, valves, flow meter, excavation, foundation, backfill, and connection to existing force main
4. Costs are in 2014 dollars

Avonlea Odor Control Summary		
CIP Number: 10		
Project Type: O&M	Replacement	
	Upgrade	☑
	Expansion	

Project Description: This project includes the emergency cleanup associated with a faulty chemical storage tank used for odor control in the City's Avonlea STEP area. Also included is the replacement of the failed odor control facility on the existing site.

Project Benefit: This project will reduce maintenance requirements for the Avonlea odor control facility.

Comments: Costs were provided by the City.

Schedule and Opinion of Probable Cost	
Project Year	2014
Engineering and Allied Cost	-----
Construction Cost	-----
Contingency (35%)	-----
Total Project Cost	$100,000

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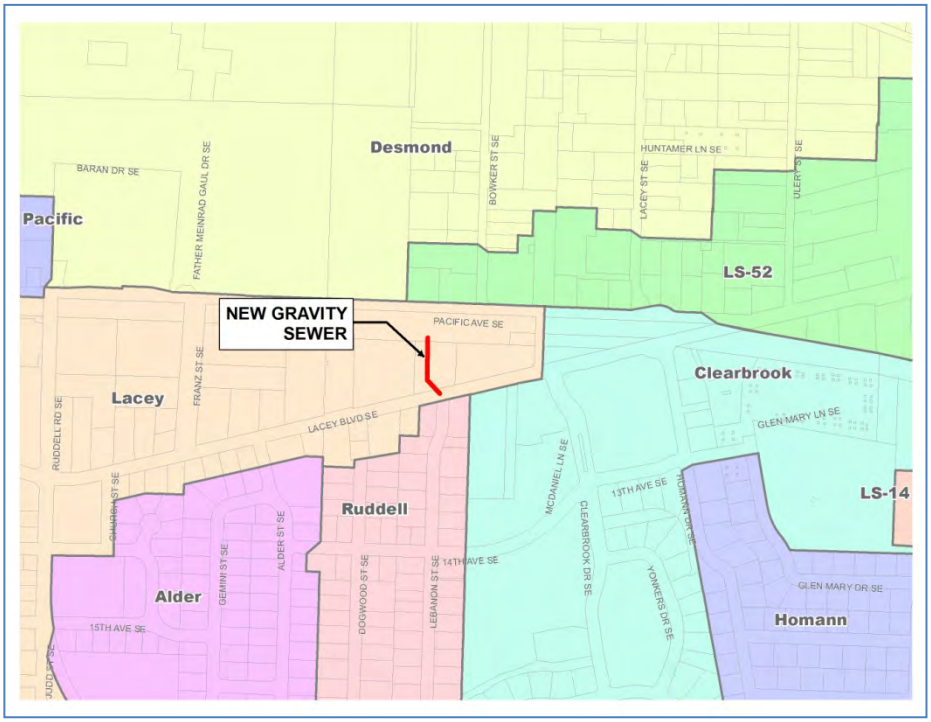
Train Depot Summary		
CIP Number: 11		
Project Type: Capacity	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Construct new 8-inch diameter gravity sewer in Lebanon St to serve the future Train Depot/Lacey Museum		
Project Benefit: This project will provide sewer service to the future Train Depot/Lacey Museum.		
Comments: Costs were provided by the City.		

Schedule and Opinion of Probable Cost	
Project Year	2014
Engineering and Allied Cost	-----
Construction Cost	-----
Contingency (35%)	-----
Total Project Cost	$62,000



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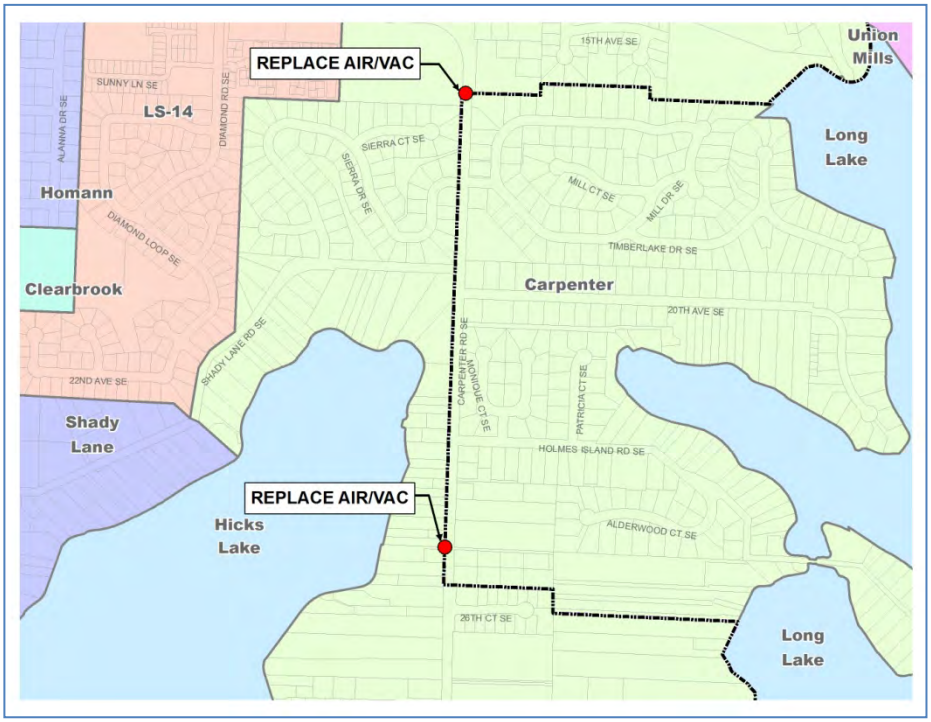
Carpenter Road STEP Upgrades Summary		
CIP Number: 12		
Project Type: O&M	Replacement	☑
	Upgrade	
	Expansion	
Project Description: Replace air release/vacuum relief valves and the manhole structures they are housed in. The two locations are at 1530 and 2417 Carpenter Rd SE.		
Project Benefit: These air release valves are needed to ensure any air trapped in the STEP main is allowed to escape, preventing excessively high system pressure.		
Comments: City requested additional contingency.		

Schedule and Opinion of Probable Cost	
Project Year	2014
Engineering and Allied Cost	$10,000
Construction Cost	$20,000
Contingency (35% + $10,000 per the City)	$20,000
Total Project Cost	$50,000



CIP 12: Carpenter Road STEP Upgrades

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$1,200	1	ls	$1,200
2	Temporary Erosion & Sediment Control	$200	1	ls	$200
3	Air Release/Vacuum Valve	$2,000	2	ea	$4,000
4	48-inch Manhole	$5,000	2	ea	$10,000
5	Temporary Bypass	$2,000	1	ls	$2,000
6	Dewatering	$200	1	ls	$200
7	General Restoration	$200	1	ls	$200
	Subtotal				$17,800
	Sales Tax	8.7%			$1,549
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$20,000

Planning	5%	$1,000
Design and Permitting	15%	$3,000
Services During Construction	15%	$3,000
TOTAL OPINION OF PROBABLE ALLIED COST		$10,000
Contingency	35%	$10,000
City of Lacey Additional Contingency		$10,000
TOTAL OPINION OF PROBABLE PROJECT		$50,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Lift Station 2 - Lift Station, Gravity, and Force Main Replacement Summary		
CIP Number: 13		
Project Type: O&M	Replacement	☑
	Upgrade	
	Expansion	
Project Description: Replace and relocate LS-2. Reroute 450 lf of 4-inch diameter force main. Replace approximately 900 lf of 8-inch diameter gravity pipe and manholes in Westlake Drive.		
Project Benefit: LS-2 was built in 1970 and has reached the end of its useful life. It has limited space for maintenance tasks and is located near low hanging utility lines. Relocating will allow for easier maintenance. The force main crosses a private lot and is underneath a house for easier access. The gravity sewer has high levels of infiltration and inflow.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2015-2017
Engineering and Allied Cost	$310,000
Construction Cost	$880,000
Contingency (35%)	$420,000
Total Project Cost	$1,610,000

CIP 13: Lift Station 2 - Lift Station, Gravity, and Force Main Replacement

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$68,700	1	ls	$68,700
2	Temporary Erosion & Sediment Control	$13,700	1	ls	$13,700
3	Dewatering	$13,700	1	ls	$13,700
4	8-inch PVC Sewer Pipe, SDR 35	$117	915	lf	$107,055
5	48-inch Manhole	$5,000	5	ea	$25,000
6	Side Sewer Connections	$500	23	ea	$11,438
7	4-inch PVC C900 Force Main	$76	450	lf	$34,200
8	HMA Trench Patch	$200	311	tn	$62,183
9	Temporary Sewer Bypass Pumping	$10,000	1	ls	$10,000
10	Removal of Structures and Obstructions	$20,000	1	ls	$20,000
11	Utility Potholing	$300	8	hr	$2,400
12	Trench Safety System	$2,000	1	ls	$2,000
13	Roadway Excavation Incl. Haul	$50	20	cy	$1,000
14	Extra Excavation Incl. Haul	$60	10	cy	$600
15	Imported Pipe Bedding	$50	32	tn	$1,600
16	Bank Run Gravel for Trench Backfill	$40	26	tn	$1,040
17	CDF	$100	8	cy	$800
18	HMA Pavement Incl. CSTC & CSBC	$150	45	sy	$6,750
19	Cement Conc. Pavement Incl. CSBC	$600	22	cy	$13,200
20	Extruded Concrete Curb	$100	43	lf	$4,300
21	Sidewalk	$100	29	sy	$2,900
22	Raise Manhole to Grade	$300	2	ea	$600
23	Temporary Bypass Pumping	$25,000	1	ls	$25,000
24	2 Inch Water Main	$75	45	lf	$3,375
25	Reset Existing Hydrant	$1,000	1	ls	$1,000
26	Reset Existing RPBA	$1,500	1	ea	$1,500
27	Connect to Exist. Water Main	$4,000	1	ls	$4,000
28	Connect to Exist. San. Sewer Force Main	$4,000	1	ls	$4,000
29	Flow Meter Vault	$12,000	1	ea	$12,000
30	Lift Station	$60,000	1	ls	$60,000
31	Pumps & Mechanical; Grease Digester	$55,000	1	ls	$55,000
32	Valve Structure & Mechanical	$60,000	1	ls	$60,000
33	Electrical	$140,000	1	ls	$140,000
34	Replacement Pump-Around Vault Lid	$6,000	1	ls	$6,000
35	Remove and Replace Bollard	$1,000	3	ls	$3,000
36	Lawn and Landscape Restoration	$500	1	ls	$500
37	Minor Change	$5,000	1	mc	$5,000
38	Traffic Control	$13,700	1	ls	$13,700
39	General Restoration	$13,700	1	ls	$13,700
	Subtotal				$810,941
	Sales Tax	8.7%			$70,552
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$880,000

Planning	5%	$44,000
Design and Permitting	15%	$132,000
Services During Construction	15%	$132,000
TOTAL OPINION OF PROBABLE ALLIED COST		$310,000
Contingency	35%	$420,000
TOTAL OPINION OF PROBABLE PROJECT		$1,610,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

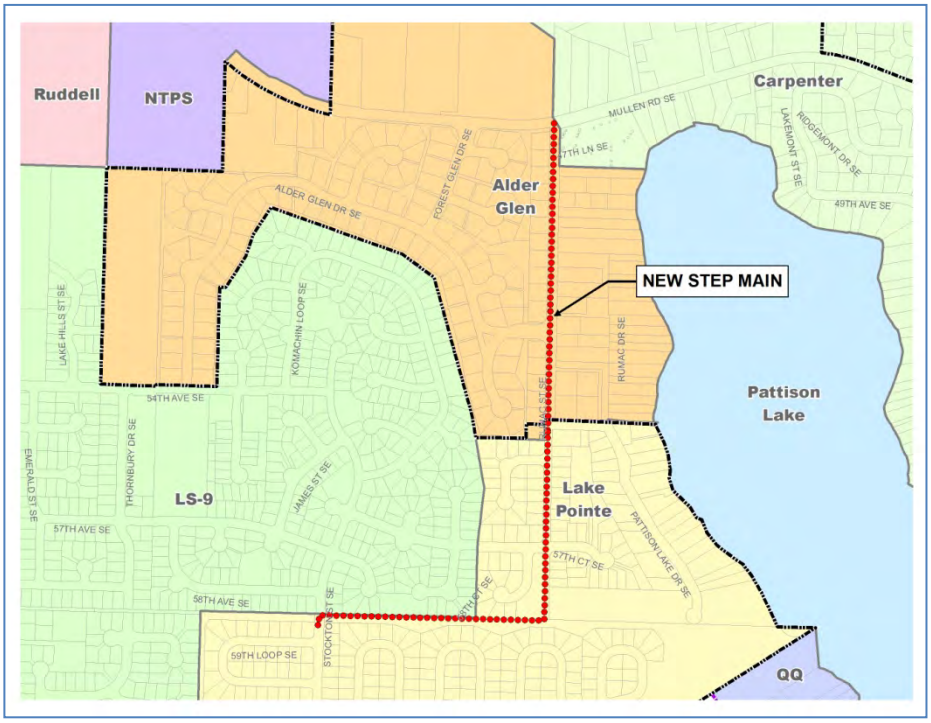
Rumac St STEP Main Summary		
CIP Number: 14		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	

Project Description: Install approximately 4,400 lf of 6-inch diameter STEP main along Rumac Street. Reduce the number of odor control facilities.

Project Benefit: This project will extend a new STEP main along Rumac St, allowing the Lake Pointe STEP area to be diverted to the Mullen Rd STEP line. The three existing odor control facilities may be reduced due to increased contact times through the new Rumac St STEP Main.

Comments: This project should be completed concurrently with or after the Mullen Rd STEP Main project and covers only the STEP main along Rumac St; budget for a future odor control facility is included in the Mullen Rd STEP Main project. City has requested additional contingency.

Schedule and Opinion of Probable Cost	
Project Year	2015-2016
Engineering and Allied Cost	$180,000
Construction Cost	$510,000
Contingency (35% + $70,000 per the City)	$310,000
Total Project Cost	$1,000,000



CIP 14: Rumac St STEP Main

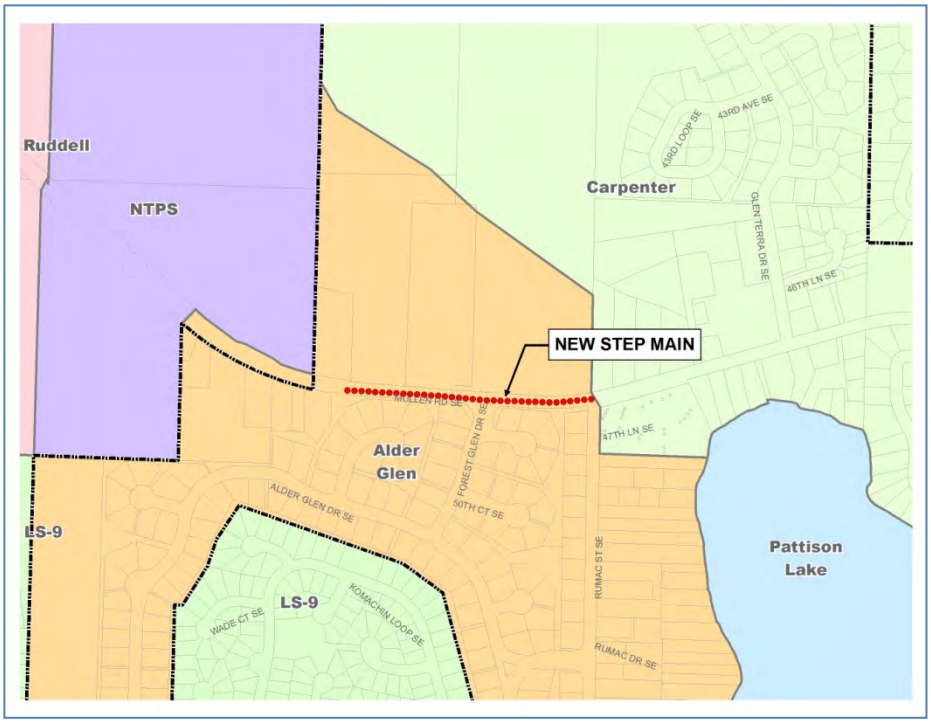
Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$39,200	1	ls	$39,200
2	Temporary Erosion & Sediment Control	$7,800	1	ls	$7,800
3	Dewatering	$7,800	1	ls	$7,800
4	6-inch PVC C900 Force Main	$76	4,400	lf	$334,400
5	Isolation Valve	$1,000	2	ea	$2,000
6	HMA Trench Patch	$200	280	tn	$56,000
7	Traffic Control	$7,800	1	ls	$7,800
8	General Restoration	$7,800	1	ls	$7,800
	Subtotal				$462,800
	Sales Tax	8.7%			$40,264
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$510,000

Planning	5%	$26,000
Design and Permitting	15%	$77,000
Services During Construction	15%	$77,000
TOTAL OPINION OF PROBABLE ALLIED COST		$180,000
Contingency	35%	$240,000
City of Lacey Additional Contingency		$70,000
TOTAL OPINION OF PROBABLE PROJECT		$1,000,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

Mullen Rd STEP Main Summary		
CIP Number: 15		
Project Type: Capacity	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Install approximately 1,200 lf of missing 6-inch diameter force main in Mullen Road from the city limits to Rumac Street, and install an odor control facility.		
Project Benefit: This project will provide sewer service to the southeast corner of the City's UGA, and redirect some flow from the Carpenter Rd STEP Main to Ruddell Rd, preserving capacity in Carpenter Rd. The Lake Pointe STEP system will also be redirected, increasing contact time for odor control chemicals, thereby increasing the effectiveness.		
Comments: This project should be constructed prior to, or concurrently with a planned county road project to reconstruct a portion of Mullen Rd.		

Schedule and Opinion of Probable Cost	
Project Year	2015-2016
Engineering and Allied Cost	$100,000
Construction Cost	$270,000
Contingency (35%)	$130,000
Total Project Cost	$500,000



CIP 15: Mullen Rd STEP Main

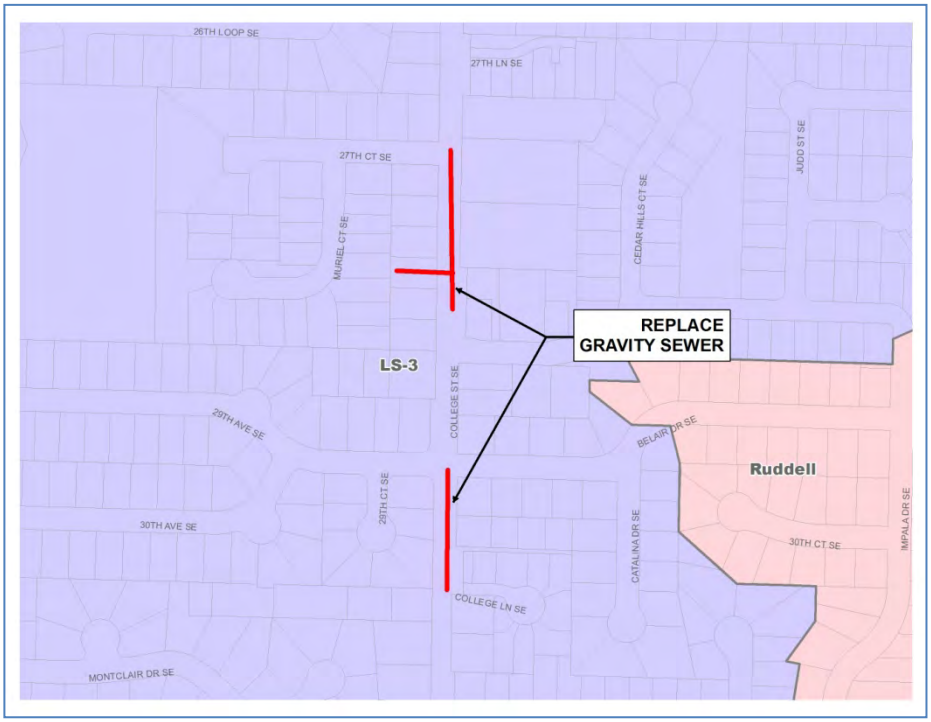
Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$21,400	1	ls	$21,400
2	Temporary Erosion & Sediment Control	$4,300	1	ls	$4,300
3	Dewatering	$4,300	1	ls	$4,300
4	6-inch PVC C900 Force Main	$76	1,200	lf	$91,200
5	Isolation Valve	$1,000	2	ea	$2,000
6	Odor Control	$65,000	1		$65,000
7	HMA Trench Patch	$200	280	tn	$56,000
8	Traffic Control	$4,300	1	ls	$4,300
9	General Restoration	$4,300	1	ls	$4,300
	Subtotal				$252,800
	Sales Tax	8.7%			$21,994
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$270,000

Planning	5%	$14,000
Design and Permitting	15%	$41,000
Services During Construction	15%	$41,000
TOTAL OPINION OF PROBABLE ALLIED COST		$100,000
Contingency	35%	$130,000
TOTAL OPINION OF PROBABLE PROJECT		$500,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

College St / 26th Ave Gravity Repair Summary		
CIP Number: 16		
Project Type: O&M	Replacement	☑
	Upgrade	
	Expansion	
Project Description: Install approximately 1,300 lf of 8-inch diameter CIPP to address deterioration in pipeline. Spot repairs in 2 locations to address root problems in pipeline.		
Project Benefit: This project may help to reduce heavy root intrusion and repair deteriorated concrete piping.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2015
Engineering and Allied Cost	$19,000
Construction Cost	$55,000
Contingency (35%)	$26,000
Total Project Cost	$100,000



CIP 16: College St / 26th Ave Gravity Repair

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$4,400	1	ls	$4,400
2	Temporary Erosion & Sediment Control	$900	1	ls	$900
3	8-inch Slipline	$21	1,300	lf	$27,300
4	Side Sewer Connections	$500	33	ea	$16,250
5	Traffic Control	$900	1	ls	$900
6	General Restoration	$900	1	ls	$900
	Subtotal				$50,650
	Sales Tax	8.7%			$4,407
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$55,000

Planning	5%	$3,000
Design and Permitting	15%	$8,000
Services During Construction	15%	$8,000
TOTAL OPINION OF PROBABLE ALLIED COST		$19,000
Contingency	35%	$26,000
TOTAL OPINION OF PROBABLE PROJECT		$100,000

Notes
1. Gen. Rest., Traffic Control, Erosion Control at 2% Construction Costs
2. Mobilization is assumed to be 10% of Construction
3. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Annual Sewer Line Replacement Summary		
CIP Number: 17		
Project Type: Obsolescence	Replacement	☑
	Upgrade	
	Expansion	
Project Description: Annual program to repair and replace problematic or deteriorating sewer mains.		
Project Benefit: Proactive approach will keep infiltration and inflow rates low and preserves the overall functionality of the collection system. This will also reduce expensive emergency repairs.		
Comments: This funding program is intended to increase throughout the planning horizon as the overall age of the City's collection system increases. Costs were provided by the City.		

Schedule and Opinion of Probable Cost	
Project Year	Annual
Engineering and Allied Cost	-----
Construction Cost	-----
Contingency (35%)	-----
Total Project Cost	$50,000 through 2018; $100,000 after 2018

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FOG / Fibrous Wipes Program Summary		
CIP Number: 18		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	
Project Description: Conduct a second FOG/fibrous wipes pilot program to confirm preliminary findings of first program. If successful, expand program to other high-FOG areas.		
Project Benefit: FOG and fibrous wipes present a significant challenge to maintenance crews. These items have a tendency to build up in the collection system and lift stations, reducing capacity and performance, and can lead to sewer backups and frequent pump failures. This program seeks to reduce the input of these items into the sewer system by customers.		
Comments: Coordinate program with other jurisdictions.		

Schedule and Opinion of Probable Cost	
Project Year	2015-2022
Engineering and Allied Cost	-----
Construction Cost	-----
Contingency (35%)	-----
Total Project Cost	$10,000 per year

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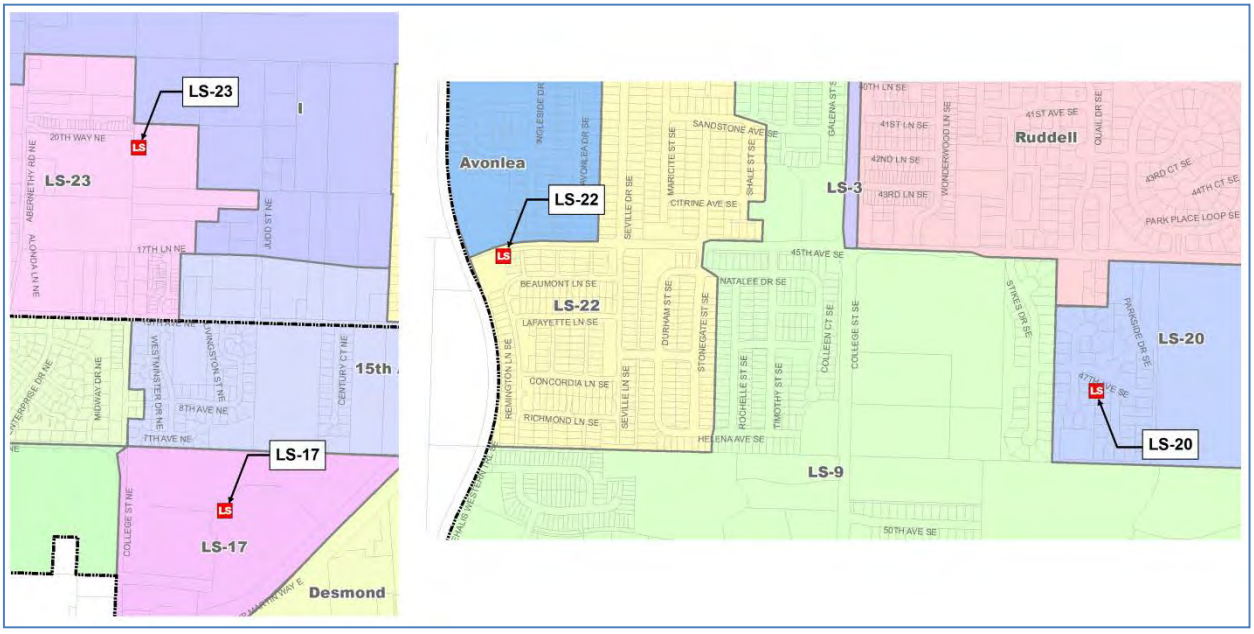
Generators/Flow Meters (LS-17, LS-20, LS-22, LS-23) Summary		
CIP Number: 19		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	
Project Description: Install a backup generator set, flow meter, and pressure transducer, and connect to SCADA for LS-17, LS-20, LS-22, and LS-23.		
Project Benefit: This project will reduce the risk of upstream surcharging during a power outage, and reduce the time spent moving a portable generator set to each individual lift station. The flow meter will allow the City to accurately track flow from this basin and monitor pump performance.		
Comments: Lift Station 17 may be combined with CIP 23.		

Schedule and Opinion of Probable Cost	
Project Year	2016
Engineering and Allied Cost	$150,000
Construction Cost	$440,000
Contingency (35%)	$210,000
Total Project Cost	$800,000



CIP 19: Generators/Flow Meters (LS-17, LS-20, LS-22, LS-23)

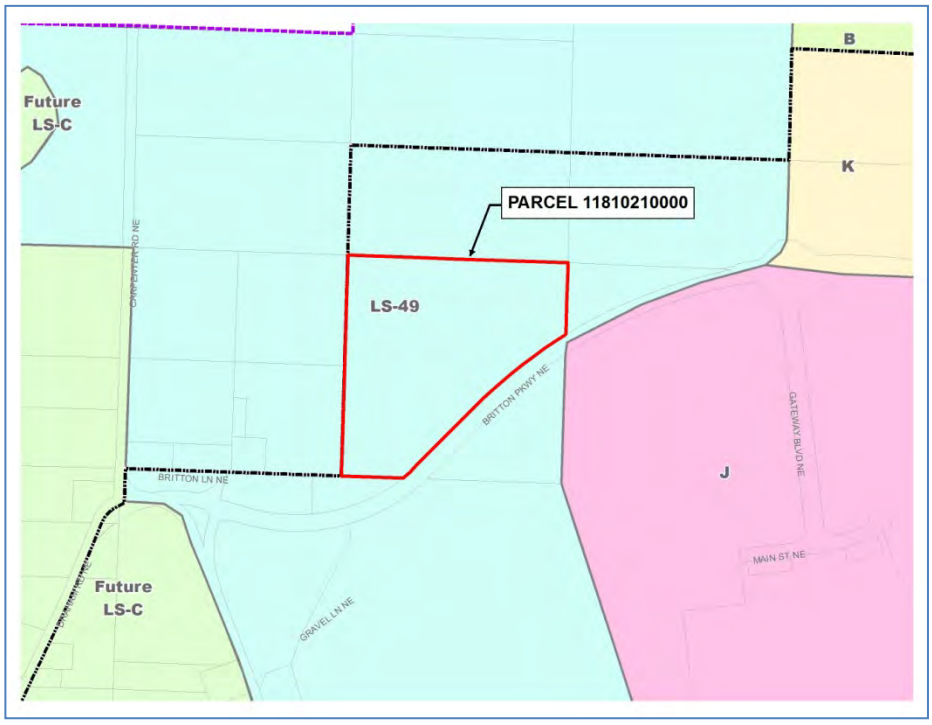
Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$34,400	1	ls	$34,400
2	Temporary Erosion & Sediment Control	$6,880	1	ls	$6,880
3	Flow Meter Vault	$21,000	4	ea	$84,000
4	Generator Set	$60,000	4	ea	$240,000
5	Equipment Pad	$5,000	4	ea	$20,000
6	Traffic Control	$6,880	1	ls	$6,880
7	Dewatering	$6,880	1	ls	$6,880
8	General Restoration	$6,880	1	ls	$6,880
	Subtotal				$405,920
	Sales Tax	8.7%			$35,315
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$440,000

Planning	5%	$22,000
Design and Permitting	15%	$66,000
Services During Construction	15%	$66,000
TOTAL OPINION OF PROBABLE ALLIED COST		$150,000
Contingency	35%	$210,000
TOTAL OPINION OF PROBABLE PROJECT		$800,000

Notes
1. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
2. Mobilization is assumed to be 10% of Construction
3. Vault includes piping, fittings, valves, flow meter, excavation, foundation, backfill, and connection to existing force main
4. Costs are in 2014 dollars

Lift Station 49 Land Purchase Summary		
CIP Number: 20		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	
Project Description: Purchase adjacent lot (Parcel 11810210000) before it develops to prevent future odor and noise complaints from future resident.		
Project Benefit: Prevent future odor and noise complaints from future resident, and provide maintenance crews with additional space when repairs are needed.		
Comments: Cost provided by City.		

Schedule and Opinion of Probable Cost	
Project Year	2016
Engineering and Allied Cost	-----
Construction Cost	-----
Contingency (35%)	-----
Total Project Cost	$120,000



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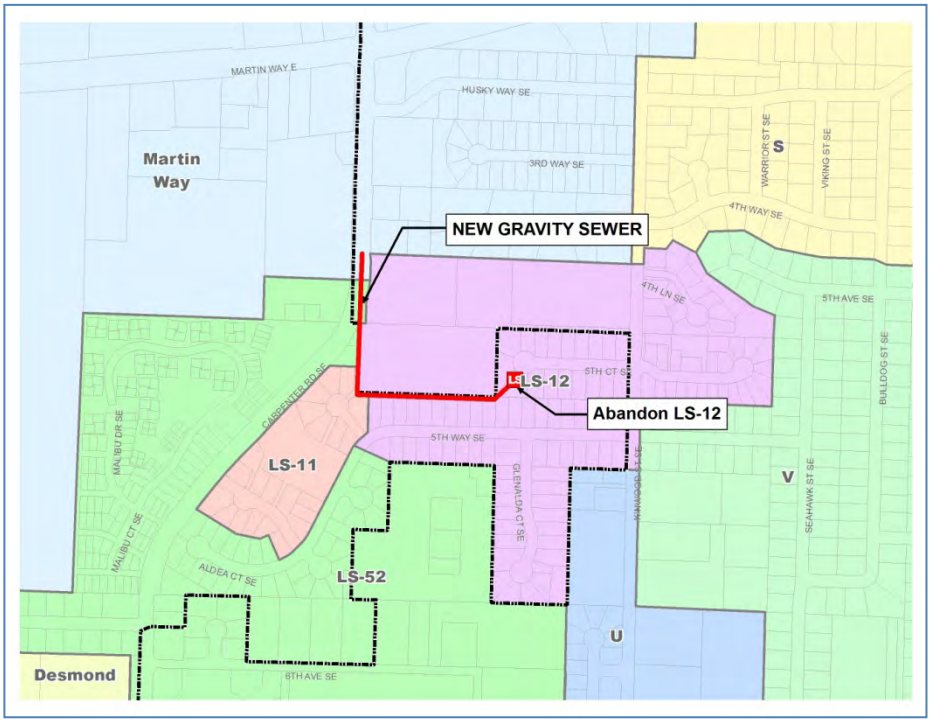
Lift Station 12 Abandonment Summary		
CIP Number: 21		
Project Type: Capacity, Obsolescence	Replacement	
	Upgrade	☑
	Expansion	☑
Project Description: Replace LS-12 with 2,000 lf of 12-inch diameter gravity sewer and abandon LS-12.		
Project Benefit: LS-12 is an older above grade vacuum prime station and is near capacity. It can be replaced with a gravity sewer, which will reduce the need for costly upgrades and long term maintenance.		
Comments: This project will require easements and/or property acquisition to provide a route for the new gravity line between the existing lift station and Carpenter Rd.		

Schedule and Opinion of Probable Cost	
Project Year	2015-2020
Engineering and Allied Cost	$185,000
Construction Cost	$557,000
Contingency (35%)	$160,000
Total Project Cost	$902,000



CIP 21: Lift Station 12 Abandonment

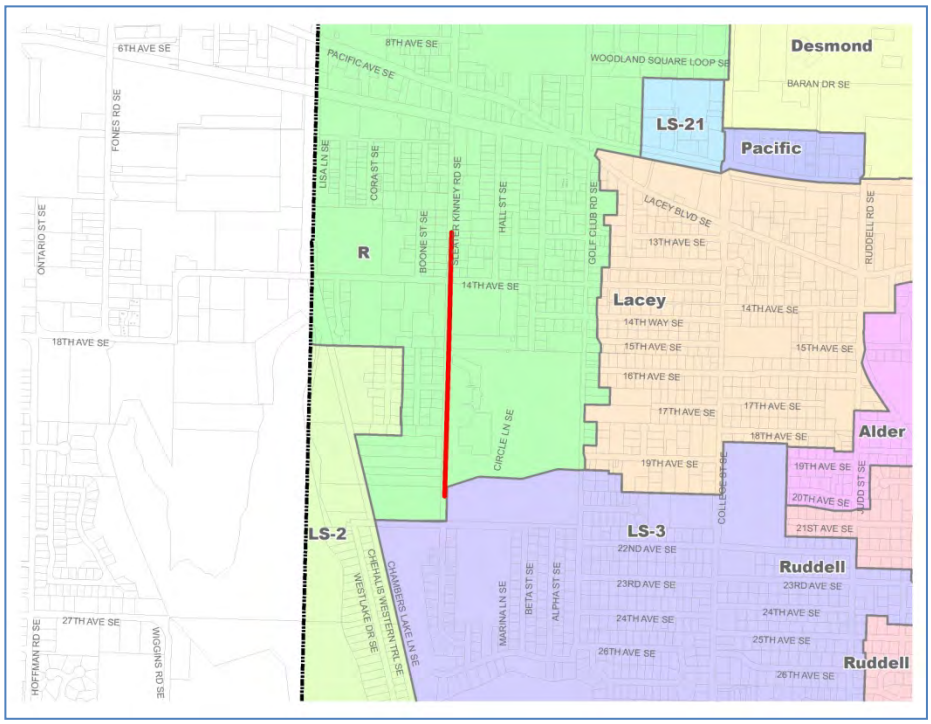
Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$35,600	1	ls	$35,600
2	Temporary Erosion & Sediment Control	$7,100	1	ls	$7,100
3	Dewatering	$7,100	1	ls	$7,100
4	12-inch PVC Sewer Pipe, SDR 35	$125	2,000	lf	$250,000
5	48-inch Manhole	$5,000	3	ea	$15,000
6	HMA Trench Patch	$200	456	tn	$91,111
7	Traffic Control	$7,100	1	ls	$7,100
8	General Restoration	$7,100	1	ls	$7,100
	Subtotal				$420,111
	Sales Tax	8.7%			$36,550
	ESTIMATED CONSTRUCTION COST				$457,000
	Construction Contingency	35%			$160,000
	TOTAL ESTIMATED CONSTRUCTION COST				$617,000

Planning	5%	$30,850
Design and Permitting	10%	$61,700
Construction and Construction Management	15%	$92,550
TOTAL OPINION OF PROBABLE ALLIED COST		$185,000
Property Acquisition		$100,000
TOTAL ESTIMATED PROJECT COST		$902,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

Sleater Kinney Gravity Main Improvements (Phase 1) Summary		
CIP Number: 22		
Project Type: Capacity	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Upsize approximately 2,590 lf of pipe between MH VQD02 to MH VGE01 from 15-inch diameter to 21-inch diameter.		
Project Benefit: This section of gravity main serves a large number of customers along the City's western boundary and operates in excess of the City's 80% depth criteria during peak hour flows. This main consists of older concrete pipe that is showing signs of deterioration (exposed aggregate, root penetrations).		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2017-2018
Engineering and Allied Cost	$250,000
Construction Cost	$710,000
Contingency (35%)	$340,000
Total Project Cost	$1,300,000



CIP 22: Sleater Kinney Gravity Main Improvements (Phase 1)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$18,000	1	ls	$18,000
2	Temporary Erosion & Sediment Control	$4,000	1	ls	$4,000
3	Dewatering	$4,000	1	ls	$4,000
4	21-inch PVC Sewer Pipe, SDR 35	$171	2,590	lf	$442,890
5	48-inch Manhole	$5,000	6	ea	$30,000
6	Side Sewer Connections	$500	65	ea	$32,375
7	HMA Trench Patch	$200	590	tn	$117,989
8	Traffic Control	$4,000	1	ls	$4,000
9	General Restoration	$4,000	1	ls	$4,000
	Subtotal				$657,254
	Sales Tax	8.7%			$57,181
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$710,000
	Planning	5%			$36,000
	Design and Permitting	15%			$107,000
	Services During Construction	15%			$107,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$250,000
	Contingency	35%			$340,000
	TOTAL OPINION OF PROBABLE PROJECT				$1,300,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

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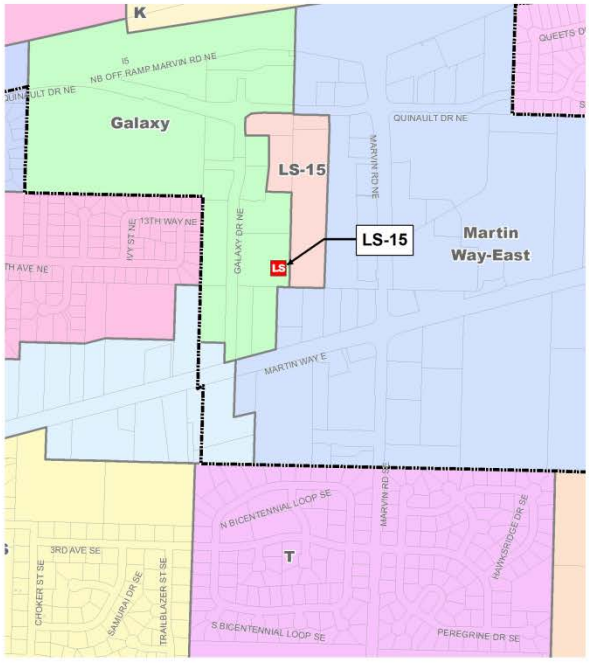
Lift Station Rehabilitation (Phase 1) Summary		
CIP Number: 23		
Project Type: Obsolescence	Replacement	☑
	Upgrade	
	Expansion	

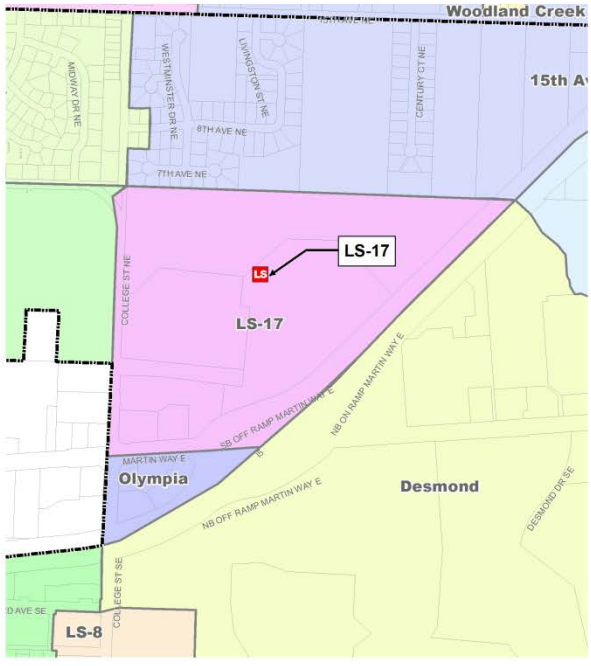
Project Description: Replace vacuum prime pumps with submersible pumps and upgrade mechanical and electrical equipment in LS-15 and LS-17. LS-17 will require the replacement of the upper section of the wet well to allow for mounting of the new pumps. Inspect and recoat wet wells as needed. Install on site generators and flow meters.

Project Benefit: Mechanical and electrical equipment will need to be replaced due to age. On site generators will increase reliability during power outages.

Comments:

Schedule and Opinion of Probable Cost	
Project Year	2017-2018
Engineering and Allied Cost	$364,000
Construction Cost	$1,043,000
Contingency (35%)	$492,000
Total Project Cost	$1,900,000





CIP 23: Lift Station Rehabilitation (Phase 1)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$82,700	1	LS	$82,700
2	Temporary Erosion & Sediment Control	$16,500	1	LS	$16,500
3	Wet Well Dewatering (wells)	$40,000	2	EA	$80,000
4	Wet Well Struct Excavation	$40	280	CY	$11,200
5	Wet Well Structural Shoring	$30	2,000	SF	$60,000
6	Wet Well Base (precast or CIP)	$4,000	2	EA	$8,000
7	Wet Well (8 ft inside dia precast MH)	$7,500	2	EA	$15,000
8	Wet Well Structural Backfill	$35	200	CY	$7,000
9	Wet Well Lid (CIP w/non-traffic hatch)	$10,000	2	LS	$20,000
10	Sandblast, Caulk Jts and Coat Int Wet Well, Pipe & Equip.	$10,000	2	EA	$20,000
11	SST Pump Rails	$3,500	2	EA	$7,000
12	Disch Piping in Wet Well, incl. support/thrust restraint	$6,000	2	EA	$12,000
13	Duplex Submersible Pumps	$85,000	2	EA	$170,000
14	Valve Vault Excav & Backfill	$4,000	2	EA	$8,000
15	Valve Vault Shoring	$2,500	2	EA	$5,000
16	Valve Vault (CIP vault, non-traffic hatch, piping & valves)	$25,000	2	EA	$50,000
17	Gravity Sewer from Wet Well to Ex. MH in Street	$125	100	LF	$12,500
18	Electrical Equipment Foundation (6-in gravel & 6-in reinf. conc. pad)	$1,500	2	EA	$3,000
19	Structural Aluminum Equipment Canopy/Shelter (~14ft x 10ft)	$10,000	2	EA	$20,000
20	Primary Power Supply	$10,000	2	EA	$20,000
21	UG Power & Controls to Wet Well & Vaults	$7,500	2	EA	$15,000
22	Level Controls in Wet Well	$1,500	2	EA	$3,000
23	Pump Inst. & Controls in NEMA 3R Enclosures	$30,000	2	EA	$60,000
24	MCC in NEMA 3R Enclosures	$15,000	2	EA	$30,000
25	Eng-Generator Foundation	$2,500	2	EA	$5,000
26	Weather/Acoustical Enclosure w/Eng-Gen, fuel tank, critical silencer, ATS)	$40,000	2	EA	$80,000
27	Telemetry	$10,000	2	EA	$20,000
28	Flow Meter Vault	$21,000	2	EA	$42,000
29	Misc. Yard Piping (water, vault drains, site SD)	$6,000	2	EA	$12,000
30	Minor Landscaping	$5,000	2	EA	$10,000
31	Site Parking Area (Gravel)	$3,500	2	EA	$7,000
32	Site Fencing (50' x 50' site)	$35	400	LF	$14,000
33	Traffic Control	$16,500	1	LS	$16,500
34	General Restoration	$16,500	1	LS	$16,500
	Subtotal				$958,900
	Sales Tax	8.7%			$83,424
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$1,042,000

Planning	5%	$52,000
Design and Permitting	15%	$156,000
Services During Construction	15%	$156,000
TOTAL OPINION OF PROBABLE ALLIED COST		$364,000
Contingency	35%	$492,000
TOTAL OPINION OF PROBABLE PROJECT		$1,900,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. 10" pipe includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

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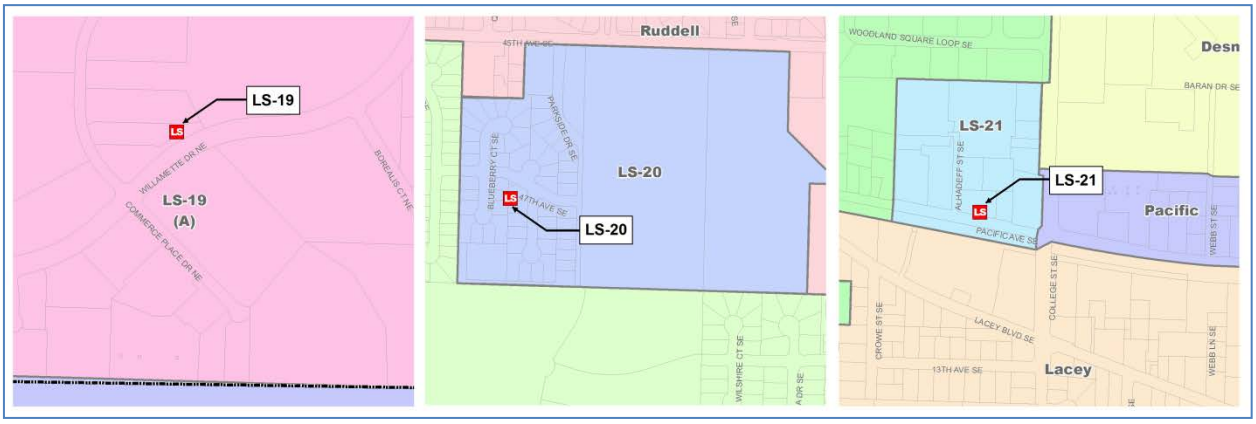
Lift Station Rehabilitation (Phase 2) Summary		
CIP Number: 24		
Project Type: Obsolescence	Replacement	☑
	Upgrade	
	Expansion	
Project Description: Upgrade mechanical and electrical equipment in LS-19, LS-20, and LS-21. Inspect and recoat wet wells as needed. Install on site generators and flow meters.		
Project Benefit: Mechanical and electrical equipment will need to be replaced due to age. On site generators will increase reliability during power outages.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2018-2019
Engineering and Allied Cost	$548,000
Construction Cost	$1,564,000
Contingency (35%)	$739,000
Total Project Cost	$2,850,000



CIP 24: Lift Station Rehabilitation (Phase 2)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$124,000	1	LS	$124,000
2	Temporary Erosion & Sediment Control	$24,800	1	LS	$24,800
3	Wet Well Dewatering (wells)	$40,000	3	EA	$120,000
4	Wet Well Struct Excavation	$40	420	CY	$16,800
5	Wet Well Structural Shoring	$30	3,000	SF	$90,000
6	Wet Well Base (precast or CIP)	$4,000	3	EA	$12,000
7	Wet Well (8 ft inside dia precast MH)	$7,500	3	EA	$22,500
8	Wet Well Structural Backfill	$35	300	CY	$10,500
9	Wet Well Lid (CIP w/non-traffic hatch)	$10,000	3	LS	$30,000
10	Sandblast, Caulk Jts and Coat Int Wet Well, Pipe & Equip.	$10,000	3	EA	$30,000
11	SST Pump Rails	$3,500	3	EA	$10,500
12	Disch Piping in Wet Well, incl. support/thrust restraint	$6,000	3	EA	$18,000
13	Duplex Submersible Pumps	$85,000	3	EA	$255,000
14	Valve Vault Excav & Backfill	$4,000	3	EA	$12,000
15	Valve Vault Shoring	$2,500	3	EA	$7,500
16	Valve Vault (CIP vault, non-traffic hatch, piping & valves)	$25,000	3	EA	$75,000
17	Gravity Sewer from Wet Well to Ex. MH in Street	$125	150	LF	$18,750
18	Electrical Equipment Foundation (6-in gravel & 6-in reinf. conc. pad)	$1,500	3	EA	$4,500
19	Structural Aluminum Equipment Canopy/Shelter (~14ft x 10ft)	$10,000	3	EA	$30,000
20	Primary Power Supply	$10,000	3	EA	$30,000
21	UG Power & Controls to Wet Well & Vaults	$7,500	3	EA	$22,500
22	Level Controls in Wet Well	$1,500	3	EA	$4,500
23	Pump Inst. & Controls in NEMA 3R Enclosures	$30,000	3	EA	$90,000
24	MCC in NEMA 3R Enclosures	$15,000	3	EA	$45,000
25	Eng-Generator Foundation	$2,500	3	EA	$7,500
26	Weather/Acoustical Enclosure w/Eng-Gen, fuel tank, critical silencer, ATS)	$40,000	3	EA	$120,000
27	Telemetry	$10,000	3	EA	$30,000
28	Flow Meter Vault	$21,000	3	EA	$63,000
29	Misc. Yard Piping (water, vault drains, site SD)	$6,000	3	EA	$18,000
30	Minor Landscaping	$5,000	3	EA	$15,000
31	Site Parking Area (Gravel)	$3,500	3	EA	$10,500
32	Site Fencing (50' x 50' site)	$35	600	LF	$21,000
33	Traffic Control	$24,800	1	LS	$24,800
34	General Restoration	$24,800	1	LS	$24,800
	Subtotal				$1,438,450
	Sales Tax	8.7%			$125,145
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$1,564,000

Planning	5%	$78,000
Design and Permitting	15%	$235,000
Services During Construction	15%	$235,000
TOTAL OPINION OF PROBABLE ALLIED COST		$548,000
Contingency	35%	$739,000
TOTAL OPINION OF PROBABLE PROJECT COST		$2,850,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. 10" pipe includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Lift Station and STEP System Flow Meters Summary		
CIP Number: 25		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	
Project Description: Install 21 flow meters and pressure transducers at lift stations that do not currently have them and connect to SCADA. Install 3 flow meters and pressure transducers in STEP mains and connect to SCADA.		
Project Benefit: Flow meters and pressure transducers are an important tool in establishing the performance, remaining capacity, and in troubleshooting of pressurized sewer systems.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2018-2020
Engineering and Allied Cost	$230,000
Construction Cost	$650,000
Contingency (35%)	$300,000
Total Project Cost	$1,180,000

CIP 25: Lift Station and STEP System Flow Meters

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$50,400	1	ls	$50,400
2	Temporary Erosion & Sediment Control	$10,080	1	ls	$10,080
3	Flow Meter Vault	$21,000	24	ea	$504,000
4	Traffic Control	$10,080	1	ls	$10,080
5	Dewatering	$10,080	1	ls	$10,080
6	General Restoration	$10,080	1	ls	$10,080
	Subtotal				$594,720
	Sales Tax	8.7%			$51,741
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$650,000

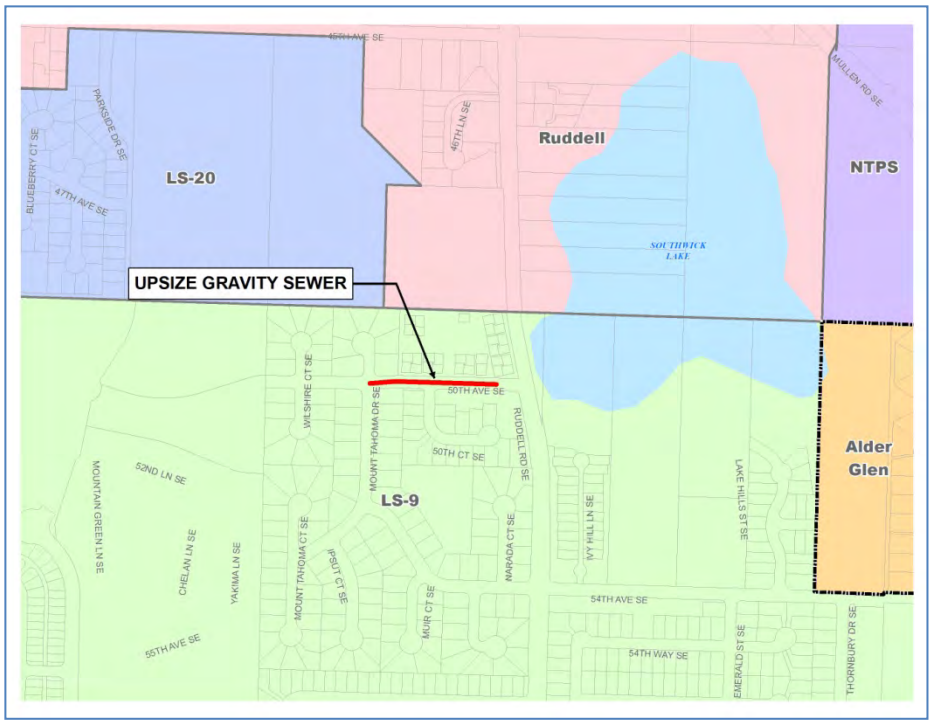
Planning	5%	$33,000
Design and Permitting	15%	$98,000
Services During Construction	15%	$98,000
TOTAL OPINION OF PROBABLE ALLIED COST		$230,000
Contingency	35%	$300,000
TOTAL OPINION OF PROBABLE PROJECT		$1,180,000

Notes
1. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
2. Mobilization is assumed to be 10% of Construction
3. Vault includes piping, fittings, valves, flow meter, excavation, foundation, backfill, and connection to existing force main
4. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Sewer Main Replacement (50th Ave) Summary		
CIP Number: 26		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	
Project Description: Replace approximately 350 lf of 18-inch diameter gravity sewer with adverse grade between MH 5KK02 and 5KJ02, and install a manhole where the Cottages connect with the main.		
Project Benefit: A section of this main was laid at a reverse slope which needs to be corrected. The private sewer system serving the Cottages is currently connected as a single service lateral; due to the size of this connection it should be reconfigured to connect at a manhole to facilitate maintenance and to prevent potential backups		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2019
Engineering and Allied Cost	$40,000
Construction Cost	$116,000
Contingency (35%)	$55,000
Total Project Cost	$210,000



CIP 26: Sewer Main Replacement (50th Ave)

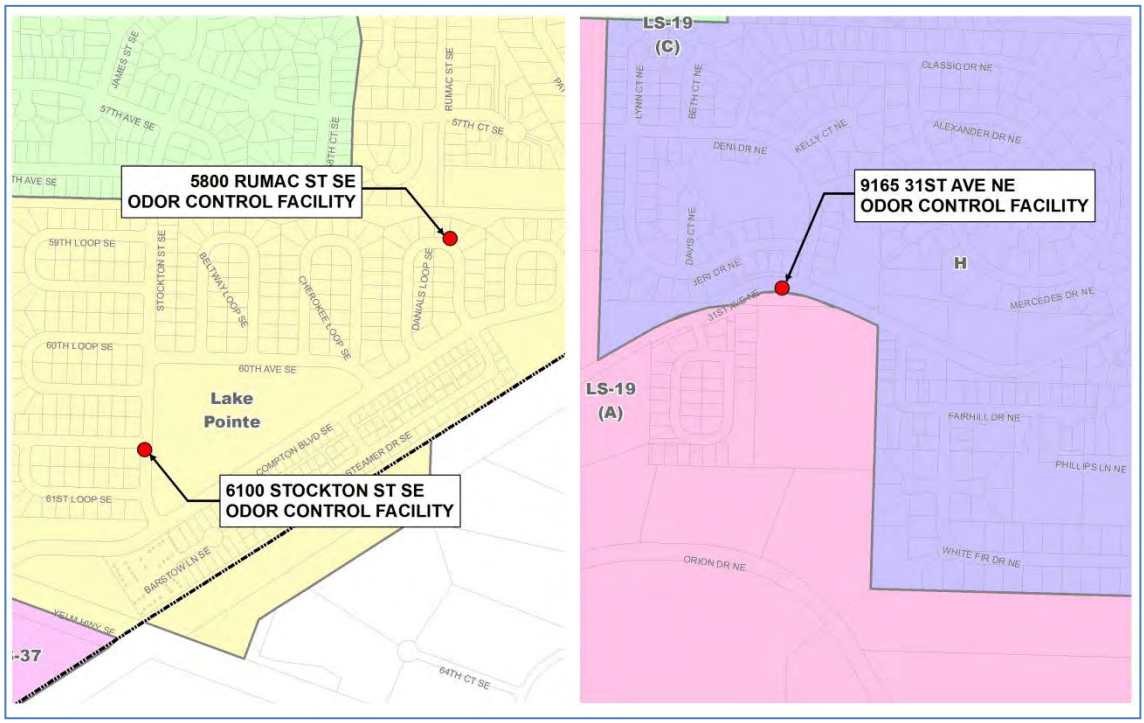
Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$9,100	1	ls	$9,100
2	Temporary Erosion & Sediment Control	$1,800	1	ls	$1,800
3	Dewatering	$1,800	1	ls	$1,800
4	18-inch PVC Sewer Pipe, SDR 35	$159	350	lf	$55,650
5	48-inch Manhole	$5,000	3	ea	$15,000
6	Side Sewer Connections	$500	9	ea	$4,375
7	HMA Trench Patch	$200	80	tn	$15,944
8	Traffic Control	$1,800	1	ls	$1,800
9	General Restoration	$1,800	1	ls	$1,800
	Subtotal				$107,269
	Sales Tax	8.7%			$9,332
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$116,000

Planning	5%	$6,000
Design and Permitting	15%	$17,000
Services During Construction	15%	$17,000
TOTAL OPINION OF PROBABLE ALLIED COST		$40,000
Contingency	35%	$55,000
TOTAL OPINION OF PROBABLE PROJECT		$210,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

Chemical Storage Tank Replacement Summary		
CIP Number: 27		
Project Type: O&M	Replacement	
	Upgrade	☑
	Expansion	
Project Description: Replace 3 existing odor control chemical storage tanks with new double containment tanks at the 5800 Rumac St SE, 6100 Stockton St SE, and 9165 31st Ave NE odor control facilities.		
Project Benefit: This project will provide secondary containment for odor control chemical storage.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2019
Engineering and Allied Cost	$28,000
Construction Cost	$82,000
Contingency (35%)	$40,000
Total Project Cost	$150,000



CIP 27: Chemical Storage Tank Replacement

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$6,600	1	ls	$6,600
2	Temporary Erosion & Sediment Control	$1,300	1	ls	$1,300
3	3,000 Gallon Double Wall Storage Tank	$17,000	3	ea	$51,000
4	Equipment Pad	$5,000	3	ea	$15,000
5	General Restoration	$1,300	1	ls	$1,300
	Subtotal				$75,200
	Sales Tax	8.7%			$6,542
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$82,000

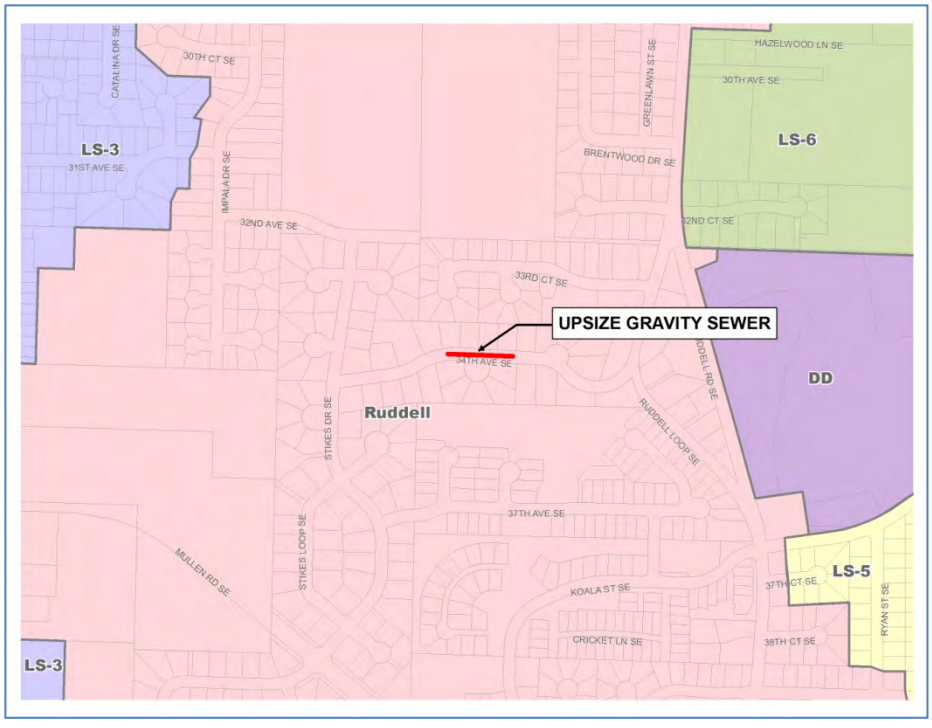
Planning	5%	$4,000
Design and Permitting	15%	$12,000
Services During Construction	15%	$12,000
TOTAL OPINION OF PROBABLE ALLIED COST		$28,000
Contingency	35%	$40,000
TOTAL OPINION OF PROBABLE PROJECT		$150,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Sewer Main Replacement (34th Ave) Summary		
CIP Number: 28		
Project Type: Capacity	Replacement	
	Upgrade	☑
	Expansion	
Project Description: Replace approximately 100 lf of existing 6-inch diameter gravity sewer with 8-inch diameter gravity sewer along 34th Avenue between MH W3R01 and W3R02.		
Project Benefit: This section of sewer main is a smaller diameter than City standards allow and was laid at a slope that is less than the minimum for this pipe size. It requires regular cleaning by the City's maintenance crews and it is recommended that it be replaced with an 8-inch diameter gravity sewer pipe installed at an appropriate slope.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2019
Engineering and Allied Cost	$12,000
Construction Cost	$32,000
Contingency (35%)	$15,000
Total Project Cost	$60,000



CIP 28: Sewer Main Replacement (34th Ave)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$2,500	1	ls	$2,500
2	Temporary Erosion & Sediment Control	$500	1	ls	$500
3	Dewatering	$500	1	ls	$500
4	8-inch PVC Sewer Pipe, SDR 35	$110	90	lf	$9,900
5	48-inch Manhole	$5,000	2	ea	$10,000
6	Side Sewer Connections	$500	2	ea	$1,125
7	HMA Trench Patch	$200	21	tn	$4,100
8	Traffic Control	$500	1	ls	$500
9	General Restoration	$500	1	ls	$500
	Subtotal				$29,625
	Sales Tax	8.7%			$2,577
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$32,000

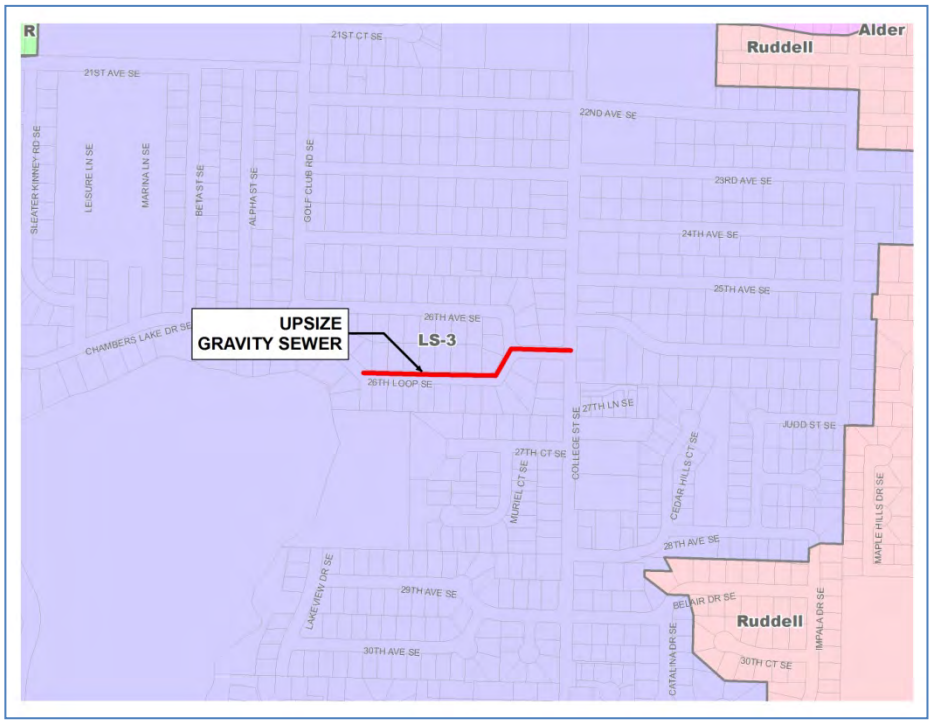
Planning	5%	$2,000
Design and Permitting	15%	$5,000
Services During Construction	15%	$5,000
TOTAL OPINION OF PROBABLE ALLIED COST		$12,000
Contingency	35%	$15,000
TOTAL OPINION OF PROBABLE PROJECT		$60,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

26th Loop SE Replacement Summary		
CIP Number: 101		
Project Type: Capacity	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Upsize approximately 1,150 lf of gravity sewer pipe between MH WVM01 to MH VSM01 from 8-inch diameter to 10-inch diameter.		
Project Benefit: It is projected that this section of sewer main will exceed the City's design threshold for gravity mains during peak hour flow within the 20 year planning horizon. This project will provide capacity through build-out conditions.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2020
Engineering and Allied Cost	$100,000
Construction Cost	$286,000
Contingency (35%)	$135,000
Total Project Cost	$520,000



CIP 101: 26th Loop SE Replacement

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$22,300	1	ls	$22,300
2	Temporary Erosion & Sediment Control	$4,500	1	ls	$4,500
3	Dewatering	$4,500	1	ls	$4,500
4	10-inch PVC Sewer Pipe, SDR 35	$110	1,150	lf	$126,500
5	48-inch Manhole	$5,000	6	ea	$30,000
6	Side Sewer Connections	$500	29	ea	$14,375
7	HMA Trench Patch	$200	262	tn	$52,389
8	Traffic Control	$4,500	1	ls	$4,500
9	General Restoration	$4,500	1	ls	$4,500
	Subtotal				$263,564
	Sales Tax	8.7%			$22,930
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$286,000

Planning	5%	$14,000
Design and Permitting	15%	$43,000
Services During Construction	15%	$43,000
TOTAL OPINION OF PROBABLE ALLIED COST		$100,000
Contingency	35%	$135,000
TOTAL OPINION OF PROBABLE PROJECT		$520,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Lift Station #3 Pumps and Inlet Piping Summary		
CIP Number: 102		
Project Type: Capacity	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Replace pumps at LS-3 with new higher capacity pumps. Construct approximately 60 lf of new 15-inch diameter inlet pipe to divert flow from southern and eastern portions of the basin directly to wet well to alleviate surcharging between MH VTA02 and MH VTA01.		
Project Benefit: The pumps and inlet piping at LS-3 are expected to reach capacity within the 20 year planning horizon and should be upsized to accommodate full build-out flows.		
Comments: The City should reevaluate pump capacity needs for this site after flows from LS-2 have been diverted around LS-3.		

Schedule and Opinion of Probable Cost	
Project Year	2020
Engineering and Allied Cost	$44,000
Construction Cost	$125,000
Contingency (35%)	$59,000
Total Project Cost	$230,000

CIP 102: Lift Station #3 Pumps and Inlet Piping

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$8,500	1	ls	$8,500
2	Duplex Submersible Pumps	$85,000	1	ls	$85,000
3	15-inch PVC Sewer Pipe, SDR 35	$159	60	lf	$9,527
4	48-inch Manhole	$5,000	1	ea	$5,000
5	Side Sewer Connections	$500	2	ea	$750
6	HMA Trench Patch	$200	14	tn	$2,733
7	Traffic Control	$1,700	1	ls	$1,700
8	General Restoration	$1,700	1	ls	$1,700
	Subtotal				$114,910
	Sales Tax	8.7%			$9,997
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$125,000

Planning	5%	$6,000
Design and Permitting	15%	$19,000
Services During Construction	15%	$19,000
TOTAL OPINION OF PROBABLE ALLIED COST		$44,000
Contingency	35%	$59,000
TOTAL OPINION OF PROBABLE PROJECT		$230,000

Notes
1. Gen. Rest., Traffic Control at 2% Construction Costs
2. Mobilization is assumed to be 10% of Construction
3. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

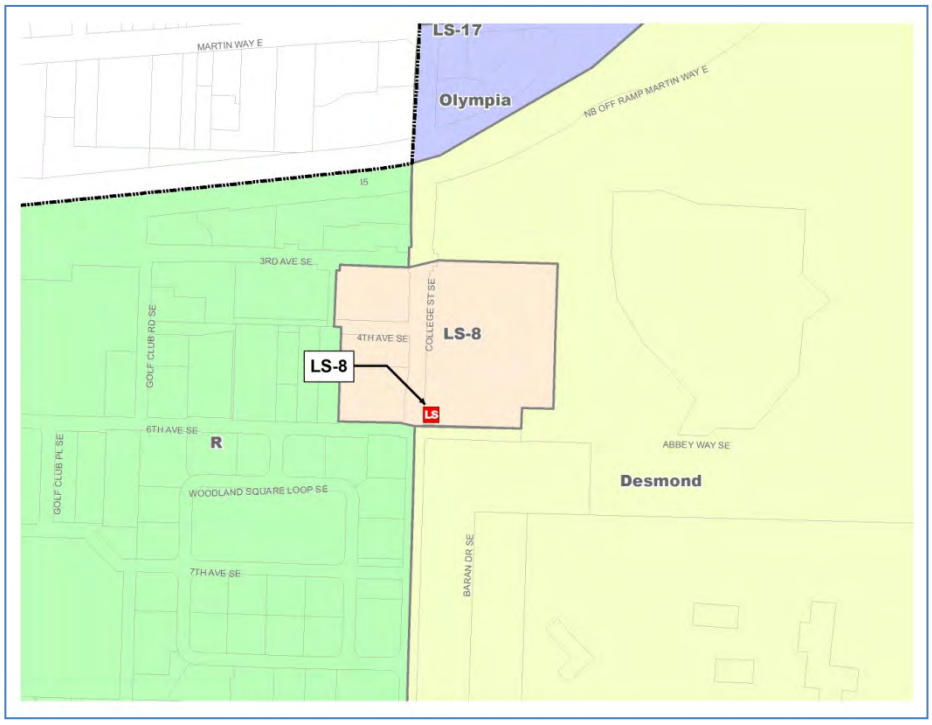
LS-8 Generator and Flow Meter Summary		
CIP Number: 103		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	

Project Description: Install a backup generator set at LS-8, or connect LS-8 to the City Hall generator. Install a flow meter and pressure transducer and connect to SCADA.

Project Benefit: LS-8 serves City Hall and should be equipped with auxiliary power to ensure continued operation during power outages or other emergencies.

Comments: It may be possible to operate this station with the existing generator currently serving City Hall.

Schedule and Opinion of Probable Cost	
Project Year	2020
Engineering and Allied Cost	$40,000
Construction Cost	$110,000
Contingency (35%)	$50,000
Total Project Cost	$200,000



CIP 103: LS-8 Generator and Flow Meter

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$8,600	1	ls	$8,600
2	Temporary Erosion & Sediment Control	$1,720	1	ls	$1,720
3	Flow Meter Vault	$21,000	1	ea	$21,000
4	Generator Set	$60,000	1	ls	$60,000
5	Equipment Pad	$5,000	1	ls	$5,000
6	Traffic Control	$1,720	1	ls	$1,720
7	Dewatering	$1,720	1	ls	$1,720
8	General Restoration	$1,720	1	ls	$1,720
	Subtotal				$101,480
	Sales Tax	8.7%			$8,829
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$110,000

Planning	5%	$6,000
Design and Permitting	15%	$17,000
Services During Construction	15%	$17,000
TOTAL OPINION OF PROBABLE ALLIED COST		$40,000
Contingency	35%	$50,000
TOTAL OPINION OF PROBABLE PROJECT		$200,000

Notes
1. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
2. Mobilization is assumed to be 10% of Construction
3. Vault includes piping, fittings, valves, flow meter, excavation, foundation, backfill, and connection to existing force main
4. Costs are in 2014 dollars

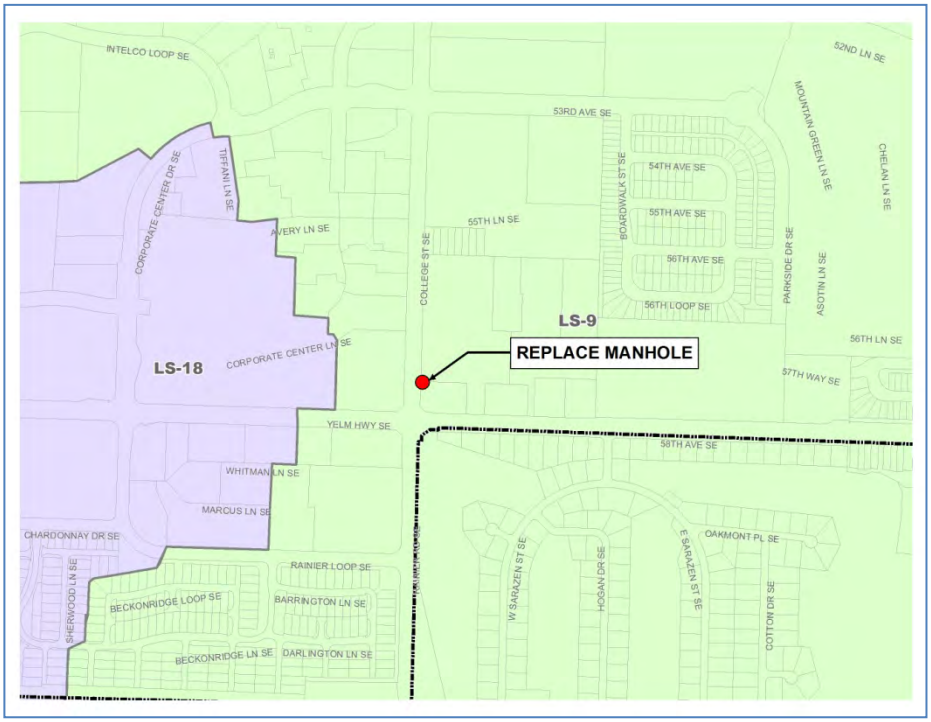
LS-37 Discharge Manhole Improvements Summary		
CIP Number: 104		
Project Type: General	Replacement	
	Upgrade	☑
	Expansion	

Project Description: Repair or install appurtenances to relieve surcharging at existing discharge manhole for LS-37, located at the intersection of Yelm Highway and College Street.

Project Benefit: The manhole directly receiving the discharge from Lift Station 37 experiences minor surcharging while the station is pumping. This manhole should be replaced with a larger structure to facilitate the transition of flow from the force main to the gravity system.

Comments:

Schedule and Opinion of Probable Cost	
Project Year	2020
Engineering and Allied Cost	$3,000
Construction Cost	$9,000
Contingency (35%)	$4,000
Total Project Cost	$16,000



CIP 104: LS-37 Discharge Manhole Improvements

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$700	1	ls	$700
2	Temporary Erosion & Sediment Control	$100	1	ls	$100
3	Replace Appurtanences	$5,000	1	ea	$5,000
4	HMA Trench Patch	$200	10	tn	$2,000
5	Traffic Control	$100	1	ls	$100
6	General Restoration	$100	1	ls	$100
	Subtotal				$8,000
	Sales Tax	8.7%			$696
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$9,000

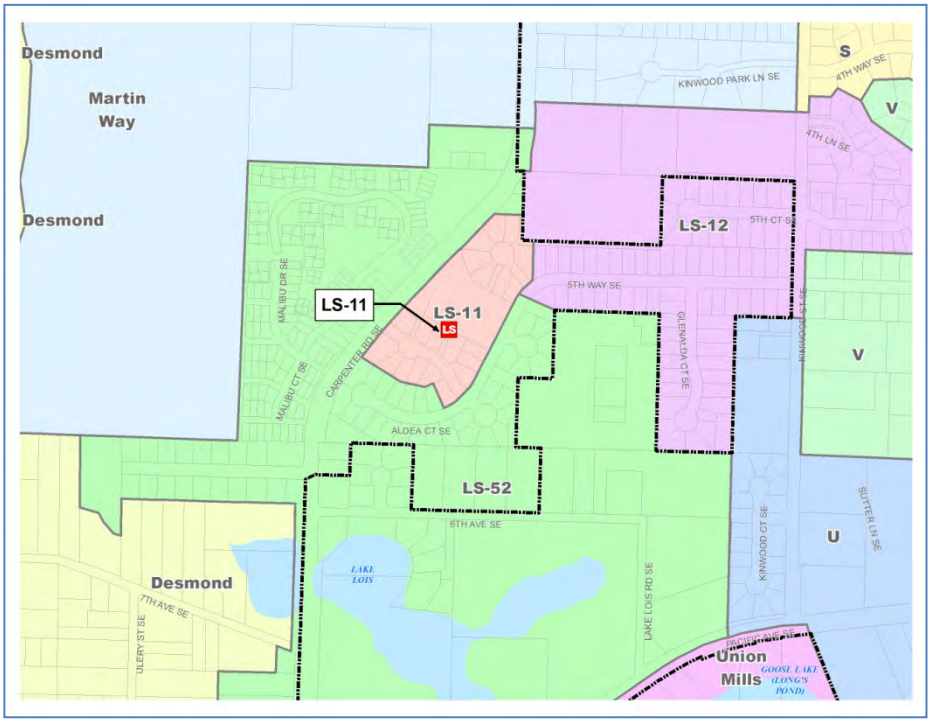
Planning	5%	$1,000
Design and Permitting	15%	$1,000
Services During Construction	15%	$1,000
TOTAL OPINION OF PROBABLE ALLIED COST		$3,000
Contingency	35%	$4,000
TOTAL OPINION OF PROBABLE PROJECT COST		$16,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Lift Station 11 Abandonment Summary		
CIP Number: 105		
Project Type: General	Replacement	☑
	Upgrade	
	Expansion	
Project Description: Replace LS-11 with 20 individual grinder pumps and install 650 lf of 2-inch diameter force main. Abandon LS-11.		
Project Benefit: LS-11 is an aging facility that serves approximately 20 single family residences. This project will allow the City to avoid high replacement, operation, and maintenance costs generally associated with lift stations.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2021
Engineering and Allied Cost	$93,000
Construction Cost	$268,000
Contingency (35%)	$126,000
Total Project Cost	$490,000



CIP 105: Lift Station 11 Abandonment

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$21,200	1	ls	$21,200
2	Temporary Erosion & Sediment Control	$4,200	1	ls	$4,200
3	Grinder Pump Structure	$3,000	20	ea	$60,000
4	Grinder Pump	$2,000	20	ea	$40,000
5	Electrical House Connect	$1,000	20	ea	$20,000
6	Side Sewer Connection	$1,000	20	ea	$20,000
7	2-inch Force Main	$73	650	lf	$47,450
8	LS-11 Demolition	$25,000	1	ls	$25,000
9	Dewatering	$4,200	1	ls	$4,200
10	General Restoration	$4,200	1	ls	$4,200
	Subtotal				$246,250
	Sales Tax	8.7%			$21,424
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$268,000

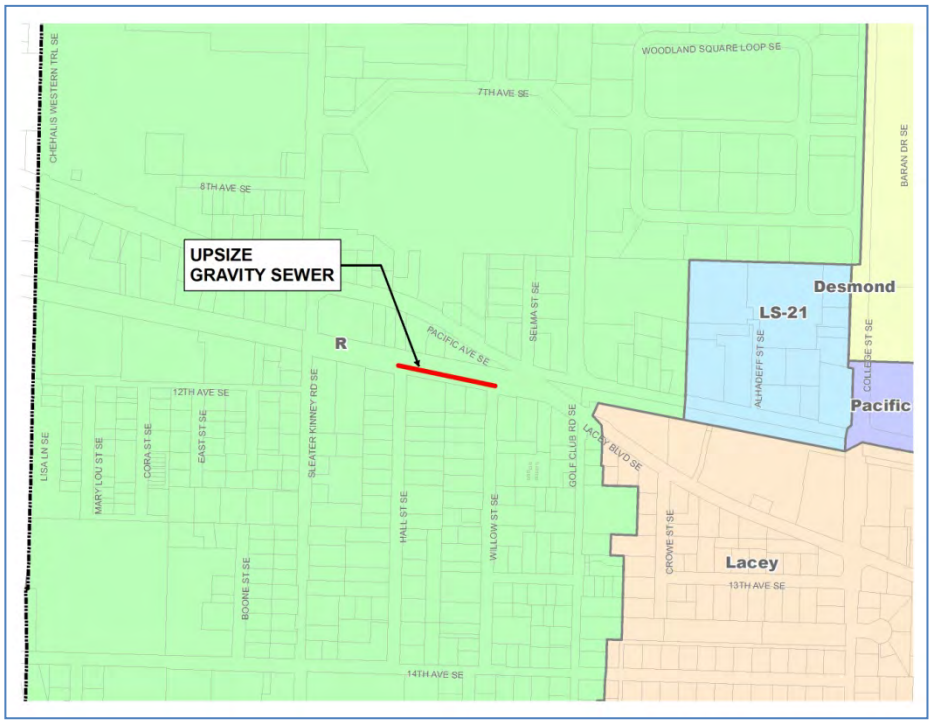
Planning	5%	$13,000
Design and Permitting	15%	$40,000
Services During Construction	15%	$40,000
TOTAL OPINION OF PROBABLE ALLIED COST		$93,000
Contingency	35%	$126,000
TOTAL OPINION OF PROBABLE PROJECT		$490,000

Notes
1. Gen. Rest., Dewatering, Erosion Control at 2% Construction Costs
2. Mobilization is assumed to be 10% of Construction
3. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Lacey Boulevard SE Replacement Summary		
CIP Number: 106		
Project Type: Capacity	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Upsize approximately 900 lf of gravity sewer pipe between MH VBQ01 to MH VCJ01 from 8-inch diameter to 10-inch diameter.		
Project Benefit: The gravity sewer main in Lacey Blvd is projected to reach its allowable capacity within the 20 year planning horizon. This project will provide capacity through build-out conditions.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2021
Engineering and Allied Cost	$77,000
Construction Cost	$222,000
Contingency (35%)	$100,000
Total Project Cost	$399,000



CIP 106: Lacey Boulevard SE Replacement

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$17,300	1	ls	$17,300
2	Temporary Erosion & Sediment Control	$3,500	1	ls	$3,500
3	Dewatering	$3,500	1	ls	$3,500
4	10-inch PVC Sewer Pipe, SDR 35	$117	900	lf	$105,300
5	48-inch Manhole	$5,000	3	ea	$15,000
6	Side Sewer Connections	$500	23	ea	$11,250
7	HMA Trench Patch	$200	205	tn	$41,000
8	Traffic Control	$3,500	1	ls	$3,500
9	General Restoration	$3,500	1	ls	$3,500
	Subtotal				$203,850
	Sales Tax	8.7%			$17,735
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$222,000

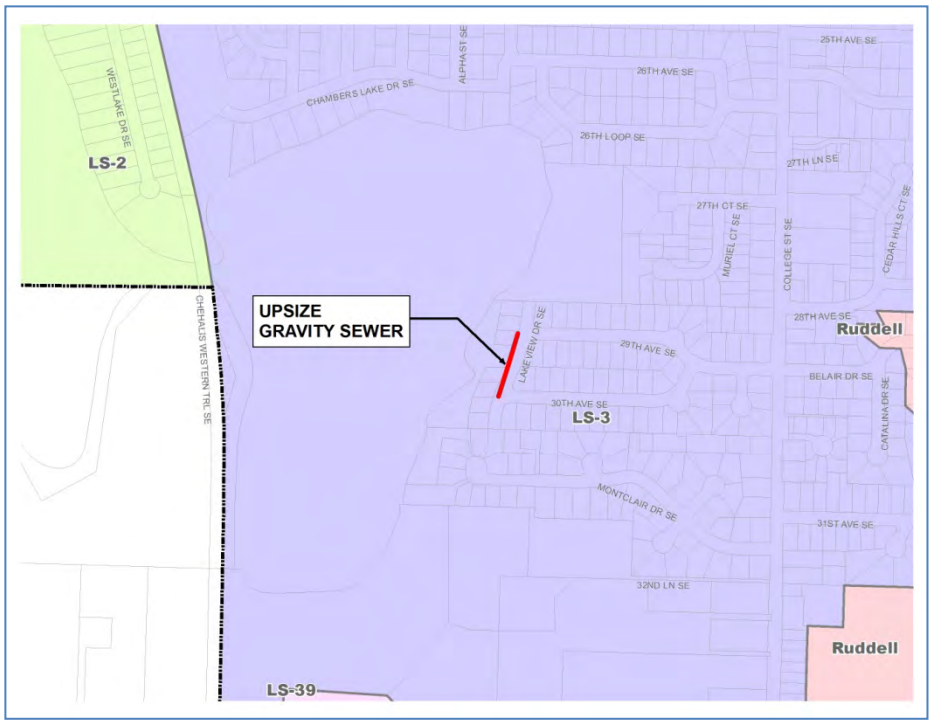
Planning	5%	$11,000
Design and Permitting	15%	$33,000
Services During Construction	15%	$33,000
TOTAL OPINION OF PROBABLE ALLIED COST		$77,000
Contingency	35%	$100,000
TOTAL OPINION OF PROBABLE PROJECT COST		$399,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

Lakeview Drive Gravity Main Replacement Phase 2 Summary		
CIP Number: 107		
Project Type: Capacity	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Upsize approximately 500 lf of gravity sewer pipe between MH VYR01 to MH VZD01 from 10-inch diameter to 12-inch diameter.		
Project Benefit: The existing Lakeview Dr gravity main which serves a large area adjacent to Chambers Lake is nearing its maximum capacity and needs to be upsized to reduce the risk of surcharging and to serve future growth. This project will provide capacity through build-out conditions.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2021
Engineering and Allied Cost	$49,000
Construction Cost	$137,000
Contingency (35%)	$65,000
Total Project Cost	$251,000



CIP 107: Lakeview Drive Gravity Main Replacement Phase 2

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$10,700	1	ls	$10,700
2	Temporary Erosion & Sediment Control	$2,100	1	ls	$2,100
3	Dewatering	$2,100	1	ls	$2,100
4	12-inch PVC Sewer Pipe, SDR 35	$125	500	lf	$62,500
5	48-inch Manhole	$5,000	3	ea	$15,000
6	Side Sewer Connections	$500	13	ea	$6,250
7	HMA Trench Patch	$200	114	tn	$22,778
8	Traffic Control	$2,100	1	ls	$2,100
9	General Restoration	$2,100	1	ls	$2,100
	Subtotal				$125,628
	Sales Tax	8.7%			$10,930
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$137,000

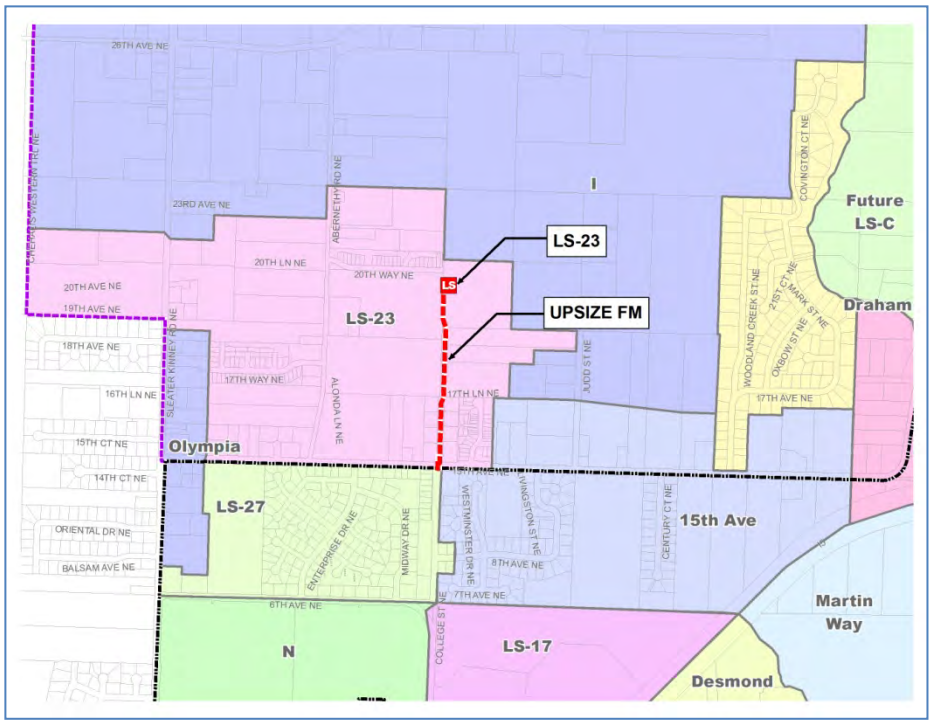
Planning	5%	$7,000
Design and Permitting	15%	$21,000
Services During Construction	15%	$21,000
TOTAL OPINION OF PROBABLE ALLIED COST		$49,000
Contingency	35%	$65,000
TOTAL OPINION OF PROBABLE PROJECT COST		$251,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Costs are in 2014 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

LS-23 and Force Main Upgrade to 8-inch Summary		
CIP Number: 108		
Project Type: Capacity, Obsolescence	Replacement	
	Upgrade	
	Expansion	☑
Project Description: Upsize 1,850 lf of force main from 4-inch diameter to 8-inch diameter in 2022. Upgrade mechanical and electrical equipment at LS-23.		
Project Benefit: Lift Station 23 is not able to meet the anticipated increase in flows over the 20 year planning horizon. The existing pumps should be upsized along with the associated mechanical and electrical equipment. The existing 4-inch diameter force main is also undersized and limiting the station's capacity.		
Comments:		

Schedule and Opinion of Probable Cost	
Project Year	2021-2022
Engineering and Allied Cost	$254,000
Construction Cost	$727,000
Contingency (35%)	$343,000
Total Project Cost	$1,324,000



CIP 108: LS-23 and Force Main Upgrade to 8-inch

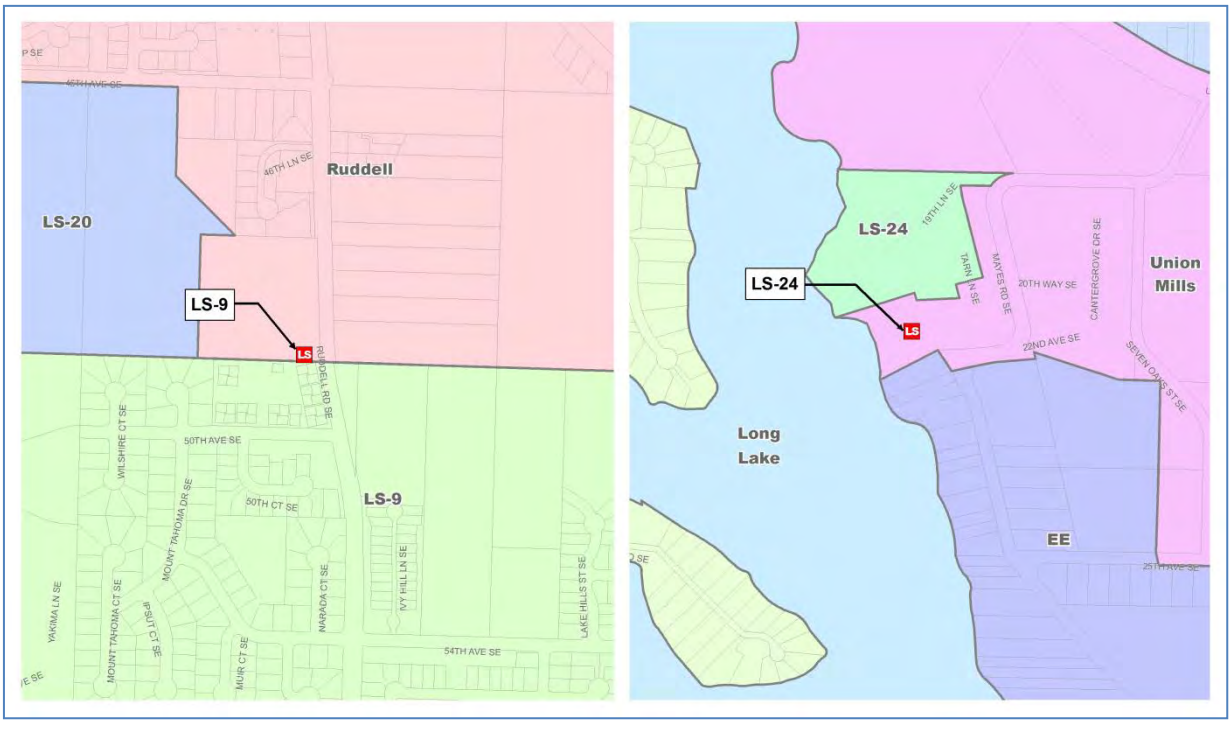
Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$56,700	1	ls	$56,700
2	Temporary Erosion & Sediment Control	$11,300	1	ls	$11,300
3	Dewatering	$11,300	1	ls	$11,300
4	8-inch PVC Sewer Force Main, C900	$92	1,850	lf	$170,200
5	HMA Trench Patch	$200	421	tn	$84,278
6	Sandblast, Caulk Jts and Coat Int Wet Well, Pipe & Equip.	$10,000	1	LS	$10,000
7	SST Pump Rails	$3,500	1	LS	$3,500
8	Disch Piping in Wet Well, incl. support/thrust restraint	$6,000	1	LS	$6,000
9	Duplex Submersible Pumps	$85,000	1	LS	$85,000
10	Valve Vault Excav & Backfill	$4,000	1	LS	$4,000
11	Valve Vault Shoring	$2,500	1	LS	$2,500
12	Valve Vault (CIP vault, non-traffic hatch, piping & valves)	$25,000	1	LS	$25,000
13	Gravity Sewer from Wet Well to Ex. MH in Street	$125	50	LF	$6,250
14	Electrical Equipment Foundation (6-in gravel & 6-in reinf. conc. pad)	$1,500	1	LS	$1,500
15	Structural Aluminum Equipment Canopy/Shelter (~14ft x 10ft)	$10,000	1	LS	$10,000
16	Primary Power Supply	$10,000	1	LS	$10,000
17	UG Power & Controls to Wet Well & Vaults	$7,500	1	LS	$7,500
18	Level Controls in Wet Well	$1,500	1	LS	$1,500
19	Pump Inst. & Controls in NEMA 3R Enclosures	$30,000	1	LS	$30,000
20	MCC in NEMA 3R Enclosures	$15,000	1	LS	$15,000
21	Eng-Generator Foundation	$2,500	1	LS	$2,500
22	Weather/Acoustical Enclosure w/Eng-Gen, fuel tank, critical silencer, ATS)	$40,000	1	LS	$40,000
23	Telemetry	$10,000	1	LS	$10,000
24	Flow Meter Vault	$21,000	1	LS	$21,000
25	Misc. Yard Piping (water, vault drains, site SD)	$6,000	1	LS	$6,000
26	Minor Landscaping	$5,000	1	LS	$5,000
27	Site Parking Area (Gravel)	$3,500	1	LS	$3,500
28	Site Fencing (50' x 50' site)	$35	200	LF	$7,000
29	Traffic Control	$11,300	1	ls	$11,300
30	General Restoration	$11,300	1	ls	$11,300
	Subtotal				$669,128
	Sales Tax	8.7%			$58,214
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$727,000

Planning	5%	$36,000
Design and Permitting	15%	$109,000
Services During Construction	15%	$109,000
TOTAL OPINION OF PROBABLE ALLIED COST		$254,000
Contingency	35%	$343,000
TOTAL OPINION OF PROBABLE PROJECT COST		$1,324,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Lift Station costs include new mechanical and electrical equipment, valve vault, rehabilitation of existing wet well, generator set, flow meter, and site restoration
7. Costs are in 2014 dollars

LS-9 and LS-24 Rehabilitation Summary		
CIP Number: 109		
Project Type: Obsolescence	Replacement	☑
	Upgrade	
	Expansion	
Project Description: For LS-9 and LS-24, replace mechanical and electrical equipment, and install flow meters, pressure transducers, and on-site generators. Inspect and repair wet wells as needed.		
Project Benefit: Lift stations have reached the end of their useful life.		
Comments: Significant reconfiguration of the wet-well or site layout is not anticipated at these stations.		

Schedule and Opinion of Probable Cost	
Project Year	2023-2024
Engineering and Allied Cost	$275,000
Construction Cost	$789,000
Contingency (35%)	$372,000
Total Project Cost	$1,436,000



CIP 109: LS-9 and LS-24 Rehabilitation

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization	$62,600	1	LS	$62,600
2	Temporary Erosion & Sediment Control	$12,500	1	LS	$12,500
3	Sandblast, Caulk Jts and Coat Int Wet Well, Pipe & Equip.	$10,000	2	EA	$20,000
4	SST Pump Rails	$3,500	2	EA	$7,000
5	Disch Piping in Wet Well, incl. support/thrust restraint	$6,000	2	EA	$12,000
6	Duplex Submersible Pumps	$42,500	4	EA	$170,000
7	Valve Vault Excav & Backfill	$4,000	2	EA	$8,000
8	Valve Vault Shoring	$2,500	2	EA	$5,000
9	Valve Vault (CIP vault, non-traffic hatch, piping & valves)	$25,000	2	EA	$50,000
10	Gravity Sewer from Wet Well to Ex. MH in Street	$125	100	LF	$12,500
11	Electrical Equipment Foundation (6-in gravel & 6-in reinf. conc. pad)	$1,500	2	EA	$3,000
12	Structural Aluminum Equipment Canopy/Shelter (~14ft x 10ft)	$10,000	2	EA	$20,000
13	Primary Power Supply	$10,000	2	EA	$20,000
14	UG Power & Controls to Wet Well & Vaults	$7,500	2	EA	$15,000
15	Level Controls in Wet Well	$1,500	2	EA	$3,000
16	Pump Inst. & Controls in NEMA 3R Enclosures	$30,000	2	EA	$60,000
17	MCC in NEMA 3R Enclosures	$15,000	2	EA	$30,000
18	Eng-Generator Foundation	$2,500	2	EA	$5,000
19	Weather/Acoustical Enclosure w/Eng-Gen, fuel tank, critical silencer, ATS)	$40,000	2	EA	$80,000
20	Telemetry	$10,000	2	EA	$20,000
21	Flow Meter Vault	$21,000	2	EA	$42,000
22	Misc. Yard Piping (water, vault drains, site SD)	$6,000	2	EA	$12,000
23	Minor Landscaping	$5,000	2	EA	$10,000
24	Site Parking Area (Gravel)	$3,500	2	EA	$7,000
25	Site Fencing (50' x 50' site)	$35	400	LF	$14,000
26	Traffic Control	$12,500	1	LS	$12,500
27	General Restoration	$12,500	1	LS	$12,500
	Subtotal				$725,600
	Sales Tax	8.7%			$63,127
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$789,000

Planning	5%	$39,000
Design and Permitting	15%	$118,000
Services During Construction	15%	$118,000
TOTAL OPINION OF PROBABLE ALLIED COST		$275,000
Contingency	35%	$372,000
TOTAL OPINION OF PROBABLE PROJECT COST		$1,436,000

Notes
1. Import backfill assumed to be 100%
2. Foundation Gravel assumed to be 100%
3. Gen. Rest., Dewatering, Traffic Control, Erosion Control at 2% Construction Costs
4. Mobilization is assumed to be 10% of Construction
5. Pipe costs includes all fittings, pipe, bedding, excavation, haul, and pavement restoration
6. Lift Station costs include new mechanical and electrical equipment, valve vault, rehabilitation of existing wet well, generator set, flow meter, and site restoration
7. Costs are in 2014 dollars

Appendix I

STEP System History

Appendix I.1
Septic Tank Effluent Pump (STEP) History
Prepared by City of Lacey staff

In 1989 the first Septic Tank Effluent Pump (STEP) systems were introduced. By 1998 1,400 STEP systems had been installed, and failures had increased noticeably, with the failure rate peaking at 26% annually. The high rate of failures was contributing to a significant increase in operating costs. By 2011 there were 2,921 STEP systems connected to the sewer system.

In response to the increasing failure rate, Lacey initiated a Full Service Maintenance (FSM) program in 1999 by hiring two staff and equipment. The FSM program was an aggressive preventive maintenance approach that provides a level of service that calls for replacing most major components and pumping out all tanks on a five-year cycle. After the FSM program was implemented, by the end of 2005 emergency calls reduced slightly to 247 annually; however, the system almost doubled to 2,738 systems, reducing the effective failure rate to 9%.

In 2006 two additional staff were added to the STEP program. The annual failure rate dropped to 6%, with 178 emergency calls and 2,781 active systems.

Lacey's STEP systems are almost entirely made up of components manufactured by Orenco Systems, Inc. For this reason, Orenco contributed resources to review the history of Lacey's system and researching possible improvements. In 2007, City staff along with Orenco performed an evaluation of the STEP program. The first element of the analysis was data collection. Orenco joined Lacey on several site visits to several other large STEP systems throughout the country. Sites included Charlotte County, Florida; Missoula, Montana; Camas, Washington; and Yelm, Washington. Through the site visits opportunities were identified for modifications to the Lacey FSM program. Data was collected from site visits to evaluate risk and quantify financial impacts of potential modifications. In addition to many possible minor modifications, significant opportunities for improvement were also apparent, including tank pump-out intervals, FTE allocation, and pump repair and replacement.

The analysis findings were based on the data and observations made, it was recommended that the interval between FSM visits and tank pump-outs be increased from five years to eight years. Additionally, components previously replaced under the FSM will be inspected and cleaned, but not replaced unless a defect is noted. Four FTEs were committed to the STEP program. There were new programs however, particularly within the water section that required additional resources. Two FTE's from the STEP program were allocated to the Water main repair programs to keep them on schedule. The purchase of a new VacCon optimized the use of these reallocated resources.

Because of the FSM program, the failure rate gradually declined and in 2011 it was reduced to 7%, with 196 emergency calls and 2,921 active systems.

What is a Full Service Maintenance (FSM): The goal of the FSM program is to improve reliability. An FSM is a complete service overhaul of individual STEP sites, including pumps, tank pump-out, power cord inspection, float balls, tank cleaning, control box inspection, etc. The intent of this program is to complete a full system maintenance visit every eight years to each resident.

STEP system repairs are emergency work that is performed on a STEP system due to failure or customer calls.

The STEP crew also maintains all 19 of the STEP/Community Lift Stations facilities. They are responsible for evacuating the debris tanks, which range in size from 6,350 to 50,000 gallons. There are a total of 26 debris tanks having a combined storage volume of 774,874 gallons.

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Appendix I.2

History of the Carpenter Rd and Union Mills, Marvin Rd STEP System*

*Prepared by City of Lacey staff

Appendix I.2
Septic Tank Effluent Pump (STEP) History
Prepared by City of Lacey staff

Date:	Tuesday, November 08, 2011
To:	Teri O'Neal, Senior Water Resource Engineer
Cc:	Terry Cargil, Water/Wastewater Supervisor
From:	Ed Andrews, Water/Wastewater Quality Control Technician
Subject:	**Brief history of the Carpenter Rd and Union Mills, Marvin Rd STEP System evolution**

In 1986 a 3" PVC STEP force main was constructed to serve the Pacific Park Development just south of the intersection of Pacific Ave and David St SE. This 3" PVC force main was extended south across Woodland Creek to the intersection of 14th Ave SE and Carpenter Rd. and traveled west to outfall into gravity sewer manhole XFT01 in front of the School Bus Barn on Carpenter Rd SE. The flow then traveled south in the gravity system to sewer lift station #7 (now abandoned) at the Le Village apartment complex on Diamond Dr SE. In 1988 this same 3" PVC force main was extended south along Carpenter Rd and east into Sierra Dr. to serve a portion of the Timberlake development. In 1993 another larger STEP main project was constructed in the Carpenter Rd area between 43rd Ave SE and Sierra Dr SE to serve the Meadow Lake development (now called The Arbors). This low pressure force main increased in size from its furthest point, a 6" main at 43rd Ave SE up to a 10" main at the intersection of Sierra Dr and Carpenter Rd where it was connected to the existing 3" PVC pipe. Shortly after this time in 1994 a developer building the Laurel Oaks development at the intersection of Union Mills Rd SE and Marvin Rd SE constructed a 14" HDPE (inside diameter of aprox. 12.5") force main from Mayes Rd west along the railroad grade to the Carpenter Rd intersection where it was also connected to the existing 3" main. Immediately after this time another force main project began constructing a 16" PVC main from the 14" connection at the Carpenter Rd / Bus barn location west along the railroad grade to outfall at sewer manhole WB101 at the intersection of Clearbrook and Lacey Blvd (previously called Lift station #1). This was to alleviate the overloaded condition of the old 3" main which now had too many connections added to it. When this 16" main was completed the 3" main outfall at manhole XFT01 was disconnected. All of the STEP sewer flows from Carpenter Rd and Marvin Rd (Laurel Oaks) area were directed to the Clearbrook manhole. Odor and corrosion problems immediately became an issue at the Clearbrook site and an experimental Bioxide injection system was installed at the Keller Plumbing Supply location adjacent to the new 16" STEP main at the Carpenter Rd. crossing. It was quickly determined that more contact time was needed for the Bioxide product to work properly and the temporary injection facility was moved east to a location at the NE corner of the School Bus Barn property. At this time a large trap was constructed on the 16" STEP main at the Clearbrook outfall location. The pipe was raised up above ground to back up the flow and prevent the pipe from draining out too quickly. This solution worked. In 1999 the City of Lacey upsized the old 3" PVC bottle necked main in Carpenter Rd with a new 16" PVC main due to pressure problems occurring in the south Carpenter Rd. system. In late 1996 a developer (Scott Griffin) building the Madrona Park development along Pacific Ave east of Marvin Rd. extended the STEP main from the Laurel Oaks site north along Marvin Rd and east along Pacific Ave. to Madrona Park.

The next year another developer constructing the McAllister Park development extended this same main south on Marvin and east on 19th Ave SE into McAllister Park. The mains described above would become the main arteries of the Carpenter / Marvin Rd. STEP system. All other smaller projects in the SE STEP area would make connections to or extend this system.

In 1998 a developer connected to the Marvin STEP force main at the intersection of 15th Ave SE and Marvin Rd. This project was called Sylvan Village and is now called Villages at Union Mills. The Village at Union Mills tract was proposed to be single family STEP however, in 2002 the Village at Union Mills Apartment complex project proposed using 3,000 gallon STEP tanks at each apartment building and were designed and placed in a way that would make maintenance nearly impossible. This design was rejected by the city. A decision was made between the city and the developer during the plan review to install a private gravity sewer system at the apartment complex which would be served by a large community pump station. Large fiberglass septic tanks were installed and a wet well with single impeller, solids handling submersible pumps. It was realized and approved at this time by the city that the single impeller style pumps would only be compatible with the existing force main system for a temporary period of time (5 to 10 years) at which time a pump up grade project would be necessary. This would become one of the 1st large Community STEP systems owned and operated by the City of Lacey. During this time the number of single family STEPS owned and operated by the city was growing quickly and maintenance was becoming an ever increasing burden. Also, the costs and headaches involved with treating STEP odors and corrosion were adding to an attitude of wanting to reduce the number of proposed STEP systems and have developers install Gravity sewers instead and was then viewed as a cost effective alternative to single family STEP. With more large developments being proposed for the Marvin Rd. area, it was believed that at some point these large Community holding tanks could be abandoned, the community pump stations would be converted to pump conventional sewer into town by way of a new future force main constructed to handle these flows. As a result of this decision another large Community pump station with single impeller pumps was built at the Village at Union Mills called LS# 31. These two pump stations remain in operation today and suffer mild pumping challenges caused by slightly increased system pressures in the Marvin / Union Mills transmission main system.

Another, situation that added to the expansion of the Marvin Rd. STEP system and an increase in number of Large Community STEP pump stations were the small developments built on the back side of Madrona Park along Steilacoom Rd SE. Avalon Ct, LS#26; Pine Crest divisions 1 & 2, LS#28 & LS#36; Steilacoom Heights, LS# 29 and the Regional Athletic Complex, LS#38 were all allowed to connect to the Marvin Rd. STEP main system via Madrona Park. They were allowed as temporary systems and were constructed with gravity sewer dry lines stubbed out to Steilacoom Rd. for future connection to a gravity system and regional pump station proposed in the City of Lacey sewer comprehensive plan. To date, the sewer capital project(s) identified in the comp. plan have not yet been constructed to remove these pump stations from the Marvin Rd. system.

In the McAllister, south Marvin area around 2006 to present day developments were continuing to be designed and constructed with gravity sewer and large community pumping systems. These developments are Evergreen Heights with two pump stations, # 42 & # 50 and Pleasanton with lift

station # 44. One of the reasons the city allowed these large community stations to proceed here was a proposal from the Tri-Way Inc. developer to place a new force main out to this area to tie all of these large community pump stations together and further develop parcels around and south of Evergreen Estates. This plan never fully developed and Tri-Way has since gone bankrupt. Development has stagnated nearly to a stop with the turn in the economy. The City of Lacey has no capital sewer improvement project planned to upgrade this area.

With this years Development Guideline Revisions, the City is eliminating the large community type pumping systems. Pumping of the large (20k to 50k gallon) septic tanks requires too many man hours, is overly strenuous and has caused back injuries to the maintenance crews. Also, the maintenance and electricity cost of the pump stations is a factor. In the last 10 years Orenco has made many advances in single family STEP pumping design components (with the help of the City of Lacey). STEP reliability and performance is far above what it was in the 90's. Pumping / electrical costs are provided by the home owner with a STEP system as opposed to lift stations. The City has refined its maintenance program and has transitioned from 5 years to an 8 year pump out interval of the individual STEP tanks. The city is proposing that all future connections within the STEP basin be constructed as single family connections. No future large community STEP pump stations will be allowed.

Appendix J

CMOM Questionnaire

CHECKLIST FOR CONDUCTING EVALUATIONS OF WASTEWATER COLLECTION SYSTEM CAPACITY, MANAGEMENT, OPERATION, AND MAINTENANCE (CMOM) PROGRAMS[1]

Capacity Management, Operations, and Maintenance (CMOM) is a planning and management structure that was developed for use by wastewater utilities to analyze and assess their system's capacity, operations, and maintenance management programs. The checklist was developed by United States Environmental Protection Agency (USEPA) in 2005.

City of Lacey staff provided answers to the questions that pertained to Lacey's wastewater system and for which the necessary information was available.

Although conducting a CMOM program is not a regulatory requirement of the City, Lacey's Operations staff wanted to evaluate how their operation and programs compares with accepted practice. The checklist can be viewed as a list of best practices for sewer agencies. It is a very good tool for identifying areas of excellence and areas where improvements could be made.

Note that the checklist was not evaluated for Lacey's consistency with CMOM or any other agency's practice, rather it was prepared as a starting point, or benchmark against which staff can compare Lacey's capacity, operations, and maintenance management programs in the future.

The checklist consists of a series of questions organized by major categories and sub-categories. The major category is followed by a brief statement describing the category. Following the sub-category is
a brief clarifying statement. References are then given.

Questions are provided in a table format that includes the question, response, and documentation available.

Response is completed by using information and data acquired from the data and information request, onsite interviews, and site reviews. An alternative to this process is to transmit the entire checklist to the collection system owner or operator to complete and return electronically.

[1] *Checklist for Conducting Evaluations of Wastewater Collection system Capacity, Management, Operation, and Maintenance (CMOM) Programs, USEPA, 2005*

Table of Contents

I. General Information - Collection System Description

Question	Response	Documentation Available	
		Yes	No
Size of service area (acres).	21,200 ac	X	
Population of service area.	75,600 people as of 2010	X	
Number of pump stations.	47	X	
Feet (or miles) of sewer.	211 miles	X	
Age of system (e.g., 30% over 30 years, 20% over 50 years, etc.).	0-10 Yrs 33% 10-20 Yrs 26% 20-30 Yrs 20% 30-40 Yrs 14% 40+ Yrs 6% Unknown 1%	X	

Comments:

II. Continuing Sewer Assessment Plan

Question	Response	Documentation Available	
		Yes	No
Does the collection system experience problems related to I/I? How do these problems manifest themselves? (Manhole overflows, basement flooding, structure, SSOs)	Very small amount of I&I primarily due to infiltration in limited areas of the collection system.	X	
How does the owner or operator prioritize investigation, repairs and rehabilitation related to I/I?	We address all Identified with a level of attention appropriate for the level of urgency as I&I is so minimal in our system we have the financial ability to correct as necessary.	X	
What methods are considered to remedy hydraulic deficiencies?	Hydraulic line cleaning or through construction to increase capacity if pipe sizes are inadequate.	X	
Does the plan include a schedule for investigative activities?	Gravity lines are inspected on a routine schedule.	X	
Is the plan regularly updated?	Sewer assessment programs are updated through the wastewater comprehensive plan	X	

Comments:

III. A. Collection System Management: Organizational Structure

Question	Response	Documentation Available	
		Yes	No
Is an organizational chart available that shows the overall personnel structure for the collection system, including operation and maintenance staff?		X	
Are there organizational charts that show functional groups and classifications?		X	
Are up to date job descriptions available that delineate responsibilities and authority for each position?		X	
Are the following items discussed in the job descriptions: G nature of work to be performed, G minimum requirements for the position, G necessary special qualifications or certifications, G examples of the types of work, G list of license's required for the position, G performance measures or promotional potential?	Performance measures or promotional potential is not described in job descriptions.	X	
Does the organizational chart indicate how many positions are budgeted as opposed to actually filled?		X	
On average, how long do positions remain vacant?	3 months up to one year	X	
Is collection system staff responsible for any other duties, (e.g., road repair or maintenance, O&M of the storm water collection system)?	Assistance occurs rarely usually only on an emergency basis.	X	

Comments:

III. B. Collection System Management: Training

Question	Response	Documentation Available	
		Yes	No
Is there a documented formal training program?		X	
Does the training program address the fundamental mission, goals, and policies of the collection system owner or operator?		X	
Does the owner or operator provide training in the following areas: safety, routine line maintenance, confined space entry, traffic control, record keeping, electrical and instrumentation, pipe repair, bursting CIPP, public relations, SSO/emergency response, pump station operations and maintenance, CCTV and trench/shoring, other?		X	
Which of these programs have formal curriculums?	All safety and technical related training.	X	
Does On-the-Job (OJT) training use Standard Operating and Standard Maintenance Procedures (SOPs & SMPs)?		X	
Is OJT progress and performance measured?	It is evaluated and documented first 6 mo. of employment	X	
Does the owner or operator have mandatory training requirements identified for key employees?		X	
What percentage of employees met or exceeded their annual training goals during the past year?	100%	X	
Which of the following methods are used to assess the effectiveness of the training: periodic testing, drills, demonstration, none?	Ongoing performance observation and evaluation. With the exception of safety and operator certification testing requirements, there is no formal process in place to measure Training effectiveness.		X
What percentage of the training offered by the owner or operator is in the form of the following: manufacturer training, on-the-job training, in-house classroom training, and industry-wide training?	100%	X	

Comments:

III. C. Collection System Management: Communication and Customer Service

Question	Response	Documentation Available	
		Yes	No
What type of public education/outreach programs does the owner or operator have about user rates?	Mail out, Website, news paper and public meetings	X	
Do these programs include communication with groups such as local governments, community groups, the media, schools, youth organizations, senior citizens? List applicable groups.	All listed.	X	
Is there a public relations program in place?		X	
Are the employees of the collection system trained in public relations?		X	
Are there sample correspondences or "scripts" to help guide staff through written or oral responses to customers?			X
What methods are used to notify the public of major construction or maintenance work: door hangers, newspaper, fliers, signs, other, none?	All that are listed	X	
Is the homeowner notified prior to construction that his/her property may be affected?		X	
Is information provided to residents on cleanup procedures following basement backups and overflows from manholes when they occur?		X	
Which of the following methods are used to communicate with system staff: regular meetings, bulletin boards, e-mail, other?	All Listed	X	
How often are staff meetings held (e.g., daily, weekly, monthly)?	Daily at the Senior Tech Level	X	
Are incentives offered to employees for performance improvements?			X
Does the owner or operator have an "Employee of the Month/Quarter/Year" program?			X

Question	Response	Documentation Available	
		Yes	No
How often are performance reviews conducted (e.g., semi-annually, annually, etc.)?	Once at 3 mo. and 6 mo.	X	
Does the owner or operator regularly communicate with other municipal departments?		X	
Does the owner or operator have a formal procedure in place to evaluate and respond to complaints?		X	
What are the common complaints received?	Complaints are rare. There are no routine complaints in any categories.	X	
Does the owner or operator have a process for customer evaluation of the services provided?			X
Do customer service records include the following information: personnel who received the complaint or request, nature of complaint or request, to whom the follow-up action was assigned, date of the complaint or request, date the complaint or request was resolved, customer contact information, location of the problem, date the follow-up action was assigned, cause of the problem, feedback to customer?		X	
Does the owner or operator have a goal for how quickly customer complaints (or emergency calls) are resolved?	Immediately for emergencies. The goal for non emergency is the same day before the end of the work day.	X	
What percentages of customer complaints (or emergency calls) are resolved within the timeline goals?	100%	X	
How are complaint records maintained? (i.e., computerized) Is this information used as the basis for other activities such as routine preventative maintenance?	Computerized	X	

Comments:

III. D. Collection System Management: Management Information Systems

Question	Response	Documentation Available	
		Yes	No
What types of work reports are prepared by the O&M Staff?	Routine and emergency documentation before closing out work orders.	X	
Do the work reports include enough information? (See example report forms)	Yes they are very detailed	X	
How are records kept?	Computer files and hard copy log files	X	
Are records maintained for a period of at least three years?		X	
Are the records able to distinguish activities taken in response to an overflow event?		X	
Does the owner or operator use computer technology for its management information system? (Computer Based Maintenance Management Systems, spreadsheets, data bases, SCADA, etc). If so, what type of system(s) is used?	Our computer based maintenance mgt. system is called HTE and our SCADA software is Rockwell. We also have all of the common-current Microsoft windows software applications	X	
Are there written instructions for managing and tracking the following information: complaint work orders, scheduled work orders, customer service, scheduled preventative maintenance, scheduled inspections, sewer system inventory, safety incidents, scheduled monitoring/sampling, compliance/overflow tracking, equipment/tools tracking, parts inventory?		X	
Do the written instructions for tracking procedures include the following information: accessing data and information, instructions for using the tracking system, updating the MIS, developing and printing reports?		X	
How often is the management information system updated (immediately, within one week of the incident, monthly as time permits)?	Daily	X	

Comments:

III. E. Collection System Management: SSO Notification Program

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have standard procedures for notifying state agencies, health agencies, the regulatory authority, and the drinking water purveyor of overflow events?		X	
Are above notification procedures dependent on the size or location of the overflow? If so, describe this procedure.			X
Is there a Standard form for recording overflow events? Does it include location, type, receiving water, estimated volume, cause?		X	
Are chronic SSO locations posted?	We do not have chronic overflow locations	X	

Comments:

III. F. Collection System Management: Legal Authority

Question	Response	Documentation Available	
		Yes	No
Does the collection system receive flow from satellite communities?			
What is the total area from satellite communities that contribute flow to the collection system (acres or square miles)?	N/A		
Does the owner or operator require satellite communities to enter into an agreement?	N/A		
Does the agreement include the requirements listed in the sewer use ordinance (SUO)?	N/A		
Do the agreements have a date of termination and allow for renewal under different terms?	N/A		
Does the owner or operator maintain the legal authority to control the maximum flow introduced into the collection system from satellite communities?	N/A		
Are standards, inspections, and approval for new connections clearly documented in a SUO?	N/A		
Does the SUO require satellite communities to adopt the same industrial and commercial regulator discharge limits as the owner or operator?	N/A		
Does the SUO require satellite communities to adopt the same inspection and sampling schedules as required by the pretreatment ordinance?	N/A		
Does the SUO require the satellite communities or the owner or operator to issue control permits for significant industrial users?	N/A		
Does the SUO contain provisions for addressing over-strength wastewater from satellite communities?	N/A		
Does the SUO contain procedures for the following: inspection standards, pretreatment requirements, building/sewer permit issues?	N/A		

Does the SUO contain general prohibitions of the following materials: fire and explosion hazards, oils or petroleum, corrosive materials, materials which may cause interference at the wastewater treatment plant, obstructive materials?	N/A		
Does the SUO contain procedures and enforcement actions for the following: fats, oils, and grease (FOG); I/I; building structures over the sewer lines; storm water connections to sanitary lines; defects in service laterals located on private property; sump pumps, air conditioner?	N/A		

Comments:

IV. A. Collection System Operation: Budgeting

Question	Response	Documentation Available	
	Collection System only (does not include LOTT fees)	Yes	No
What are the owner or operator's current rates?	$16.48	X	
What is the average annual fee for residential users?	$197.76	X	
How are user rates calculated?	Cost of service and budget needs	X	
How often are user charges evaluated and adjusted based on that evaluation?	6 Yrs	X	
How many rate changes have there been in the last 10 years and what were they?	9 out of 10 Average increase is $0.25/month	X	
Does the owner or operator receive sufficient funding from its revenues?	Yes	X	
Are collection system enterprise funds used for non-enterprise fund activities?	No	X	
Is there a budget for annual operating costs?	Yes	X	
Does the budget provide sufficient line item detail for labor, materials and equipment?	Yes	X	
Are costs for collection system O&M separated from other utility services, i.e., water, storm water and treatment plants?	Yes	X	
Do O&M managers have current O&M budget data?	Yes	X	
What is the collection system's average annual O&M budget?	$3.7M	X	
What percentage of the collection system's overall budget is allocated to maintenance of the collection system?	51%	X	
Does the owner or operator have a Capital Improvement Plan (CIP) That provides for system repair/replacement on a prioritized basis?	Yes	X	
What is the collection system's average annual CIP budget?	$2.93M	X	

Question	Response	Documentation Available	
		Yes	No
What percentage of the maintenance budget is allotted to the following maintenance: Predictive maintenance (tracking design, life span, and scheduled parts replacement), preventative maintenance (identifying and fixing system weakness which, if left unaddressed, could lead to overflows), corrective maintenance (fixing system components that are functioning but not at 100% capacity/efficiency), emergency maintenance (reactive maintenance, overflows, equipment breakdowns).	We do not perform Predictive Maintenance. Our: Emergency maintenance = 13% Corrective Maintenance= 36% Preventative Maintenance = 51%	X	
Does the owner or operator have a budgeted program for the replacement of under-capacity pipes?	No		X
Does the owner or operator have a budgeted program for the replacement of over-capacity pipes?	No, some are in the CIP	X	
Are O&M staff involved in O&M budget preparation?		X	
How are priorities determined for budgeting for O&M during the budget process?	A structured process beginning with field staff moving up through the chain of command and the end result is Lacey Council member approval. Need, Risk and available funds are taken into consideration.	X	
Does the owner or operator maintain a fund for future equipment and infrastructure replacement?		X	
How is new work typically financed?	Cash or developer contribution	X	

Comments:

IV. B. Collection System Operation: Compliance

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have inter-jurisdictional or inter-municipal agreements?		X	
Is there a sewer-use and a grease ordinance?		X	
Is there a process in place for enforcing sewer and grease ordinances?		X	
Are all grease traps inspected regularly?			X
How does the owner or operator learn of new or existing unknown grease traps?	Construction plan review or customer change of use. No program in place for this.	X	
Who is responsible for enforcing the sewer ordinance and grease ordinance? Does this party communicate with the utility department on a regular basis?	LOTT and the City jointly provide enforcement.	X	
Are there any significant industrial dischargers to the system?		X	
Is there a pretreatment program in place? If so, please describe.	Yes, through LOTT	X	
Is there an ordinance dealing with private service laterals?		X	
Is there an ordinance dealing with storm water connections or requirements to remove storm water connections?		X	

Comments:

IV. C. Collection System Operation: Water Quality Monitoring

Question	Response	Documentation Available	
		Yes	No
Is there a water quality monitoring program in the service areas?	Yes	X	
If so, who performs the monitoring?	Lacey/Thurston County	X	
How many locations are monitored?	4	X	
What parameters are monitored and how often?	General chemistry/nitrate/fecal coliform-monthly	X	
Is water quality monitored after an SSO event?	No		X
Are there written standard sampling procedures available?	Yes	X	
Is analysis performed in-house or by a contract laboratory?	Both	X	
Are chain-of-custody forms used?	No		X

Comments:

IV. E. Collection System Operation: Safety

Question	Response	Documentation Available	
		Yes	No
Are odors a frequent source of complaints? How many?	Our odor control treatment process virtually eliminates odor and corrosion form occurring however, equipment failures or process issues have cause rare occurrences of odor complaints	X	
Are the locations of the frequent odor complaints documented?	All odor complaints are documented however there are no frequent odor complaints.	X	
What is the typical sewer slope? Does the owner or operator take hydrogen sulfide corrosion into consideration when designing sewers?	Typical slopes follow the 10 states standards. Corrosion is taken into consideration.	X	
Does the collection system owner or operator have a hydrogen sulfide problem, and if so, does it have in place corrosion control programs? What are the major elements of the program?	The major element of our odor control/treatment program is odor control product injection and monitoring of sulfides.	X	
Does the owner or operator have written procedures for the application of chemical dosages?		X	
Are chemical dosages, dates, and locations documented?		X	
Does the owner or operator have a program in place for renewing or replacing severely corroded sewer lines to prevent collapse?		X	
Are the following methods used for hydrogen sulfide control: aeration, iron salts, enzymes, activated charcoal canisters, chlorine, sodium hydroxide, hydrogen peroxide, potassium permanganate, biofiltration, others?	Bi-Oxide Injection, aeration, charcoal canisters, bio-filtration	X	
Does the system contain air relief valves at the high points of the force main system?		X	
How often are the valves maintained and inspected (weekly, monthly, etc.)?	Dry Well Lift Stations are occur monthly and submersible Stations occur annually	X	
Does the owner or operator enforce pretreatment requirements?	Yes, based on input from LOTT	X	

IV. E. Collection System Operation: Safety

Comments:

uestion	Response	Documentation Available	
		Yes	No
Is there a documented safety program supported by the top administration official?		X	
Is there a Safety Department that provides training, equipment, and an evaluation of procedures?	Human Resources and Operations staff act as T.T.T.	X	
If not, who provides safety training?			
Does the owner or operator have written procedures for the following: lockout/tagout, MSDS, chemical handling, confined spaces permit program, trenching and excavations, biological hazards in wastewater, traffic control and work site safety, electrical and mechanical systems, pneumatic and hydraulic systems safety?		X	
What is the agency's lost-time injury rate(percent or in hours)?	Current experience factor W/L&I 0.9442	X	
Is there a permit required confined space entry procedure for manholes, wetwells, etc.? Are confined spaces clearly marked?		X	
Are the following equipment items available and in adequate supply: rubber/disposable gloves; confined space ventilation equipment; hard hats, safety glasses, rubber boots; antibacterial soap and first aid kit; tripods or non-entry rescue equipment; fire extinguishers; equipment to enter manholes; portable crane/hoist; atmospheric testing equipment and gas detectors; oxygen sensors; H_2S monitors; full body harness; protective clothing; traffic/public access control equipment; 5-minute escape breathing devices; life preservers for lagoons; safety buoy at activated sludge plants; fiberglass or wooden ladders for electrical work; respirators and/or self-contained breathing apparatus; methane gas or OVA analyzer; LEL metering?		X	
Are safety monitors clearly identified?		X	
How often are safety procedures reviewed and revised?	Annually	X	

Question	Response	Documentation Available	
		Yes	No
Are workplace accidents investigated?		X	
How does the Administration communicate with field personnel on safety procedures; memo, direct communication, video, etc.?	Memo/Email, direct communication		
Is there a Safety Committee with participation by O&M staff? How often does it meet?	Monthly	X	
Is there a formal Safety Training Program? Are records of training maintained?		X	

Comments:

IV. F. Collection System Operation: Emergency Preparedness and Response

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have an emergency response plan? A contingency plan?		X	
How often is the plan reviewed and updated? What was the date it was last updated?	Annually is the goal it was last updated in 2012	X	
Does the plan take into consideration vulnerable points in the system, severe natural events, failure of critical system components, vandalism or other third party events, and a root cause analysis protocol?		X	
Are staff trained and drilled to respond to emergency situations? Are responsibilities detailed for all personnel who respond to emergencies?		X	
Are there emergency operation procedures for equipment and processes?		X	
Does the owner or operator have standard procedures for notifying state agencies, local health departments, the regulatory authority, and drinking water authorities of significant overflow events?		X	
Does the procedure include an up-to-date list of the names, titles, phone numbers, and responsibilities of all personnel involved?		X	
Do work crews have immediate access to tools and equipment during emergencies?		X	
Is there a public notification plan? If so, does it cover both regular business hours and off-hours?	No		
Does the owner or operator have procedures to limit public access to and contact with areas affected with SSOs?	No		
Does the owner or operator use containment techniques to protect the storm drainage systems?	No		

Do the overflow records include the following information: date and time, cause(s), names of affected receiving water(s), location, how it was stopped, any remediation efforts, estimated flow/volume discharged, duration of overflow?		X	
Does the owner or operator have signage to keep public from affected area?		X	
Is there a hazard classification system? Where is it located?		X	
Does the owner or operator conduct vulnerability analyses?		X	
Are risk assessments performed? How often?	No		

Comments:

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a hydraulic model of the collection system including pump stations? What model is used?	InfoSWMM	X	
What uses does the model serve (predicting flow capacity, peak flows, force main pressures, etc.)?	Estimating capacity, infrastructure sizing, troubleshooting		
Does the model produce results consistent with observed conditions?	Yes	X	
Is the model kept up to date with respect to new construction and repairs that may affect hydraulic capacity?	Yes		

Comments:

IV. H. Collection System Operation: Engineering - System Mapping and As-built Plans (Record Drawings)

Question	Response	Documentation Available	
		Yes	No
What type of mapping/inventory system is used?	AutoCAD/Arc GIS	X	
Is the mapping tied to a GPS system?	No		
Are “as-built” plans (record drawings) or maps available for use by field crews in the office and in the field?		X	
Do field crews record changes or inaccuracies and is there a process in place to update “as built” plans (record drawings)?		X	
Do the maps show the date the map was drafted and the date of the last revision?		X	

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Do the sewer line maps include the following: scale; north arrow; date the map was drafted; date of the last revision; service area boundaries; property lines; other landmarks; manhole and other access points; location of building laterals; street names; SSOs/CSOs; flow monitors; force mains; pump stations; lined sewers; main, trunk, and interceptor sewers; easement lines and dimensions; pipe material; pipe diameter; pipe diameter; installation date; slope; manhole rim elevation; manhole coordinates; manhole invert elevation; distance between manholes?		X	
Are the following sewer attributes recorded: size, shape, invert elevation, material, separate/combined sewer, installation date?		X	
Are the following manhole attributes recorded: shape, type, depth, age, material?		X	
Is there a systematic numbering and identification method/system established to identify sewer system manhole, sewer lines, and other items (pump stations, etc.)?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Is there a document which details design criteria and standard construction details?		X	
Is life cycle cost analysis performed as part of the design process?		X	
Is there a document that describes the procedures that the owner or operator follows in conducting design review? Are there any standard forms that are used as a guide?		X	
Are O&M staff involved in the design review process?		X	
Does the owner or operator have documentation on private service lateral design and inspection standards?		X	
Does the owner or operator attempt to standardize equipment and sewer system components?		X	

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Comments:

Question	Response	Documentation Available	
		Yes	No
What procedures are used in determining whether the capacity of existing gravity sewer system, pump stations and force mains are adequate for new connections?	Engineering calculations/Field verification		
Is any metering of flow performed prior to allowing new connections?	Occasionally		
Is there a hydraulic model of the system used to predict the effects of new connections?	Yes		
Is there any certification as to the adequacy of the sewer system to carry additional flow from new connections required?	No		

Comments:

Question	Response	Documentation Available	
		Yes	No
Who constructs new sewers? If other than the owner or operator, does the owner or operator review and approve the design?	City reviews and inspects, developer constructs		
Is there a document that describes the procedures that the owner or operator follows in conducting their construction inspection and testing program?	Yes	X	
Are there any standard forms that guide the owner or operator in conducting their construction inspection and testing program?	Yes	X	
Is new construction inspected by the owner or operator or others?		X	
What are the qualifications of the inspector(s)?	None		
What percentage of time is a construction inspector on site?	75%		

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Is inspection supervision provided by a registered professional engineer?	Yes		
How is the new gravity sewer construction tested? (Air, water, weirs, etc.)	Air	X	
Are new manholes tested for inflow and infiltration?	Yes	X	
Are new gravity sewers televised?		X	
What tests are performed on pump stations?	Water, operational, electrical	X	
What tests are performed on force mains?	Pressure	X	
Is new construction built to standard specifications established by the owner or operator and/or the State?	Yes	X	
Is there a warranty for new construction? If so, is there a warranty inspection done at the end of this period?	Yes	X	

Comments:

Question	Response	Documentation Available	
		Yes	No
How many pump stations are in the system? How many have backup power sources?	42 of which 14 do not have auxiliary generators on site. We have portable generators for response to outages for those stations without onsite generators.	X	
Are enough trained personnel assigned to properly maintain pump stations?	416 hours	X	
Are these personnel assigned full-time or part-time to pump station duties?	Full-time	X	
Are there manned and un-manned pump stations in the system? How many of each?	All are un-manned	X	
Is there a procedure for manipulating pump operations (manually or automatically during wet weather to increase in-line storage of wet weather flows?	Not necessary		

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Are well-operating levels set to limit pump start/stops?		X	
Are the lead, lag, and backup pumps rotated regularly?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
How often are pump stations inspected?	Once /Week	X	
What work is accomplished during inspections?	Site clean- up	X	
Is there a checklist?		X	
Are records maintained for each inspection?		X	
What are the average annual labor hours spent on pump station inspections?	416	X	
Are there Standard Operating Procedures (SOPs) and Standard Maintenance Procedures (SMPs) for each station?		X	
What are the critical operating characteristics maintained for each station? Are the stations maintained within these criteria?	We have all this information	X	

Comments:

IV. L. 2. Collection System Operation: Pump Stations - Emergencies

Question	Response	Documentation Available	
		Yes	No
Is there an Emergency Operating Procedure for each pump station?		X	
Is there sufficient redundancy of equipment in all pump stations?	All except stations without onsite auxiliary generators	X	
Who responds to lift station failures and overflows? How are they notified?	After Hour stand-by personnel. They are notified by SCADA alarm or central dispatch if alarms malfunction and Overflow actually occurs	X	
How is loss of power at a station dealt with? (i.e. on-site electrical generators, alternate power source, portable electric generator(s))	Onsite and portable generators	X	
What equipment is available for pump station bypass?	Each pump station has a by-pass port connection assembly and we have a by-pass pump	X	
What process is used to investigate the cause of pump station failure and take necessary action to prevent future failures?	Assess and determine the cause and implement necessary action.	X	

Comments:

IV. L. 3. Collection System Operation: Pump Stations - Emergency Response and Monitoring

Question	Response	Documentation Available	
		Yes	No
How is lift stations monitored?	By SCADA	X	
If a SCADA system is used, what parameters are monitored?	High level, low level, intrusion, pump runs, smoke & fire, water in the drywell, phase loss, communication loss and power failure.	X	

Comments:

IV. L. 4. Collection System Operation: Pump Stations - Recordkeeping

Question	Response	Documentation Available	
		Yes	No
Are operations logs maintained for all pump stations?		X	
Are manufacturer's specifications and equipment manuals available for all equipment?		X	
Are pump run times maintained for all pumps?		X	
Are elapsed time meters used to assess performance?		X	

Comments:

IV. L. 5. Collection System Operation: Pump Stations - Force Mains and Air/Vacuum Valves

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator regularly inspect the route of force mains?			X
Does the owner or operator have a program to regularly assess force main condition?			X
Is there a process in place to investigate the cause of force main failures?	We have never experienced a force main failure		X
Does the owner or operator have a regular maintenance/inspection program for air/vacuum valves?	Our air relief valves are maintenance free	X	
Have force main failures been caused by water hammer?			X

Comments:

V. A. Equipment and Collection System Maintenance: Maintenance Budgeting

Question	Response	Documentation Available	
		Yes	No
How does the collection system owner or operator track yearly maintenance costs?	Through our computerized financial management System HTE	X	
Is there a maintenance cost control system?		X	
Are maintenance costs developed from past cost records?		X	
How does the owner or operator categorize costs? Preventive? Corrective? Projected Costs? Projected Repair?	Yes there are detailed budget line items for all pertinent categories	X	
How does the owner or operator control expenditures?	Through careful planning and expenditure approval procedures	X	

Comments:

V. B. Equipment and Collection System Maintenance: Planned Maintenance

Question	Response	Documentation Available	
		Yes	No
Are preventive maintenance tasks and frequencies established for all pump stations and equipment?		X	
How were preventive maintenance frequencies established?	Manufacturers recommended frequencies and historical information	X	
What percentage of the operator's time is devoted to planned as opposed to unplanned maintenance?	90% Planned	X	
What predictive maintenance techniques are used as part of PM Program?	We do not perform predictive maintenance		X
Is there a formal procedure to repair or replace pump stations and equipment when useful life is reached?		X	
Has an energy audit been performed on pump station electrical usage?			X
Is an adequate parts inventory maintained for all equipment?		X	
Is there a sufficient number of trained personnel to properly maintain all stations?		X	
Who performs mechanical and electrical maintenance?	Control Technicians	X	
Are there Standard Maintenance Procedures (SMPs) for each station?		X	

Comments:

V. C. Equipment and Collection System Maintenance: Maintenance Scheduling

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator plan and schedule preventive and corrective maintenance activities?		X	
Is there an established priority system? Who sets priorities for maintenance?	Supervisor and senior Technicians	X	
Is a maintenance card or record kept for each piece of mechanical equipment within the collection system?	All Computerized	X	
Do equipment maintenance records include the following information: maintenance recommendations, instructions on conducting the specific maintenance activity, other observations on the equipment, maintenance schedule, a record of maintenance on the equipment to date.		X	
Are dated tags used to show out-of-service equipment?		X	
Is maintenance backlog tracked?		X	
How is O&M performance tracked and measured?	Maintenance Management System	X	
What percent of repair finds are spent on emergency repairs?	13%		
Are corrective repair work orders backlogged more than six months?			X
Is maintenance performed for other public works divisions?			X
How are priorities determined for this work?	From least critical to most	X	
How is this work funded?	Through Sewer Rates	X	
Are maintenance logs maintained for all pump stations?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator perform scheduled maintenance on Rights-of-Way and Easements?		X	
Does the owner or operator monitor street paving projects?		X	
Does the owner or operator have a program to locate and raise manholes (air valves, etc) as needed?		X	
How are priorities determined?	From least critical to most	X	
How is the effectiveness of the maintenance schedule measured?	Through maintenance Management system HTE	X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Is there a routine schedule for cleaning sewer lines on a system wide basis, e.g., at the rate of once every seven to twelve years or a rate of between 8% and 14% per year?		X	
What is the owner or operator's goals for annual system cleaning?	Clean 20% of the system	X	
What percent of the sewer lines are cleaned, even high/repeat cleaning trouble spots, during the past year?	35%	X	
Is there a program to identify sewer line segments that have chronic problems and should be cleaned on a more frequent schedule?		X	
What is the average number of stoppages experienced per mile of sewer pipe per year?	0.00	X	
Has the number of stoppages increased, decreased, or stayed the same over the past five years?	Stayed the same	X	
Are stoppages diagnosed to determine the cause?		X	

Are stoppages plotted on maps and correlated with other data such as pipe size and material, or location?		X	
Do the sewer cleaning records include the following information: date and time, cause of stoppage, method of cleaning, location of stoppage or routine cleaning activity, identity of cleaning crew, further actions necessary/initiated?		X	
If sewer cleaning is done by a contractor are videos taken of before and after cleaning?		X	

Comments:

V. E. 1. Equipment and Collection System Maintenance: Sewer Cleaning - Cleaning Equipment

Question	Response	Documentation Available	
		Yes	No
What type of cleaning equipment does the owner or operator use?	Combination Cleaners	X	
How many cleaning units of each type does the owner or operator have? What is the age of each?	One	X	
How many cleaning crews and shifts does the owner or operator employ?	One	X	
How many cleaning crews are dedicated to preventive maintenance cleaning?	One	X	
How many cleaning crews are dedicated to corrective maintenance cleaning?	One	X	
What has the owner or operator's experience been regarding pipe damage caused by mechanical equipment?	None	X	
Where is the equipment stationed?	Operations Center	X	

Comments:

VIII. A. Rehabilitation: Manhole Repairs

V. E. 2. Equipment and Collection System Maintenance: Sewer Cleaning - Chemical Cleaning and Root Removal

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a root control program?		X	
Does the owner or operator have a FOG program?		X	
Are chemical cleaners used?		X	
What types of chemical cleaners are used?	Rotox	X	
How often are they applied?	Only when a problem is identified every 15 years	X	
How are the chemical cleaners applied?	Injector equipment and pipe plugs	X	
What results are achieved through the use of chemical cleaners?	Roots are eliminated	X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a central location for the storage of spare parts?		X	
Have critical spare parts been identified?		X	
Are adequate supplies on hand to allow for two point repairs in any part if the system?		X	
Is there a parts standardization policy in place?	Philosophy practiced but not written.		X
Does the owner or operator maintain a stock of spare parts on its maintenance vehicles?		X	

VIII. A. Rehabilitation: Manhole Repairs

What method(s) does the owner or operator employ to keep track of the location, usage, and ordering of spare parts? Are parts logged out when taken by maintenance personnel for use?	Replaced as needed. Not logged.		X
Does the owner or operator salvage specific equipment parts when equipment is placed out-of-service and not replaced?		X	
How often does the owner or operator conduct a check of the inventory of parts to ensure that their tracking system is working?	There is no formal tracking system in place. Parts are replaced as needed on an ongoing basis.		X
Who has the responsibility of tracking the inventory?	Senior Technicians	X	
For those parts which are not kept in inventory, does the owner or operator have a readily available source or supplier?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Is there a list of equipment and tools used for operation and maintenance?		X	
Do personnel feel they have access to the necessary equipment and tools to do all aspects of operation and maintenance of the collection system?		X	
Is there access to suitable equipment if the owner or operator's equipment is down for repair?		X	
Does the owner or operator own or have access to portable generators?		X	
Where does the owner or operator store its equipment?	Operations Center	X	
Is a detailed equipment maintenance log kept?		X	
Are written equipment maintenance procedures available?		X	
What is the procedure for equipment replacement?	Depreciation Policy		
Are the services of an in-house vehicle and equipment maintenance services used?		X	

VIII. A. Rehabilitation: Manhole Repairs

What is the typical turnaround time for equipment and vehicle maintenance?	One to three days	X	

Comments:

Question	Response	Documentation Available	
		Yes	No
How many sanitary sewer overflows (SSOs) have occurred in the last 5 years? How many less than 1,000 gallons?	This information is not tracked by our organization		X
Does the owner or operator document and report all SSOs regardless of size?		X	
Does the owner or operator document basement backups?		X	
Are there areas that experience basement or street flooding?			X
How many SSOs have reached "Waters of the US"? Is there a record?	None		
Approximately, what percent of SSOs discharge were from each of the following in the last 5 years: manholes, pump stations, main and trunk sewers, lateral and branch sewers, structural bypasses?	STEP System: 50% Lift/Pump Station: 50%	X	
What is the per capita wastewater flow for the maximum month and maximum week or day?	Max Month ~ 81 gpd Max Day ~105 gpd	X	
What is average annual influent BOD?	~ 0.135 lb/day/capita, ~ 3M lb/year for LOTT	X	
What is the ratio of maximum wet weather flow to average dry weather flow?	~ 1.56	X	
Approximately, what percent of SSO discharge were caused by the following in the last 5 years: debris buildup, collapsed pipe, root intrusion, capacity limitations, excessive infiltration and inflow, FOG, vandalism?	None	X	
What percent of SSOs were released to: soil; surface water; basements; paved areas; coastal, ocean, or beach areas; rivers, lakes or streams?	All soil or paved areas	X	

VIII. A. Rehabilitation: Manhole Repairs

For surface water releases, what percent are to surface waters that could affect: contact recreation, shellfish growing areas, drinking water sources?	None	X	
How many chronic SSO locations are in the collection system?	N/A		
Are pipes with chronic SSOs being monitored for sufficient capacity and/or structural condition?	N/A		
Prior to collapse, are structurally deteriorating pipelines being monitored for renewal or replacement?	N/A		
What is the annual number of mainline sewer cave-ins? What was the cause (i.e. pipe corrosion, leaks, etc.)	N/A		
What other types of performance indicators does the owner or operator use?	None	X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator use internal T.V. inspection? If so please describe the program.	Daily TV inspection program with goal of televising all lines every three years	X	
Do the internal TV record logs include the following: pipe size, type, length, and joint spacing; distance recorded by internal TV; results of the internal TV inspection; internal TV operator name; cleanliness of the line; location and identification of line being televised by manholes?		X	
Is a rating system used to determine the severity of the defects found during the inspection process?		X	
Is there documentation explaining the codes used for internal TV results reporting?		X	
Approximately what percent of the total defects determined by TV inspection during the past 5 years were the following:	N/A		
Are main line and lateral repairs checked by internal TV inspection after the repair(s) have been made?		X	

VIII. A. Rehabilitation: Manhole Repairs

Comments:

Question	Response	Documentation Available	
		Yes	No
Have SSES's been performed in the past? If so, is documentation available?			X
Has any sewer rehabilitation work been done in the past 15 years? If so, please describe?	Sleater Kinney – slip line and manhole rehab	X	
Does the owner or operator have standard procedures for performing SSES work?	N/A		
Do the SSES reports include recommendations for rehabilitation, replacement, and repair?	N/A		
Were defects identified in the SSES repaired?	N/A		
Does the owner or operator have a multi-year Capital Improvements Program that includes rehabilitation, replacement, and repair?	Yes	X	
How are priorities established for rehabilitation, replacement, and repair?	Severity/Risk of failure/Potential impact	X	
Has the owner or operator established schedules for performing recommended rehabilitation, both short term and long term?	N/A		
Has funding been approved for the recommended rehabilitation?		X	
Is post rehabilitation flow monitoring used to assess the success of the rehabilitation?	N/A		

VIII. A. Rehabilitation: Manhole Repairs

Comments:

Question	Response	Documentation Available	
		Yes	No
Are sewers cleaned prior to flow monitoring?		X	
Are sewers cleaned prior to internal T.V. inspection?		X	
When cleaning, is debris removed from the system?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a flow monitoring program? If so, please describe.	Monitoring is provided by LOTT for the gravity system, the City monitors select pump stations		
Does the owner or operator have a comprehensive capacity assessment and planning program?	The wastewater comprehensive plan includes capacity assessment and planning	X	
Are flows measured prior to allowing new connections?			X
Number of permanent meters? Number of temporary meters?	5	X	
What type(s) of meters are used?	Mag Meters		
Number of rain gauges?	N/A		
How frequently are flow meters checked?	Meters are monitored through our SCADA system. They are physically read on a weekly basis and serviced on an annual basis	X	
Do the flow meter checks include: independent water level, checking the desiccant, velocity reading, cleaning away debris, downloading data, battery condition?			X
Are records maintained for each inspection?		X	

VIII. A. Rehabilitation: Manhole Repairs

Do the flow monitoring records include: descriptive location of flow meter, type of flow meter, frequency of flow meter inspection, frequency of flow meter calibration?		X	
Are flow data used for billing, capacity analysis, and/or I/I investigations?			X
What is the ratio of peak wet weather flow to average dry weather flow at the wastewater treatment plant?	~ 4.45 peak day/dry ave @LOTT		
Does the owner or operator have any wet weather capacity problems?			X
Are low points or flood-plain areas monitored during rain events?			X
Does the owner or operator have any dry weather capacity problems?			X
Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a smoke testing program to identify sources of inflow and infiltration into the system including private service laterals and illegal connections? If so please describe.	Only on suspect areas	X	
Are there written procedures for the frequency and schedule of smoke testing?		X	
Is there a documented procedure for isolating line segments?		X	
Is there a documented procedure for notifying local residents that smoke testing will be conducted in the area?		X	
What is the guideline for the maximum amount of line to be tested at one time?	400’	X	
Are there guidelines for the weather conditions under which smoke testing should be conducted?	No	X	
Do the written records contain location, address, and description of the smoking element that produced a positive result?		X	
What follow-up occurs as a result of positive results for smoke or dye testing?	Correct deficiencies		

VIII. A. Rehabilitation: Manhole Repairs

Is there a goal for the percent of the system smoke tested each year?			X
What percent of the system has been smoke tested over the past year?	N/A		
Does the owner or operator have a dyed water flooding program If so please describe.			X
Is there a goal for the percent of the system dye tested each year?			X
What percent of the system has been dye tested over the past year?	N/A		
Does the owner or operator share smoke and dye testing equipment with another owner or operator?			X

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a routine manhole inspection and assessment program?		X	
What is the purpose of the inspection program?	To prevent sewer back-ups	X	
Does the owner or operator have a goal for the number of manholes inspected annually?		X	
How many manholes were inspected during the past year?	3,500	X	
Do the records for manhole/pipe inspection include the following: conditions of the frame and cover; evidence of surcharge; offsets or misalignments; atmospheric hazards measurements; details on the root cause of cracks or breaks in the manhole or pope including blockages; recording conditions of corbel, walls, bench, trough, and pipe seals; presence of corrosion, if repair is necessary; manhole identifying number/location; wastewater flow characteristics; accumulations of grease, debris, or grit; presence of infiltration, location, and estimated quantity; inflow from manhole covers?		X	
Are manholes susceptible to inflow identified and inspected on a regular frequency?		X	

VIII. A. Rehabilitation: Manhole Repairs

Is there a data management system for tracking manhole inspection activities?		X	
What triggers whether a manhole needs rehabilitation?	I&I or level of corrosion	X	
Does the owner or operator have a multi-year Capital Improvements Program that includes rehabilitation, replacement, and repair of manholes?			X
How are priorities established for rehabilitation, replacement, and repair of manholes?	CCTV Inspection and evaluation	X	
Has the owner or operator established schedules for performing rehabilitation, both short term and long term of manholes?		X	

Question	Response	Documentation Available	
		Yes	No
Has funding been approved for the rehabilitation of manholes?		X	
Does the owner or operator have a grouting program?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
What rehabilitation techniques are used for manhole repairs?	Grouting and coatings	X	
How are priorities determined for manhole repairs?	Inspection /evaluation	X	
What type of documentation is kept?	Computer records	X	
Does the owner or operator use manhole inserts?			X
Are they used system wide or only on low lying manholes?	N/A		

Comments:

VIII. B. Rehabilitation: Mainline Sewers

Question	Response	Documentation Available	
		Yes	No
What type of main line repairs has the owner or operator used in the past?	Insitu -form/cured in place pipe liner's, slip- lining	X	
Does the owner or operator currently use any of above techniques for main line repairs? What other techniques is the owner or operator presently using?		X	
How are priorities established for main line repairs?	CCTV evaluation	X	
What type of follow-up is performed after the repair (e.g., CCTV)?	CCTV	X	

Comments:

Appendix A

EXAMPLE
COLLECTION SYSTEM PERFORMANCE INDICATOR DATA COLLECTION FORM

EXAMPLE
COLLECTION SYSTEM PERFORMANCE INDICATOR DATA COLLECTION FORM

I. General Information

A. Agency Name City of Lacey

B. Agency Address

Street 1200 College Street

City Lacey State WA Zip 98503-3400

C. Contact Person

D. Telephone: Voice _____ Fax _____ Email

E. Data provided for latest fiscal/calendar year, 2012

II. Collection System Description

A. Service Area 33 Square miles

B. Population Served 44,000

C. System Inventory

Miles of gravity sewer	Miles of force main	Number of maintenance access structures	Number of pump stations	Number of siphons	Number of air, vacuum, or air/vacuum relief valves
141	67	4,000	47	1	139

D. Number of Service Connections:

Residential 15,424 Commercial 721 Industrial 3 Total 16,148

E. Lateral Responsibility (check one)

1. At main line connection only X
2. From main line to property line or easement/cleanout _____
3. Beyond property line/cleanout _____
4. Other _____

F. System combined (storm and sanitary)? Yes ___ No X If yes, % combined ____

G. Average Annual Precipitation 50 inches

H. System Flow Characteristics (total for service area)

Peak Dry Weather Flow (MGD)	Peak Wet Weather Flow (MGD)	Average Daily Flow (MGD)
3.247	5.053	3.407

III. Special Conditions

A. Indicate local conditions that are accounted for during design, construction, operation, and maintenance of the collection system.

1. Precipitation: Yes ____ No X___ If yes, provide brief explanation _____

2. Terrain: Yes X___ No _____ If yes, provide brief explanation Pressure collection systems may be used depending on terrain

3. Soils: Yes ____ No X___ If yes, provide brief explanation _____

4. Temperature: Yes ____ No X___ If yes, provide brief explanation _____

5. Groundwater: Yes X___ No _____ If yes, provide brief explanation _____ Dewatering, Buoyancy

6. Geology: Yes ____ No X___ If yes, provide brief explanation _____

7. Other: _____

B. Is corrosion a significant problem? Yes X No ____
   - Is there a corrosion control program in place? Yes X No

C. Is odor a significant problem? Yes X No ____
   - Is there an odor control program in place? Yes X No ____

D. Is grease a significant problem? Yes ____ No X
   - Is there a grease control program in place? Yes X No ____

E. Are roots a significant problem? Yes ____ No X
   - Is there a root control program in place? Yes X No ____

IV. Age Distribution of Collection System

Age	Gravity Sewer, miles	Force Mains, miles	Number of Pump Stations
0 - 25 years	97	63	36
26 - 50 years	45	6	11
51 - 75 years	-	-	-
> 76 years	-	-	-

V. Size Distribution of Collection System

Diameter in inches	Gravity Sewer, miles	Force Mains, miles
8 inches or less	108	60
9 - 18 inches	27	8
19 - 36 inches	7	
> 36 inches		

VI. Distribution of Gravity Sewer By Material

A. Vitrified Clay Pipe (VCP) _____ Miles
B. Reinforced Concrete Pipe (RCP) _____ Miles
C. Unreinforced Concrete Pipe (CP) _____ Miles
D. Plastic (all types) 140 Miles
E. Brick _____ Miles
F. Other 2 Miles
G. Other _____ Miles
H. Other _____ Miles

VII. Distribution of Force Mains By Material (circle one)

A. Reinforced Concrete Pipe (RCP) _____ miles or feet
B. Prestressed Concrete Cylinder Pipe (PCCP) _____ miles or feet
C. Asbestos Cement Pipe (ACP) _____ miles or feet
D. Polyvinyl Chloride (PVC) 54 miles or feet
E. Steel _____ miles or feet
F. Ductile Iron _____ miles or feet
G. Cast Iron _____ miles or feet
H. Techite (RPMP) _____ miles or feet
I. High Density Polyethylene (HDPE) 15 miles or feet
J. Fiberglass Reinforced Plastic (FRP) _____ miles or feet
K. Other _____ miles or feet

VIII. Preventive Maintenance of System

A. Physical Inspection of Collection System, Preventive Maintenance

Inspection Activity	Total Annual Labor Hours Expended for This Activity	Total Completed (Miles of Pipe or Manholes Inspected Annually)	Crew Size (s)
CCTV	2,317	62.3	2
Visual Manhole Inspection, Surface Only	———		
Visual Manhole Inspection, Remove Cover	All inspected & recorded through CCTV. Quantity Unknown.		
Visual Gravity Line Inspection, Surface Only	———		
Visual Force Main Inspection, Surface Only	———		
Other (Sonar, etc.)			

B. Mechanical and Hydraulic Cleaning, Preventive Maintenance

Cleaning Activity	Total Annual Labor Hours Expended for This Activity	Total Annual Labor Hours Expended for Scheduled PM	Total Miles Cleaned Annually	Crew Size (s)	Range of Pipe Diameters Cleaned
Hydraulic Jet					
Bails, Kites, Scooters					
Combination Machines	17,772		70.72	2	8” through 27”
Rod Machines					
Hand Rodding					
Bucket Machines					
Chemical Root Control					
Chemical or Biological Grease Control					

IX. Dry Weather Stoppages

A. Number of stoppages, annually 0
B. Average time to clear stoppage
C. Number of stoppages resulting in overflows and/or backups annually 0
D. Total quantity of overflow(s) 0
E. Is there an established procedure for problem diagnosis? Yes X No
F. Are future preventive measures initiated based on diagnosis? Yes X No
G. What equipment is available for emergency response? Combination cleaners and CCTV equip

X. Repairs and Rehabilitation, Proactive

A. Number of annual spot repairs identified
B. Number of annual spot repairs completed
C. Percent of spot repairs contracted 0
D. Number of manholes identified for rehabilitation
E. Number of manholes rehabilitated annually
F. Percent of manhole repairs contracted
G. Feet of main line needing rehabilitation
H. Feet of main line rehabilitated
I. Percent of main line rehabilitation contracted
J. Number of manholes scheduled for rehabilitation under Capital Improvement Program (s) 0
K. Feet of main line scheduled for rehabilitation under Capital Improvement Program (s)

XI. Repairs and Rehabilitation, Reactive

A. Number of annual line features 0
B. Number of line repairs 0

XII. Pump Stations

A. Number of pump stations inspected 47
   - Frequency of inspections Once weekly(daily, every other day, weekly)
B. Number of inspection crews One
C. Crew size 5
D. Number of pump stations with pump capacity redundancy 47
E. Number of pump stations with backup power sources 33
F. Number of pump stations with dry weather capacity limitations
G. Number of pump stations with wet weather capacity limitations
H. Number of pump stations calibrated annually 1
I. Number of pump stations with permanent flow meters 6
J. Number of pump stations with remote status monitoring 47
K. Number of pump stations with running time meters 47
L. Number of mechanical maintenance staff assigned to mechanical maintenance 3
M. Number of electrical maintenance staff assigned to electrical maintenance 2
N. Total labor hours scheduled annually for electrical and mechanical PM tasks
O. Total labor hours expended annually for electrical and mechanical PM tasks

XIII. Pump Station Failures, Dry Weather

A. Number of failures resulting in overflows/bypass or backup, annually One
B. Total quantity of overflow/bypass Gallons or MG
C. Average time to restore operational capability 0.5 hours
D. Total labor hours expended for electrical and mechanical corrective maintenance tasks
E. Is failure mode and effect diagnosed? Yes X No
F. Are future preventive measures initiated based on diagnosis? Yes X No
G. What equipment is available for emergency response? By-pass pumping and Tanker Trucks

XIV. Force Mains

A. Force mains inspected annually 0 miles or feet (visual surface inspection of alignment)
B. Force mains monitored annually 0 miles or feet (pressure profile, capacity)
C. Number of force main failures annually 0
D. Cause(s) of force main failures _____

XV. Air Relief/Vacuum Valves

A. What is frequency of valve inspections? N/A
B. What is frequency of PM (backflushing, etc)? 0
C. Number of annual valve failures 0
D. Cause(s) of valve failures _____

XVI. System Operation and Maintenance Efficiency

A. Total full time or full time equivalent staff assigned to O & M (excluding administration staff but including line managers, supervisors) 16.5
B. Total estimated labor hours actually expended for active O & M tasks (this is the total above less hours for sick, vacation, holidays, training, breaks, etc., not directly related to performing O & M tasks) _____

XVII. Level of Service

A. Average annual rate for residential users $197.76 (not including LOTT)
B. Rate based on: water consumption _____ Flat rate X Other _____
C. Number of complaints annually _____
D. Number of complaints that are agency responsibility _____
E. Number of public health or other warnings issued annually 0
F. Number of claims for damages due to backups annually _____
G. Total cost of claims settled annually _____

XVIII. Financial

A. Total annual revenue received from wastewater $13.4M
   1. % of revenue for long-term debt 0%
   2. % of revenue for treatment and disposal 62%
   3. % of revenue for collection and conveyance 28%
B. Current value of collection system assets $66.7M
C. Annual O & M expenditure $3.7M
D. Annual CIP expenditure for repair, replacement, or rehabilitation $1.9M
E. Annual O & M training budget _____
F. Total number of O & M personnel (including administrative in O & M department) _____
G. Number of personnel with collection system certification _____
H. Number of personnel qualified for collection system certification _____
I. Amount of O & M budget allocated for contracted services _____
J. Hydroflush cost per foot _____
K. Rodding cost per foot _____
L. Bucketing cost per foot _____
M. CCTV cost per foot _____
N. Spot repairs, cost each _____

XIX. Safety

A. Total labor hours assigned to O & M _____
B. Number of lost time injuries _____
C. Total lost time days _____
D. Total cost of lost time injuries _____

XX. Regulatory

A. Total number of violations issued annually _____
B. Total cost of fines paid annually _____
C. What is minimum reportable quantity in gallons? All that overflows
D. What is time reporting requirement? 24 hours
E. Number of annual WWTP upsets due to wet weather flow N/A

XXI. General

A. Has SSES been performed on system? Yes _____ No _____
B. Total O & M positions currently budgetd 15
C. Total O & M positions currently filled 15
D. Is computerized maintenance management system (s) used for O & M managing? Yes X No ___

E. Is GIS system used for O & M managing? Yes _____ No X

XXII. Procedures or Other Documentation Available

A. Overflow, bypass and containment Yes X No _____
B. Problem evaluation and solution Yes X No _____
C. Cleanup procedure Yes X No _____
D. Failure mode and effect procedure Yes _____ No _____
E. O & M budget process Yes X No _____
F. O & M budget with line item detail Yes X No _____
G. Long-range CIP planning for system expansion, rehabilitation, and replacement Yes X No ____
H. Is there a written procedure for cleanup to mitigate effect of overflow? Yes X No _____
I. Is there a written procedure for containing overflows and bypasses? Yes X No _____
J. Is there an established procedure for containing overflows and bypasses? Yes X No _____
K. Is there an established procedure for problem evaluation and solution? Yes _____ No X
L. Is there an established procedure for cleanup to mitigate effect of overflow? Yes X No _____
M. Is there a grease control program? Yes X No _____
N. Is there a pretreatment program? Yes X No _____
O. Is there a private source I/I reduction program? Yes _____ No X
P. Do you have chronic O & M problems that are designed into your system? Yes X No _____
If yes, provide brief description Community STEP debris tanks

Q. Do you have chronic O & M problems that are constructed into your system? Yes _____ No _____
If yes, provide brief description _____

R. How would you rate your construction inspection program?
Very effective _____ Needs improvement _____ Poor _____

XXIII. Definitions/Clarifications

A. Maintenance access structures, most commonly manholes, in your system that are incorporated into your O & M program.

B. Pump capacity redundancy is the ability to maintain pumping at design capacity with the largest pump out of service.

C. Remote status monitoring is any remote monitoring system such as alarm telemetry or SCADA that provides remote pump station status information.

D. You will notice that in the section on stoppages and pump station failures, we are asking for dry weather incidents only. Dry weather system performance is a good indicator or effectiveness of O & M program. If you have wet weather information that you wish to provide also, please do.

E. Under the Special Conditions sections we are identifying conditions that are present in your system that require consideration during design, construction, and O & M of your system.

F. Any of the questions dealing with labor hours are designed to determine total labor hours irrespective of crew size or crews that are only assigned to cleaning, for example, less than full time.

G. Our goal is to obtain data that can be or are standardized and that are accurate. We also realize that some data may not be available; however, data can be accurately estimated. If you estimate data please follow with an (E).

H. If data is not available please indicate "NA." If data does not apply to your system, please indicate by "DNA."

I. Failure mode and effect refers to any established procedure you have to diagnose system failures to determine the cause and effect of the failure. This can apply to crews clearing stoppages or to pump station failures.

J. Pump station inspection (XII) means scheduled inspection by operators to verify station operation and perform PM. It excludes electrical or mechanical craft maintenance.

K. Stoppage in section IX refers only to stoppages other than pump stations. Pump stations are covered in Section XIII. Backup in this case refers to a basement or other structure backup as opposed to main line sewer backup.

XXIV. Additional Comments

Appendix K

SEPA Checklist

CITY OF LACEY

Shaping our community together

420 COLLEGE STREET SE
LACEY, WA 98503-1238

DETERMINATION OF NONSIGNIFICANCE

Description of Proposal: Update to the City of Lacey Wastewater Comprehensive Plan. The purpose of the Wastewater Comprehensive Plan is to provide documentation of the existing utility, provide guidance for future operation and expansion, and to ensure the utility's sustainability into the future. Topics addressed in the plan include utility service and extension policies, population and flow projections, analysis of existing facilities, documentation of operation and maintenance practices, capital improvement plan, and financial plan.

Proponent: City of Lacey

Location of Proposal: The revisions will apply within the City of Lacey and within applicable utility service areas located within the City's Urban Growth Area in unincorporated Thurston County.

Lead Agency: City of Lacey Community Development Department

Threshold Determination: As provided by RCW 43.21C.240 and WAC 197-11-158, the lead agency has determined that the requirements for environmental analysis, protection, and mitigation measures have been adequately addressed in the applicable development regulations and comprehensive plan adopted under Chapter 36.70A RCW and in other local, state, or federal laws or rules. Therefore, this proposal is not likely to have a significant adverse impact upon the environment, an Environmental Impact Statement is not required under RCW 43.21C.030(2)(C), and the City of Lacey will not require additional mitigation measures under SEPA. This decision was made after review of an Environmental Checklist and other information on file with the City. This information is available to the public upon request.

__X__ This DNS is issued under 197-11-340(2); the lead agency will not act on this proposal for 14 days. Comments must be submitted by Monday, November 10, 2014.

Assigned Staff Person: Ryan Andrews, Planning Manager

Responsible Official: Rick Walk, AICP, Director of Community Development

Address: 420 College Street SE, Lacey, WA 98503

Phone: (360) 491-5642 **Fax:** (360) 438-2669

Date: October 27, 2014 **Signature:** 

Appeal Deadline: 5:00 p.m. on November 10, 2014

NOTE: Pursuant to RCW 43.21.C.075 and Lacey Municipal Code 14.24.170(A), a project denial based upon environmental information, and a conditioned or mitigated Determination of Nonsignificance (DNS) may be appealed by any agency or aggrieved person. Appeals are filed ether with the Community Development Department when there is also an underlying governmental action or with the City Council if there is no underlying governmental action. Appeals to the City Council must be filed within fourteen (14) days of the issuance of the written decision (refer to the Lacey Municipal Code for time periods on appeals filed with the Community Development Department).

cc: Department of Ecology

CITY OF LACEY
Community Development Department
420 College Street SE
Lacey, WA 98503
(360) 491-5642

OFFICIAL USE ONLY
Case Number: _____
Date Received: _____
By: _____
Related Case Numbers:
_____
_____

WAC 197-11-960
ENVIRONMENTAL CHECKLIST

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants: [help]

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:
Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. BACKGROUND [help]

1. Name of proposed project, if applicable: [help]

City of Lacey Wastewater Comprehensive Plan Update

2. Name of applicant: [help]

City of Lacey

3. Address and phone number of applicant and contact person: [help]

Brandon McAllister, Utilities Engineer
420 College St. SE, Lacey, WA 98503
(360) 413-4386

4. Date checklist prepared: [help]

October 22, 2014

5. Agency requesting checklist: [help]

City of Lacey

6. Proposed timing or schedule (including phasing, if applicable): [help]

Review and public hearing to be held by Lacey Planning Commission in November, 2014. Council adoption following Washington State Department of Ecology Approval (2014-2015). Individual projects are proposed throughout the 20-year planning period.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

Providing wastewater service to an increasing population will be an ongoing effort requiring periodic updates in planning and programmed expansion of infrastructure to service increased demand. Changes to both short and long range plans and infrastructure may be necessary to address developing issues and concerns. All such changes will require additional analysis and environmental work if applicable.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

Impacts that are most relevant to the planning of wastewater utilities are in the context of the utility's relationship with planned land use. This Plan is based upon land use planning and is anticipated to influence land use consistent with the dispersion, form and density that has been planned. The

Wastewater Comprehensive Plan is expected to help implement planned land use. As such, environmental documents that have reviewed expected impacts from the City's Comprehensive Land Use Plan are representative of the impacts that Lacey's planning under GMA will be expected to have.

General impacts expected from implementation of Lacey's GMA Plan as well as general urbanization under GMA have been identified in a number of environmental documents. These include an environmental impact statement prepared in 1987 to address Lacey's downtown element, an environmental impact statement prepared on the original GMA plan and associated growth strategies in 1994, an expanded environmental checklist prepared on the Land Use Plans update in 2003 and more recently an Impact statement prepared on the Gateway project in 2008. All of these documents looked at general impacts expected from urbanization, planned land use strategies and implementation of smart growth concepts required under GMA.

All of these documents are available at Lacey City Hall.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

This is a non-project action. There is no one specific property the Wastewater Comprehensive Plan will impact. Wastewater infrastructure will take place throughout the City and its designated growth area to service development planned under GMA. As individual development projects occur individual site specific impacts will be evaluated and mitigated.

10. List any government approvals or permits that will be needed for your proposal, if known. [help]

Planning Commission and City Council approvals. Also, environmental review approval is required from the responsible official. Review and approval of the Wastewater Comprehensive Plan is required by the state Department of Ecology.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

This plan includes and/or considers the following items:

- Current and historical information about the wastewater system,
- Wastewater utility regulations and policies,
- Growth and wastewater generation projections,
- Existing and future infrastructure,
- Hydraulic analysis,

- Capital improvements,
- Financial analysis,
- Operation and maintenance.

Projects originating as a result of this plan will be completed on a project specific basis in compliance with all local, state, and federal regulations.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The area includes the incorporated City of Lacey and its urban growth area.

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. General description of the site [help]
(circle one): Flat, rolling, hilly, steep slopes, mountainous,
other _____

This is a non-project action. Not applicable.

b. What is the steepest slope on the site (approximate percent slope)? [help]

This is a non-project action. Not applicable.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

This is a non-project action. Not applicable.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

This is a non-project action. Not applicable.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

This is a non-project action. Not applicable.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

This is a non-project action. Not applicable.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

This is a non-project action. Not applicable.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

This is a non-project action. Not applicable.

2. Air

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

Wastewater collection facilities have the potential to emit offensive odors. Lacey utilizes multiple strategies in mitigating such odors, those strategies include aeration, filtration, and chemical additions.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

This is a non-project action. Not applicable.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

This is a non-project action. Not applicable.

3. Water

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

Yes. Lacey has a number of lakes within its incorporated boundary and within the designated growth boundary.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

This is a non-project action. Not applicable.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

This is a non-project action. Not applicable.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

This is a non-project action. Not applicable.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

This is a non-project action. Not applicable.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

All wastewater is directed to LOTT for treatment and reclamation, any discharges are regulated by the Washington State Department of Ecology through LOTT's NPDES permit.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

This is a non-project action. Not applicable.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

This is a non-project action. Not applicable.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

This is a non-project action. Not applicable.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

This is a non-project action. Not applicable.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

This is a non-project action. Not applicable.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

This is a non-project action. Not applicable.

4. **Plants** [help]

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. Check the types of vegetation found on the site: [help]

____deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
____shrubs
____grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered? [help]

This is a non-project action. Not applicable.

c. List threatened and endangered species known to be on or near the site. [help]

This is a non-project action. Not applicable.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

This is a non-project action. Not applicable.

e. List all noxious weeds and invasive species known to be on or near the site.

This is a non-project action. Not applicable.

5. **Animals**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Examples include: [help]

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site. [help]

This is a non-project action. Not applicable.

c. Is the site part of a migration route? If so, explain. [help]

This is a non-project action. Not applicable.

d. Proposed measures to preserve or enhance wildlife, if any: [help]

This is a non-project action. Not applicable.

e. List any invasive animal species known to be on or near the site.

This is a non-project action. Not applicable.

6. **Energy and natural resources**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

This is a non-project action. Not applicable.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

This is a non-project action. Not applicable.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

This is a non-project action. Not applicable.

7. **Environmental health**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal?
If so, describe. [help]

This is a non-project action. Not applicable.

1) Describe any known or possible contamination at the site from present or past uses.

This is a non-project action. Not applicable.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

This is a non-project action. Not applicable.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

This is a non-project action. Not applicable.

4) Describe special emergency services that might be required.

This is a non-project action. Not applicable.

5) Proposed measures to reduce or control environmental health hazards, if any:

The City's Wastewater Comprehensive Plan and Spill Response Plan address measures for preventing and responding to environmental and public health hazards.

b. **Noise**

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [help]

This is a non-project action. Not applicable.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [help]

This is a non-project action. Not applicable.

3) Proposed measures to reduce or control noise impacts, if any: [help]

This is a non-project action. Not applicable.

8. **Land and shoreline use**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

This is a non-project action. Not applicable.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

This is a non-project action. Not applicable.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

This is a non-project action. Not applicable.

c. Describe any structures on the site. [help]

This is a non-project action. Not applicable.

d. Will any structures be demolished? If so, what? [help]

This is a non-project action. Not applicable.

e. What is the current zoning classification of the site? [help]
N/A

f. What is the current comprehensive plan designation of the site? [help]

This is a non-project action. Not applicable.

g. If applicable, what is the current shoreline master program designation of the site? [help]

This is a non-project action. Not applicable.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

This is a non-project action. Not applicable.

i. Approximately how many people would reside or work in the completed project? [help]

This is a non-project action. Not applicable.

j. Approximately how many people would the completed project displace? [help]

This is a non-project action. Not applicable.

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

This is a non-project action. Not applicable.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

This is a non-project action. Not applicable.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

This is a non-project action. Not applicable.

9. **Housing**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

This is a non-project action. Not applicable.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

This is a non-project action. Not applicable.

c. Proposed measures to reduce or control housing impacts, if any: [help]

This is a non-project action. Not applicable.

10. **Aesthetics**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

This is a non-project action. Not applicable.

b. What views in the immediate vicinity would be altered or obstructed? [help]

This is a non-project action. Not applicable.

c. Proposed measures to reduce or control aesthetic impacts, if any: [help]

This is a non-project action. Not applicable.

11. **Light and glare**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

This is a non-project action. Not applicable.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

This is a non-project action. Not applicable.

c. What existing off-site sources of light or glare may affect your proposal? [help]

This is a non-project action. Not applicable.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]
Standards are included in the regulations related to digital and lighted signage to ensure that light and glare impacts are minimized.

This is a non-project action. Not applicable.

12. **Recreation**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

This is a non-project action. Not applicable.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

This is a non-project action. Not applicable.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

This is a non-project action. Not applicable.

13. **Historic and cultural preservation**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe. [help]

This is a non-project action. Not applicable.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

This is a non-project action. Not applicable.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

This is a non-project action. Not applicable.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

This is a non-project action. Not applicable.

14. **Transportation**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

This is a non-project action. Not applicable.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

This is a non-project action. Not applicable.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

This is a non-project action. Not applicable.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

This is a non-project action. Not applicable.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help]

This is a non-project action. Not applicable.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

This is a non-project action. Not applicable.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

This is a non-project action. Not applicable.

h. Proposed measures to reduce or control transportation impacts, if any: [help]

This is a non-project action. Not applicable.

15. **Public services**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

This is a non-project action. Not applicable.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

This is a non-project action. Not applicable.

16. **Utilities**

This is a non-project action. Projects taking place as a result of the Wastewater Comprehensive Plan will occur and may have an impact to this element of the environment. However, each project will be required to develop an independent environmental evaluation based upon site specific impacts in a programmatic approach. Projects will be conditioned to mitigate impacts at the time of project application and will be based upon impacts identified for the specific site.

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

This is a non-project action. Not applicable.

C. SIGNATURE [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Name of signee Brandon McAllister, Utility Engineer

Position and Agency/Organization City of Lacey

Date Submitted: October 22, 2014

D. **SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS** [help]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Not applicable.

Proposed measures to avoid or reduce such increases are:

Not applicable.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Not applicable.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Not applicable.

3. How would the proposal be likely to deplete energy or natural resources?

Additional pump stations will consume electric power.

Proposed measures to protect or conserve energy and natural resources are:

The City currently uses green power as part of its electricity source, the Wastewater Comprehensive plan also identifies ways to reduce future pump stations and in some cases ways to eliminate existing installations.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Not applicable.

Proposed measures to protect such resources or to avoid or reduce impacts are:

Not applicable.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Not applicable.

Proposed measures to avoid or reduce shoreline and land use impacts are:

Not applicable.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Not applicable.

Proposed measures to reduce or respond to such demand(s) are:

Not applicable.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The Wastewater Comprehensive Plan has every attempt to maintain full compliance with all applicable regulations and requirements.

Appendix L

Washington Water/Wastewater Agency Response Network (WAWARN)

LACEY CITY COUNCIL MEETING
June 26, 2014

SUBJECT: **Mutual Aid and Assistance Agreement for Utilities**

RECOMMENDATION: **Authorize City Manager to sign Mutual Aid and Assistance Agreement for Washington State for Intrastate Water/Wastewater Agency Response Network (WARN).**

STAFF CONTACT: Scott Spence, City Manager
Scott Egger, Public Works Director

ORIGINATED BY: Public Works Department

ATTACHMENTS: 1. About WAWARN Handout
2. Member List
3. Agreement

FISCAL NOTE: No costs are associated with joining this network.

PRIOR REVIEW: Utilities Committee June 13, 2014

BACKGROUND:

One of the keys to effective and efficient emergency response is emergency preparedness and coordination with other agencies. Mutual Aid agreements have been listed as a primary tool to have in place prior to an actual emergency.

WA WARN is a Water/Wastewater Agency Response Network that allows water and wastewater utilities to receive rapid mutual aid and assistance from other member agencies. The WA WARN website provides members with free emergency planning, response and recovery information before, during and after an emergency. A member that needs help can request resources needed to respond from other member agencies. This can include emergency equipment, pumps, generators, chlorinators, treatment plant operators and other trained personnel. Members are not obligated to respond, but if they do, they are reimbursed for the total direct and indirect cost of labor, equipment, materials and supplies. Equipment costs will be no less than the Federal Emergency Management

Agency's (FEMA) Schedule of Equipment Rates. The agreement also includes a section on the Duty to Indemnify.

At its June 13, 2014, meeting, the Utilities Committee recommended full City Council approval of the Mutual Aid and Assistance Agreement for Washington State for Intrastate Water/Wastewater Agency Response Network (WARN).

ADVANTAGES:

1. Signatories have a pre-established relationship under which they are able to share resources even in both declared and undeclared emergencies.

DISADVANTAGES:

1. None.

About WAWARN

Based on other AWWA models, WAWARN is designed to provide a utility-to-utility response during an emergency.

The WAWARN Web site does this by providing its members with emergency planning, response, and recovery information before, during, and after an emergency. As the nationwide WARN system expands, it will become easier to provide mutual aid to other states as needed.

How does a utility get assistance during an emergency?

The WAWARN member who needs help identifies the resources needed to respond. The WAWARN member can either directly contact a fellow WAWARN member who has the necessary resources or use a state specific process of requesting aid.

Through the WAWARN Web site, a member can request emergency equipment (pumps, generators, chlorinators, evacuators, etc.) and trained personnel (eg. treatment plant operators) that they may need in an emergency.

Are member utilities require to respond and send resources?

There is no obligation to respond. It is up to the lending utility to determine if resources are available.

What role does the Agreement play?

During an emergency, the process and procedures to give and receive assistance are governed by articles in the WAWARN agreement. The agreement covers issues such as requesting assistance, giving assistance, reimbursement, workers' compensation, insurance, liability, and dispute resolution.

How is WARN different from an existing statewide mutual aid program managed by emergency management?

WAWARN agreements do not require a local declaration of emergency. Statewide programs do not include private utilities; WAWARN agreements do. Statewide agreements are managed by the state emergency management agency; WARN is managed by utilities.

The WAWARN program provides its member utilities with:

- A standard omnibus mutual assistance agreement and process for sharing emergency resources among members statewide.
- The resources to respond and recover more quickly from a disaster.
- A mutual assistance program consistent with other statewide mutual aid programs.
- A forum for developing and maintaining emergency contacts and relationships.

- New ideas from lessons learned in disasters.

WAWARN Benefits

- **No cost to become a member**
- Increased emergency preparedness and coordination
- Enhance access to specialized resources
- A single agreement provides access to all member utilities statewide
- Provides access to resources during an emergency without precontractual limitations or retainer fees
- Signatories have a pre-established relationship under which they are able to share resources during an emergency at the discretion of each participating agency
- Is consistent with the National Incident Management System (NIMS)
- Provides a list of emergency contacts and phone numbers
- Reduces administrative conflicts
- Agreement contains indemnification and workers' compensation provisions to protect participating utilities, and provides for reimbursement of costs, as needed
- Increases hope that recovery will come quickly

There are two sides to this Web site. The public side is open to anyone to view. This side gives you basic information about WAWARN and how to join.

The second side, the resource database, is only open to members **who have signed the agreement**, and it is free!

Member Utilities

All WaWARN member utilities, including utilities who have applied for membership but have not signed the MAA:

Utility Name	County	Region
Carbonado Water Dept.	Pierce	Southwest
Cedar River Water & Sewer District	King	Northwest
Chelan Co PUD #1	Chelan	Central
City of Bellevue Utilities Department	King	Northwest
City of College Place	Walla Walla	Eastern
City of Mercer Island	King	Northwest
City of Newport	Pend Oreille	Eastern
City of Riverside	Okanogan	Central
City of Spokane	Spokane	Eastern
City of Sprague	Lincoln	Eastern
City of Yakima	Yakima	Central
City of Yakima	Yakima	Central
Clark Regional Wastewater District	Clark	Southwest
Coal Creek Utility District	King	Northwest
Covington Water District	King	Northwest
Cross Valley Water District	Snohomish	Northwest
East Wenatchee Water District	Douglas	Central
Everett Public Works	Snohomish	Northwest
Firgrove Mutual Water Company	Pierce	Northwest
Fruitland Mutual Water Company	Pierce	Northwest
Highland Water District	Snohomish	Northwest
Highline Water District	King	Northwest
King Co Water District # 111	King	Northwest
King Co Water District #117	King	Northwest
King Co Water District #125	King	Northwest
King Co Water District #20	King	Northwest
King Co Water District #45	King	Northwest
King Co Water District #49	King	Northwest
King Co Water District #54	King	Northwest
King Co Water District #90	King	Northwest
Kitsap PUD #1	Kitsap	Southwest
Kittitas Co Water District #5	Kittitas	Northwest

Kittitas Co Water District #7	Kittitas	Central
Klickitat PUD #1	Klickitat	Central
Lake Whatcom Water & Sewer District	Whatcom	Northwest
Lakehaven Utility District	King	Northwest
Lakewood Water District	Pierce	Northwest
Liberty Lake Sewer & Water District	Spokane	Eastern
Midway Sewer District	King	Northwest
Mt. View-Edgewood Water Co	Pierce	Northwest
Mukilteo Water & Wastewater District	Snohomish	Northwest
Nob Hill Water	Yakima	Central
Northshore Utility District	King	Northwest
Olympic View Water & Sewer District	Snohomish	Northwest
Pasadena Park Irrigation District #17	Spokane	Eastern
Penn Cove Water & Sewer District	Island	Northwest
PUD No. 1 of Thurston County	Thurston	Northwest
Ronald Wastewater District	King	Northwest
Sammamish Plateau Water & Sewer District	King	Northwest
Seattle Public Utilities	King	Northwest
Shoreline Water District	King	Northwest
Skagit Co PUD #1	Skagit	Northwest
Snohomish Co PUD #1	Snohomish	Northwest
Snoqualmie Pass Utility District	King	Northwest
Soos Creek Water & Sewer District	King	Northwest
Southwest Suburban Sewer District	King	Northwest
Spanaway Water Company	Pierce	Northwest
Tacoma Water	Pierce	Northwest
Town of Rosalia	Whitman	Eastern
Valley of the Horses Water District	Spokane	Eastern
Valley View Sewer District	King	Northwest
Washington Water Service Company	Pierce	Northwest
Water District #19	King	Northwest
Water District #19	King	Northwest
West Sound Utility District	Kitsap	Southwest
Woodinville Water District	King	Northwest

Total Members: 66

Mutual Aid and Assistance Agreement for Washington State for Intrastate Water/Wastewater Agency Response Network (WARN)
As of: 04/13/09

This Agreement ("Agreement") is made and entered into by public water and wastewater utilities that have executed this Agreement.

ARTICLE I
PURPOSE

Recognizing that emergencies may require aid or assistance in the form of personnel, equipment, and supplies from outside the area of impact, the signatories hereby establish an Intrastate Network for Mutual Aid and Assistance (the "Network"). Through the Network, Members (as further defined in this Agreement) may coordinate response activities and share resources during emergencies.

ARTICLE II
DEFINITIONS

A. Authorized Official – An employee or officer of a Member agency that is authorized to:

1. Request assistance;
2. Offer assistance;
3. Decline to offer assistance;
4. Decline to accept offers of assistance, and
5. Withdraw assistance under this Agreement.

B. Emergency – A natural or human-caused event or circumstance causing, or imminently threatening to cause, loss of life, injury to person or property, human suffering, significant financial loss, or damage to environment. For example, Emergencies may include fire, explosion, flood, severe weather, drought, earthquake, volcanic activity, spills or releases of oil or hazardous material, contamination, utility or transportation emergencies, disease, blight, infestation, civil disturbance, riot, intentional acts, sabotage and war that are, or could reasonably be beyond the capability of the services, personnel, equipment, and facilities of a Member to fully manage and mitigate by itself.

C. Member – Any public agency which provides supply, transmission or distribution of water; or collection, conveyance or treatment services of storm water or waste water that executes this Agreement (individually a "Member" and collectively the "Members"). The Members are further classified as follows:

1. Requesting Member – A Member who requests aid or assistance under the Network.
2. Responding Member – A Member that responds to a request for aid or assistance under the Network.

D. Period of Assistance – The period of time when a Responding Member

assists a Requesting Member in response to a Request for Assistance. The Period of Assistance commences when personnel, equipment, or supplies depart from Responding Member's facility and ends when all of the resources return to the Responding Member's facility (*i.e.*, portal to portal).

E. National Incident Management System (NIMS): The national, standardized system for incident management and response that sets uniform processes and procedures for emergency response operations.

F. Associate – Any non-utility participant approved by the Statewide Committee that provides a support role for the Network (such as the State Department of Health). An Associate does not execute this Agreement.

ARTICLE III
ADMINISTRATION

The Network is administered through Regional Committees and a Statewide Committee.

A. Regional Committees. The State is divided into regions that are geographically the same as the existing Department of Health Office of Drinking Water regions of the state, with the exception that the eastern region is divided to create a central region. Each region has a Regional Committee. Each Member within a region may appoint one person to be a member of its Regional Committee. Only those Regional Committee members appointed by Members are entitled to vote on matters before the Regional Committee. An Associate may be a non-voting member of a Regional Committee. Each Regional Committee shall elect a Chair by majority vote of the voting members of that Regional Committee and shall meet annually to review the operations and procedures of the Network.

B. Statewide Committee. The Chairs of the Regional Committees are the voting members of the Statewide Committee. An Associate may be a non-voting member of the Statewide Committee. Further, the Statewide Committee also may include as non-voting members representatives from the Washington State Department of Health Office of Drinking Water, Washington State Department of Ecology, Washington State Emergency Management Division, Rural Community Assistance Corporation, Evergreen Rural Water of Washington, Washington State Public Health Laboratory, EPA Region 10, Washington Association of Sewer and Water Districts, and the Washington PUD Association. Under the leadership of a Statewide Committee Chair elected by majority vote of the voting members of the Statewide Committee, the Statewide Committee shall plan and coordinate emergency planning and response activities for the Network.

C. Members' administrative activities shall be voluntary and members shall not be required to finance the administration of the Network, nor shall the Network hold real or personal property.

ARTICLE IV
PROCEDURES

In coordination with the Regional Committees, and emergency management and public health systems of the State, the Statewide Committee shall develop and adopt operational and planning procedures for the Network that are consistent with this Agreement. The Statewide Committee shall review these procedures at least annually and shall update them as needed.

ARTICLE V
REQUESTS FOR ASSISTANCE

A. Member Information: Promptly after executing this Agreement, the signatory Member shall deliver the following to the Statewide Committee: (1) a certified copy of the action of Member's governing body that authorized the signing of this Agreement and (2) an original signed Agreement. Each Member shall identify an Authorized Official and one alternate Authorized Official. Each Member shall provide current 24-hour contact information for its Authorized Officials to the Statewide Committee, which shall maintain a current list of all Members and the contact information for their Authorized Officials. The Statewide Committee shall provide to all Members an updated version of this list annually and whenever there is an addition or withdrawal of a Member and whenever there is a change of Authorized Officials' contact information.

B. Request for Assistance. In the event of an Emergency, a Member's Authorized Official may request mutual aid and assistance from Members ("Request for Assistance"). Requests for Assistance may be made orally or in writing, provided that when a Request for Assistance is made orally, the Requesting Member shall, as soon as practicable, identify and transmit in writing the personnel, equipment and supplies requested. Requesting Members shall direct Requests for Assistance to Authorized Officials. The Statewide Committee shall provide specific protocols for Requests for Assistance as part of the procedures created pursuant to Article IV of this Agreement.

C. Response to a Request for Assistance – Members are not obligated to respond to a Request for Assistance. After a Member receives a Request for Assistance, the receiving Member's Authorized Official shall evaluate whether to respond to the Request for Assistance, whether resources are available to respond, or if other circumstances would hinder response. Following the evaluation, the Authorized Official shall inform, as soon as possible, the Requesting Member whether the Member will respond to the Request for Assistance. If the Member is willing and able to provide assistance, the Member shall inform the Requesting Member of the type of available resources and the approximate arrival time of such assistance.

D. Discretion of Responding Member's Authorized Official – No Member has any duty to respond to a Request for Assistance. When a Member receives a Request for Assistance, the Authorized Official shall have sole and absolute discretion

as to whether or not to respond to the Request for Assistance, and if responding in the affirmative, to determine the availability of resources to be made available to the Requesting Member. The response of a Member's Authorized Official regarding the availability of resources to a Requesting Member shall be final.

E. No Liability for Failure to Respond – No Member will be liable to any other Member for deciding not to respond to a Request for Assistance or otherwise failing to respond to a Request for Assistance. All Members hereby waive all claims against all other Members arising from or relating to any Member's decision to not respond to a Request for Assistance or to any Member's failure to respond to a Request for Assistance.

ARTICLE VI
RESPONDING MEMBER PERSONNEL

A. National Incident Management System-When providing assistance under this Agreement, the Requesting Member and Responding Member are encouraged (but are not obligated) to be organized and function under NIMS.

B. Coordination and Records – Employees of the Responding Member will remain under the direction and control of the Responding Member to the fullest extent possible. The Responding Member is an independent contractor at all times. The Requesting Member's Authorized Official shall coordinate response activities with the designated supervisor(s) of the Responding Member(s). The Responding Member's designated supervisor(s) shall keep accurate records of work performed by personnel during the Period of Assistance and for the equipment and supplies provided during work.

C. Food and Shelter – Whenever practical, Responding Member personnel must be self sufficient for up to seventy-two (72) hours. Whenever practical, the Requesting Member shall supply adequate food and shelter for Responding Member personnel. If the Requesting Member is unable to provide food and shelter for Responding Member personnel, the Responding Member's designated supervisor is authorized to secure the food and shelter necessary to meet the needs of its personnel.

D. Communication – The Requesting Member shall provide Responding Member personnel with communications equipment as available, radio frequency information to program existing radios if appropriate, or telephone contact numbers, in order to facilitate communications with local responders and utility personnel. Each Requesting Member shall provide contact information for an individual with whom Responding Member's personnel may coordinate while en-route for access, staging instructions and other logistical requirements.

E. Status - Unless otherwise provided by law, the Responding Member's officers and employees shall have the same powers, duties, rights, privileges, and immunities as if they were performing their duties in the jurisdiction in which they are

normally employed.

F. Licenses and Permits – To the extent permitted by law, Responding Member personnel that hold licenses, certificates, or permits evidencing professional, mechanical, or other skills shall be allowed to carry out activities and tasks relevant and related to their respective credentials during a Period of Assistance.

ARTICLE VII
RIGHT TO WITHDRAW RESOURCES

A. Right to Withdraw - A Responding Member may withdraw some or all of its resources at any time for any reason, as determined in the Responding Member's sole and absolute discretion. The Responding Member shall communicate written or oral notice of intention to withdraw all or some of a Responding Member's resources to the Requesting Member's Authorized Official as soon as practicable under the circumstances. To the greatest extent possible, but without limiting in any way a Responding Member's sole and absolute discretion, a Responding Member's determination to withdraw some or all of its resources provided to a Requesting Member should consider the status of the incident and incident stability, to minimize any adverse impacts from the withdrawal of resources by a Responding Member.

B. No Liability for Withdrawal - No Member will be liable to any other Member for first responding to a Request for Assistance by providing resources (such as personnel, materials, and equipment) and later withdrawing or refusing to continue to provide some or all of those resources. All Members hereby waive all claims against all Members arising from or relating to such a withdrawal or refusal.

ARTICLE VIII
COST- REIMBURSEMENT

The Requesting Member shall reimburse the Responding Member for all costs incurred by the Responding Member during a Period of Assistance, unless otherwise agreed in writing by both Members.

A. Personnel – The Requesting Member shall reimburse the Responding Member for personnel costs incurred for work performed during a Period of Assistance. Responding Member personnel costs will be calculated according to the terms provided in their employment contracts, hourly rate schedules or other conditions of employment. The Responding Member's designated supervisor(s) shall keep accurate records of work performed by personnel during a Period of Assistance. The Requesting Member shall include in its reimbursement of the Responding Member all personnel costs, including salaries or hourly wages, costs for fringe benefits, and indirect costs.

Unless otherwise agreed in writing, the Requesting Member shall reimburse the Responding Member for all reasonable and necessary costs associated with providing food and shelter for the Responding Member's personnel, if the food and shelter are

not provided by the Requesting Member. The Requesting Member is not required to reimburse the Responding Member for food and shelter costs in excess of State per diem rates unless the Responding Member demonstrates in writing that the excess costs were reasonable and necessary under the circumstances.

B. Equipment – The Requesting Member shall reimburse the Responding Member for the use of equipment during a Period of Assistance, including, but not limited to, reasonable rental rates, all fuel, lubrication, maintenance, transportation, and loading/unloading of loaned equipment. The Requesting Member shall return all equipment to the Responding Member in good working order as soon as is practicable and reasonable under the circumstances. If equipment cannot be returned in good working order, then Requesting Member shall either provide in-kind replacement equipment to Responding Member at no cost to Responding Member or pay to Responding Member the actual replacement cost of the equipment. Reimbursement rates for equipment use will be no less than the Federal Emergency Management Agency's (FEMA) Schedule of Equipment Rates. If a Responding Member uses rates different from those in the FEMA Schedule of Equipment Rates, the Responding Member shall provide such rates orally or in writing to the Requesting Member prior to supplying the equipment. If reimbursement rates are to be different than those in the FEMA Schedule of Equipment rates, Responding Member and Requesting Member shall agree in writing on which rates will be used prior to dispatch of the equipment to the Requesting Member. Requesting Member shall reimburse for equipment not referenced on the FEMA Schedule of Equipment Rates based on actual recovery of costs. If a Responding Member is required to lease equipment while its equipment is being repaired because of damage due to use during a Period of Assistance, Requesting Member shall reimburse Responding Member for such rental costs.

C. Materials and Supplies – The Requesting Member shall reimburse the Responding Member in kind or at actual replacement cost, plus handling charges, for use of expendable or non-returnable supplies by the Responding Member during a Period of Assistance. The Responding Member shall not charge direct fees or rental charges to the Requesting Member for other supplies and reusable items that are returned to the Responding Member in a clean, damage-free condition. Reusable supplies that are returned to the Responding Member with damage will be treated as expendable supplies for purposes of cost reimbursement.

D. Payment Period – In order to be reimbursed, the Responding Member shall provide an itemized bill to the Requesting Member no later than ninety (90) days following the end of the Period of Assistance for all expenses incurred by the Responding Member while providing assistance to a Requesting Member under this Agreement. The Responding Member may request additional time to submit the itemized bill, and Requesting Member shall not unreasonably withhold consent to such a request. The Requesting Member shall pay the itemized bill in full on or before the forty-fifth (45th) day following the billing date. The Requesting Member may request additional time to pay the itemized bill, and Responding Member shall not unreasonably withhold consent to such a request, but in no event will payment in full occur later than one year after the date a final itemized bill is submitted to the

Requesting Member. If a Responding Member disputes a portion of an itemized bill, the Requesting Member shall promptly pay those portions of the bill not under dispute, pending the resolution of the payment of the disputed portion of the bill.

E. Records - Where a Responding Member provides assistance to a Requesting Member under this Agreement, both Members shall provide the other Member access to the books, documents, notes, reports, papers and other records relevant to this Agreement for the purposes of reviewing the accuracy of a cost bill or making or undergoing a financial, maintenance or regulatory audit. Both Members shall maintain these records for at least three (3) years or longer where required by law.

ARTICLE IX
DISPUTES
NEGOTIATION

Members shall first attempt to resolve any controversy, claim or other dispute arising out of or relating to this Agreement by direct negotiation.

MEDIATION

To the extent not resolved by direct negotiation, Members shall mediate any controversy, claim or other dispute arising out of or relating to this Agreement. Mediation is a condition precedent to arbitration. Unless the disputing Members agree otherwise, the mediation will be administered by the American Arbitration Association (AAA) under its Construction Industry Mediation Procedures. The disputing Members shall pay in equal shares the mediator's fee and any filing fees. Unless otherwise agreed by the disputing Members, the disputing Members shall (1) hold the mediation no later than thirty (30) days after a disputing Member delivers a request for mediation to the other disputing Members and (2) hold the mediation at the location of the Requesting Member. Agreements reached in mediation will be enforceable as settlement agreements.

ARBITRATION

To the extent not resolved by mediation, Members shall arbitrate all controversies, claims and other disputes arising out of or relating to this Agreement. Unless the disputing Members agree otherwise, the arbitration will be administered by the AAA in accordance with its Construction Industry Arbitration Rules in effect on the date a disputing Member makes a demand for arbitration. A disputing Member may make a demand for arbitration before negotiation or mediation if it appears that a claim might be barred by a statute of limitations if the demand were made after the negotiation or mediation. However, in such a case the arbitration will be stayed until the conclusion of negotiation and mediation. The decision and award rendered by the arbitrator(s) shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE X
DUTY TO INDEMNIFY

To the extent of its fault, a Member shall defend, indemnify, and hold harmless all other Members, their elected officials, Authorized Officials, officers, employees and agents from any and all costs, claims, judgments, losses, awards of damage, injury, death and liability of every kind, nature and description, including the reasonable cost of defense and attorneys' fees, directly or indirectly arising from or relating to this Agreement (collectively, "Indemnified Claims"). This indemnity obligation extends to all Indemnified Claims against a Member by an employee or former employee of another Member, and for this purpose, by mutual negotiation, each Member hereby expressly waives, with respect to each other Member only, all immunity and limitation under any applicable industrial insurance act, including Title 51 of the Revised Code of Washington, other worker compensation acts, disability benefit acts or other employee benefit act of any jurisdiction which would otherwise be applicable in the case of Indemnified Claims.

ARTICLE XI
WORKER'S COMPENSATION AND SITE CONDITIONS

The Responding Member is responsible for providing worker's compensation benefits and administering worker's compensation for its employees. The Requesting Member is responsible for providing worker's compensation benefits and administering worker's compensation for its employees.

Each Member shall promptly identify to the other Members concerns about site safety, environmental concerns, and other working conditions. The Safety Officer appointed within the Incident Command System during the Period of Assistance shall address specific safety conditions and mitigations.

ARTICLE XII
NOTICE

Unless otherwise provided in this Agreement, all notices must be in writing. Notice to a Member must be delivered to the Member's Authorized Official.

ARTICLE XIII
EFFECTIVE DATE

This Agreement shall be effective with respect to each Member when that Member's authorized representative executes the Agreement. The Statewide Committee shall maintain a master list of all Members.

ARTICLE XIV
WITHDRAWAL

A Member may withdraw from this Agreement at any time by providing to the Statewide Committee Chair written notice of withdrawal signed by the withdrawing Member's Authorized Official or other person authorized by the withdrawing Member's governing body. Any withdrawal will be effective upon receipt by the Statewide Committee Chair of the notice of intent to withdraw. If there is no Statewide Committee Chair, the withdrawing Member shall provide written notice to each Member in its region, and the withdrawal will be effective upon delivery of those notices. Once withdrawal from this Agreement is effective, the withdrawing Member will have no further obligations under this Agreement, except that withdrawal from this Agreement will not affect any indemnification or reimbursement obligation under this Agreement that arises prior to the effective date of the withdrawal.

ARTICLE XV
TERMINATION

This Agreement shall terminate in its entirety when there are less than two Members. Termination of this Agreement will not affect any indemnification or reimbursement obligation under this Agreement arising prior to the termination. The Statewide Committee Chair shall provide written notice of termination to all remaining Members of the Agreement.

ARTICLE XVI
AMENDMENT

This Agreement may be amended if, after written notice of a proposed amendment to all Members, the proposed amendment is approved by a majority of Members in each region. The Statewide Committee Chair shall provide written notice to all Members of approved amendments. Approved amendments will take effect sixty (60) days after the date the notice is sent to the Members.

ARTICLE XVII
SEVERABILITY

The parties agree that if any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular term or provision held to be invalid.

ARTICLE XVIII
PROHIBITION ON THIRD PARTIES AND ASSIGNMENT OF RIGHTS/DUTIES

Notwithstanding rights of subrogation asserted by a Member's insurance provider, this Agreement is for the sole benefit of the Members and no other person or entity shall have any rights under this Agreement as a third party beneficiary nor shall any Member owe duty to a third party not a signatory of this Agreement by virtue of this Agreement. Assignments of benefits and delegations of duties created by this

Agreement are prohibited and of no effect.

ARTICLE XIX
GOVERNING LAW

This Agreement is governed by the law of the State of Washington, specifically RCW 39.34, Interlocal Cooperation Act.

ARTICLE XX
EXECUTION IN COUNTERPARTS

This Agreement may be executed in any number of counterparts and by different parties in separate counterparts. Each counterpart when so executed shall be deemed to be an original and all of which together shall constitute one and the same Agreement.

The water and wastewater utility listed below executed this Agreement on this _____ day of _____ 201 .

Water/Wastewater Utility:_____

By:_____

Title:_____

_____
Please Print Name

By:_____

Title_____

_____
Please Print Name

Approved as to form

By:_____
Attorney for Member

_____
Please Print Name

Appendix M

Training Policy

Memo

Date: December 19th 2012

To: Water/Wastewater Operations Staff

From: Terry Cargil, Water/Wastewater Supervisor

Subject: City of Lacey Water/Wastewater Certification and Training Program Policy.

New changes to our current Department Certification Program are in effect as of January 2013.

In the past all Water/Wastewater employees were required by their job descriptions to maintain either a water or wastewater certification. This was a City requirement not necessarily a State regulation as there are only a handful of positions within the Water Department that are actually mandated by the State of Washington to hold specific certification levels. All Washington State mandated certifications are associated with water operation. There are no Washington State mandated certifications required for wastewater collection operators.

Beginning in January 2013, Water/Wastewater personnel who are not required to maintain certification according to State of Washington regulations will no longer be required by the City of Lacey to maintain a Water or Wastewater certification.

These job description changes have been brought about as a result of the City's desire to minimize the administrative effort associated with maintaining certification levels and in consideration of personal preferences of staff who may not wish to maintain certifications if not mandated by the City.

History

The City of Lacey implemented the certification requirement to establish a minimum level of Operator competency even though the State of Washington Certification does not require all Operators to be certified. The intent was that employees would gain the minimum skill and knowledge levels to comply with all important water quality aspects associated with protecting the public/customers while performing their jobs in the Water Department and competency working in the Wastewater Department.

How the program will work when implemented in 2013

New employees joining the department must either have a certification or will have to go through the certification process to meet the new minimum City requirement. Once the certification is obtained, it will be up to the individual's discretion as to whether they wish to maintain their certification or not. The City of Lacey will only require certification of personnel that are mandated by the State of Washington to hold specific certifications within the department.

The following classifications and designations are required to maintain their current certification levels:

Water/Wastewater Supervisor – Water Distribution Manager 4, Basic Water Treatment Operator and Cross Connection Control Specialist

Water Production Senior Technician - Water Distribution Manager 3, Basic Treatment Operator, Water Treatment Plant Operator II and Cross Connection Control Specialist.

Water Treatment Plant Operators – Water Treatment Plant Operator I

Designated Water Treatment Plant Operator - Backflow Assembly Tester

Designated Control Technician - Backflow Assembly Tester

Designated Alternative Water Treatment Plant Operators - Water Treatment Plant Operator I

Note* Water Treatment Plant certification is voluntary for those individuals who are not classified by their City of Lacey Job Descriptions as Water Treatment Plant Operators and who are maintaining their certification levels in order to support Water Treatment Plant Stand-by Operations. These individuals are considered Designated Alternative Water Treatment Plant Operators and are compensated an additional 5% pay and must maintain a Water Treatment Plant Operator I certification level in order to participate in the Water Treatment Plant Stand-by Rotation Program.

Can you choose to maintain your certification even though it is not required by the City?

Yes, however there are changes associated with how the program will be supported administratively. The City will continue to pay for training expenses related to maintaining your certification and pay for your renewal fees if you decide to maintain your certification. It will be <u>your responsibility</u> to track your own CEU's. It will also be <u>your responsibility</u> to identify all training that you want to attend as referenced under training option details below.

What happens if you do not earn enough CEU's during a reporting period to renew your certification?

The City will <u>not</u> pay for re-certification or provide study time for re-certification however, if you achieve re-certification on your own time and expense, the City will then pay for your continued training and renewal fees associated with maintaining your certification.

Will the City continue to provide training even if you do not maintain a water or wastewater certification?

Yes, the same training opportunities will be made available to employees that do not choose to maintain certifications.
You can select any one of the three training options. Employees who are maintaining certification levels have priority over non-certified employees when associated with training and registration availability.

What training will the City pay for?

There are three training options:

You can make a selection to **1.)** Attend a WOW conference and three local training workshops during the three year reporting period or, **2.)** Attend six local training workshops during the three year CEU reporting period or, **3.)** Attend a water/wastewater conference of your choice and three local workshops during the three year reporting period. Your training selection/choice must be approved by your immediate Supervisor and submitted in writing to the Water/Wastewater Department Assistant III (Cindy Ruh) by January 15th the year of a new CEU reporting period.

What details are associated with the training options?

The intent is to provide flexibility for staff to have training opportunities available that will allow them to maintain their certifications while ensuring that sufficient coverage is available in operations to support routine and emergency efforts during training sessions. Local training is identified as training that is within sixty miles of Lacey and does not require overnight stay or expenses for per Diem. Training registration and travel expense requests must be routed to the Water/Wastewater Department Assistant III who will complete your registration and secure your travel funds.

If you choose to select option: 1.) Attend a WOW conference and three local training workshops during the three year reporting period:

The number of participants that are designated to attend a WOW conference will be divided into 3rds so that an equal number of staff will attend each year of the three year CEU reporting period. This will better ensure job coverage while employees are out of town attending training sessions. WOW conferences provide the best training value and opportunity to secure CEU's over other training conferences. The CEU's earned from the WOW conference combined with the CEU's earned from attending three local training workshops, will fulfill the 3.0 CEU requirements for the three year reporting period if you wish or need to maintain your certification. Typically 0.7 CEU's are awarded for one day workshops. The Department Assistant III will make all the necessary arrangements associated WOW Conference registration, travel and per Diem. You must submit all local workshop registration information to the Water Department Assistant III at least two months in advance of training.

If you choose to select option: 2.) Attend six local training workshops during the three reporting period:

Local training is identified as training that is within sixty miles of Lacey and does not require overnight stay or expenses for per Diem. 0.7 CEU's are typically assigned for daily workshops so, the opportunity to attend six workshops during the three year reporting period will provide the CEUs required to maintain your certification level for reporting periods if you wish or need to maintain your certification. You must submit all registration information to the Water Department Assistant III at least two months in advance of training.

If you choose to select option: 3.) Attend three local training workshops and a different water/wastewater conference in place of the WOW conference during the three year reporting period. The conference must be located in Washington State and the cost to attend the conference must be comparable to the cost associated with a WOW conference. You must submit all registration information to the Water Department Assistant III at least two months in advance of training. The CEU's earned from the water/wastewater conference combined with the CEU's earned from attending three local training workshops; need to fulfill the 3.0 CEU requirements for the three year reporting period if you wish or need to maintain your certification. Typically 0.7 CEU's are awarded for one day workshops.

Will the City Pay for Certification Upgrades?

Yes, if you qualify to promote to a higher certification level the City will pay for you to attend a certification exam review and pay for the examination and associated renewals.

Will the City pay for other training opportunities not related to certification training however may be beneficial to job performance?

Yes, on a case by case basis specialized training may be paid for by the City with approval of your Senior Technician and the Water/Wastewater Maintenance Supervisor.

Can we attend wastewater collection training opportunities?

Yes, if you are assigned to work in wastewater collections or have a certification in wastewater collections you can attend a wastewater conference once every three years and local training when available and upon approval of your immediate Supervisor and Water/Wastewater Maintenance Supervisor. You must submit all registration information and forms to the Water Department Assistant III at least two months in advance of training.

Appendix N

Sanitary Sewer Development Guidelines and Public Works Standards

CHAPTER 7

7.000 SANITARY SEWER

7A GENERAL CONSIDERATIONS

7A.010 General

Sanitary sewage refers to waste water derived from domestic, commercial and industrial pretreated waste to which storm, surface, and ground water are not intentionally admitted. Pretreatment shall follow all the requirements as set forth by Lacey, Olympia, Tumwater, Thurston County Cleanwater Alliance (LOTT).

Any extension of Lacey's sanitary sewer system shall be approved by the Department of Public Works and shall conform to the City of Lacey Comprehensive Sanitary Sewer Plan, Thurston County Health Department, Department of Ecology (DOE), and Washington State Department of Health (DOH) requirements. Specific site conditions may require variance from the comprehensive plan and require approval from the Director of Public Works.

All new homes and businesses constructed within the corporate City limits or the City of Lacey's Urban Growth area shall connect to sewer provided that public sewer is within 200 feet of the property line of the parcel. Also, connection to sewer shall be required regardless of distance to existing sewer when made a condition of approval. In the case of private residential or commercial development where the developed property abuts a right-of-way in which a public sewer is located or where a service connection is otherwise provided, all structures generating sewage shall be required to connect to the public sewer regardless of distance from the public sewer (LMC 13.08.020). When additional improvements occur to a developed parcel within 200 feet of a public sewer main, all structures on that parcel shall be connected to sewer.

Anyone who wishes to extend or connect to the City's sewer system should contact the Department of Public Works for a sewer extension/connection fee estimate. The design of the proposed sewer shall start from the existing system. The manhole numbers shall start at the cast in place or from the first manhole at the connection point or existing manhole. Mains and fittings shall be located on the south or west side six feet off of centerline of the roadway, drive aisle, private drive or easement. On boulevards and arterial roadways, the location of the sewer main and fittings shall be located as directed by the City, see Chapter 4 street details.

Prior to the operation of any sewer systems, all Public Works improvements shall be completed and approved and all applicable fees shall be paid. In the event that a sewer project has no new water meters to trigger payment of the connection fees, the sewer connection fees shall be paid prior to the start of construction.

See Section 3.025 for definitions of specific sewers. Maintenance of the building or side sewer and lateral shall be the responsibility of the property owner.

7A.015 Building Sewers

Lots created by plats, re-plats, short plats, or binding site plans shall have a sewer service installed as required below. All building sewers are private and shall be installed in accordance with these standards and the Uniform Plumbing Code (UPC).

In single family subdivisions, (including mobile home and manufactured home subdivisions) a service shall be provided to each lot or pad. In cases where this is not practical, exceptions may be granted by the City in accordance with the UPC.

Duplexes on a gravity, grinder or S.T.E.P. sewer, regardless of the number of units on a lot, may have a single or dual service provided to each building. In the case where a S.T.E.P. system services a duplex, the duplex shall be served by one 3,000 gallon tank assembly. The tank servicing a duplex shall have a duplex electrical control box designed to operate if either side were to disconnect from the power source.

Services for multi-family and commercial complexes shall be as required in the IBC. Generally, this requires a minimum of one side sewer to each separate building. See section 7B.055 for more gravity side sewer requirements.

The location of all side sewers shall be marked on the face or top of the cement concrete curb with an "S" 1/4 inch into the concrete.

Commercial sewer laterals shall be connected at a manhole. If a manhole does not exist, a new manhole shall be installed.

All sewer services for private lots and those not required to connect to a manhole shall be extended from the main to 1 foot behind the right-of-way in the utility easement with a cleanout and then extended to the back of the utility easement.

7A.016 Grease Traps

Commercial systems that have kitchen or cooking facilities such as churches, community gathering places, restaurants, schools, etc. shall require installation of a grease trap.

The grease trap shall be designed, installed and constructed according to Thurston County Health Dept. requirements and the International Building Code. The grease trap shall be installed on the gravity building sewer between the building and the tank. Grease traps shall be approved and inspected by the City of Lacey Building Section of Community Development. Grease traps shall be maintained by the customer to the satisfaction of the

City of Lacey and DOH requirements. Verification of grease trap maintenance shall be provided to the City of Lacey yearly.

7A.017 Roof Drains and Stormwater discharges to Sanitary Sewer

Only sanitary wastewater shall be discharged to the sanitary wastewater system. Roof drains and other storm water sources shall be strictly excluded.

7A.020 Sanitary Sewer/Water Main Crossings

See Chapter 6.130 for requirements regarding sewer and water separation.

7A.025 Casing

The casing shall be as follows: one quarter inch steel casing pipe or ductile iron class 52. In special cases, C-900 DR 14 PVC pipe may be allowed. Casing spacers are required. A minimum of three sets of spacers are required per 20 feet of pipe. Spacers shall be as manufactured by Uni-Flange®, Calpico Inc. or approved equal. No more than one inch of clearance is allowed per set of spacers or insulators.

The joints of the transmission pipe within the casing pipe shall be restrained. Casing Spacers shall be manufactured by UniFlange®, or if using Calpico Inc. insulators; the pipe joints shall be restrained with a restraint system approved by the City of Lacey. Restrained joints shall be required on the transmission line one pipe length past either end of the casing pipe. Additional restraints may be required by the City.

Directional boring or horizontal directional drilling (HDD) is approved for use with high density polyethylene pipe (HDPE) or CertainTeed Certa-Lok C900/RJ Restrained Joint PVC pipe for the installation of sewer pressure mains. The process, alignment, depth and soil type being drilled shall be called out on the plans and approved by the City during design. Under no circumstances shall gravity sewer mains and or gravity sewer services be installed using the directional boring (HDD) method. The process for HDD shall follow the standard 3 step process of (1) drilling the pilot hole (2) enlarging the hole, back reaming (3) pulling through the transmission pipeline. The use of drill fluid such as bentonite or polymer is required. A proper sized hole and ample amount of drill fluid shall be used to prevent damage to the pipe being installed. During the installation of the transmission pipe a second smaller HDPE CL 200 pipe minimum ¾ inch diameter shall be pulled through alongside the transmission pipe. The smaller pipe shall have a standard 12 gauge direct bury U.S.E. green coated copper tracer wire pulled through and connected to the tracer wire of the main at each end using the low voltage grease-type splice kits. Soils that have too many cobbles may not be approved by the City for HDD.

Concrete, Control Density Fill (CDF) or other methods of encasement not listed above shall not be allowed.

7A.030 Staking

All surveying and staking shall be performed by an engineering or surveying firm capable of performing such work. The surveyor directing such work shall be licensed as a Professional Land Surveyor by the State of Washington.

A pre-construction meeting shall be held with the City inspector prior to commencing staking. All construction staking shall be inspected by the City prior to construction.

The minimum staking of sewer lines shall be as directed by the City Engineer or as follows:

A. All staking shall include a hub and an informational stake with station(s) and offset(s)

B. Stake location of mainline pipe shall be at a minimum every 50 feet with cut or fill to invert of pipe.

C. Stake location of all manholes and cleanouts for alignment and grade with cut or fill to rim and invert of pipes.

D. Stake locations of laterals for alignment and grade with cut or fill to cleanout rim and invert of pipes at the right-of-way line.

7A.060 Street Patching and Restoration

See Chapter 4B.170 and 4B.180 for requirements regarding street patching and trench restoration.

7A.070 Testing

Prior to acceptance and approval of construction, the following tests shall apply to each type of construction.

A. Gravity Sewer

1. Prior to acceptance of the project, the gravity sewer pipe shall be subject to a low pressure air test per WSDOT/APWA Standards. The contractor shall furnish all equipment and personnel for conducting the test under the observation of the City inspector. The testing equipment shall be subject to the approval of the City. The contractor shall provide a minimum of 2 complete sets of test gear to test two (2) sections of pipe manhole to manhole at the same time. The contractor shall perform an air pre-test prior to notifying the City to schedule the actual test. The acceptance air test shall be made after trench is back filled and compacted and the roadway section is completed to sub grade.

   All wyes, tees, and end of side sewer stubs shall be plugged with flexible joint caps, or acceptable alternates, securely fastened to

withstand the internal test pressures. Such plugs or caps shall be readily removable and their removal shall provide a socket suitable for making a flexible jointed lateral connection or extension.

2. Testing of the sewer main shall include a television inspection by the contractor. The camera shall be equipped with a rotating head to allow televising of the side sewers as mainline inspection is occurring. The camera unit shall be equipped with a measuring device that is in plain view ahead of the camera. The device shall be 1 inch in diameter and on a flexible shaft. Television inspection shall be done after the WSDOT low pressure air test # 7-17.3(2) F has passed, the pipe line cleaned and before the roadway is paved. Immediately prior to a television inspection enough water shall be run down the line so it comes out the lower manhole, unless televising is done right after the cleaning has taken place. A copy of the video tape and written report shall be submitted to the City. Acceptance of the line will be made after the tape has been reviewed and approved by the Inspector. Any tap to an existing system needs to be televised as well. Televising shall start at the closest manhole to the tap and extend 15 feet beyond the tap.

3. A negative air pressure “vacuum” test of all manholes is also required.

   The negative air pressure “vacuum” test shall be used for testing concrete manholes. The test shall be in accordance with ASTM C 1244-93 except that the duration shall be 5 seconds per foot as measured from the bottom of the manhole channel to the ring regardless of manhole diameter. The minimum test time shall be 40 seconds for all manholes 8 feet or shallower. A vacuum of 10 inches of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head shall be closed, and the vacuum pump shall be shut off. The time shall be measured for the vacuum to drop to 9 inches of mercury. The manhole shall pass if the time for the vacuum reading to drop from 10 inches to 9 inches of mercury meets or exceeds the time calculated.

4. A mandrel test in accordance with Section 7-17.3 (2)G of the WSDOT/APWA Standard Specifications shall be required on all sewers except laterals as defined in Section 3.025 of these standards as directed by the City.

B. Lift Station Pressure Main

1. Prior to acceptance of the project, the pressure line and service lines shall be subjected to a hydrostatic pressure test of 200 pounds for 4 hours and any leaks or imperfections developing under said pressure shall be remedied by the contractor. No air will be allowed in the line. The main shall be tested between valves. Insofar as possible, no hydrostatic pressure shall be placed against the opposite side of the valve being tested. The 200 psi pressure test

shall be maintained while the entire installation is inspected. The contractor shall provide all necessary equipment and shall perform all work connected with the tests. Tests shall be made after all connections have been made. This is to include any and all connections as shown on the plan. The contractor shall perform all tests to assure that the equipment to be used for the test is adequate and in good operating condition and the air in the line has been released before requesting the City to witness the test.

2. A water test for all wet wells in accordance with the manhole water test for gravity sewer shall be required. The water test shall be made by the contractor first by filling the manhole up with water and letting it sit for 24 hours to allow the water to saturate the concrete. After 24 hours the manhole shall be filled to the top. The water cannot drop more than 0.05 gallons in 15 minutes per foot of head above invert to pass. Upon completion of the water test, the water shall be pumped out of the manhole.

3. A mandrel test in accordance with Section 7-17.3 (2) G of the WSDOT/APWA Standard Specifications shall be required as directed by the City.

C. S.T.E.P/Grinder Pressure Main System

1. Prior to acceptance of the project the pressure mainline and service lines shall be subject to a hydrostatic pressure test of 200 pounds for 15 minutes and any leaks or imperfections developing under said pressure shall be remedied by the contractor and any leaks or imperfections developing under said pressure shall be remedied by the contractor. No air will be allowed in the line. The main shall be tested between valves. Insofar as possible, no hydrostatic pressure shall be placed against the opposite side of the valve being tested. The pressure test shall be maintained while the entire installation is inspected.

   The contractor shall provide all necessary equipment and shall perform all work connected with the tests. Tests shall be made after all connections have been made. The contractor shall perform all tests to assure that the equipment to be used for the test is adequate and in good operating condition and the air in the line has been released before requesting the City to witness the test.

2. A water test of the septic, S.T.E.P. or grinder tank at the factory and on site after installation is required in accordance with the criteria outlined in Chapter 7E.060.

3. Electrical inspection and testing of all electrical components of the system is required. All tested parts shall pass before the City accepts the system. Additionally all electrical structures shall have a concrete base or floor. The concrete base or floor shall extend 4

feet to the front and 1 foot on all sides. The generator requires the pad be extended 4 feet beyond where the doors are located.

7A.080 Effluent Spills

The LOTT Alliance's NPDES permit requires that all sanitary sewer collection system spills, including those occurring from STEP systems, and reclaimed water spills are reported to the Washington State Department of Ecology and, in most cases, the Department of Health. The cities of Lacey, Olympia, and Tumwater are required to report sewage and reclaimed water spills (reclaimed water spills greater than 500 gallons) to LOTT, which in turn notifies the state agencies. The following reporting requirements need to be followed by partner jurisdiction staff to ensure timely reporting:

1. All spills need to be reported to the LOTT Clean Water Alliance at **360-528-5700** as soon as practical by the responding jurisdiction, but never later than **20** hours after the spill is discovered. LOTT must report spills verbally to Ecology within 24 hours.

   Exceptions:

   a. If the spill enters any type of waterway – pond, creek, river, or Puget Sound – it must be reported immediately to LOTT at the number listed above and to Thurston County Environmental Health at 360-867-2626 or after hours and on weekends at 360-867-2661

   b. If there is a need to directly bypass a pump station or collection line to a waterway this must be reported to LOTT as soon as the decision is made – preferably prior to initiating the bypass as Ecology must be immediately notified.

2. Provide as much information and detail as possible during the report:

   a. Name of person reporting spill and contact phone number
   b. Name of person in charge of spill management and cleanup
   c. Location by address or nearest street and cross-street
   d. Start & stop times of the spill
   e. Volume of the spill (estimate is ok)
   f. Cause of the spill and type of water (raw sewage, step system effluent, reclaimed water in amounts greater than 500 gallons, etc…)
   g. Clean up actions (diverted, vactored, lime to ground area, etc…)
   h. Actions taken to prevent reoccurrence of the spill
   i. If photos were taken of the spill, email a representative sample of the spill photos to

lauriepierce@lottcleanwater.org or
kenbutti@lottcleanwater.org .

3. If the spill does enter a receiving water body it is likely that the jurisdiction will need to make two or more reports – the initial report with information available at the time and follow-up report(s) with all the details listed above.

4. The point of contact for questions concerning these requirements is the LOTT Operations Supervisor at 360-528-5749 or the Operations and Facilities Director at 360-528-5727 - lauriepierce@lottcleanwater.org

7A.090 Effluent Pretreatment and Treatment

Effluent pretreatment and treatment shall comply with the document titled "LOTT Discharge and Industrial Pretreatment Regulations" as set forth in Lacey Municipal Code 13.10.010. The purpose and policy to this document is as follows. This document sets forth uniform requirements for direct and indirect contributors into the wastewater collection systems and the Regional Wastewater Treatment Facility for the Cities of Lacey, Olympia and Tumwater and for Thurston County. This adopted document enables Lacey, Olympia, Tumwater and Thurston County to comply with all applicable State and Federal laws required by the Clean Water Act of 1977 and the General

Pretreatment Regulations (40 CFR, Part 403). The objectives of this document are as follows:

- To prevent the introduction of pollutants into the municipal wastewater system which will interfere with the operation of the system or contaminate the resulting sludge.

- To prevent the introduction of pollutants into the municipal wastewater system which will pass through the system, inadequately treated, into receiving waters or the atmosphere or otherwise be incompatible with the system.

- To improve the opportunity to recycle and reclaim waters and sludge from the system; and

- To provide for equitable distribution of the cost of the municipal wastewater system.

This document provides for the regulation of direct and indirect contributors to the municipal wastewater system through the issuance of permits to certain non-domestic users and through enforcement of general requirements for the other users; authorizes monitoring and enforcement activities, requires user reporting, assumes that existing customer's capacity will not be preempted, and provides for the setting of fees for the equitable distribution of costs resulting from the program established.

Contact LOTT or the Lacey Public Works plan review staff for further information or a copy of this document (Ordinance 957 and Resolution 714)

7A.100 Easement Access/Entry and Roadway

The structure of the roadway shall be a minimum of 12 inches in depth of which the top 6 inches shall be 1 ¼ inch crushed rock and the bottom 6 inches shall be at a minimum ballast per WSDOT standard Specifications 9-03.9(1). When soil conditions are not ideal, the soils shall be tested by a Geo-technical Laboratory and if necessary additional depth for the roadway structure shall be added.

When the Access Roadway is connected to a Public road through a curb or driveway cut the first fifteen feet of the access shall be paved to eliminate the unwanted rocks on the sidewalks or roadway that is unsafe and unsightly.
The access roadway shall be installed over the utility with the minimum width as required by the detail of this chapter. When the easement is required for 2 utilities then the access roadway may be installed in the middle of the utilities keeping in mind that all structures that extend to the finish surface of the roadway shall be in the structured section.

All access roadway shall have a turn around with a radius big enough for the trucks using it to negotiate the turn easily. Turning radii shall also be addressed for ease of turns.

7B GRAVITY SEWER

7B.010 General

All sewers shall be designed as a gravity sewer whenever physically possible or as outlined in the Comprehensive Sanitary Sewer Plan.

7B.020 Design Standards

The design of any sewer extension/connection shall conform to City Standards, Department of Ecology's "Criteria of Sewage Works Design", and any applicable standards as set forth herein and in Sections 3.010, 3.040 and 7A.010.

The layout of extensions shall provide for the future continuation of the existing system as determined by the City. See Chapter 3.130 for utility extension information.

New gravity sewer systems shall be designed on the basis of an average daily flow of not less than 100 gallons per day per person (250 gal/day/ERU). See table 2, Design Basis For New Sewage Works for other non-residential sewer flow rates. These flow rates are assumed to cover normal infiltration, but an additional allowance shall be made where conditions are unfavorable. For some commercial and industrial applications, the design engineer may propose to use flow rates other than those found in Table 2. Any such proposal shall include water consumption records, sewer discharge records, fixture counts, or other forms of documentation justifying the proposed flow rates, and is subject to the review and approval of the Public Works Department.

All gravity sewer facilities and conveyance piping shall be sized to accommodate the peak hourly flow of the contributing basin. Peak hourly flow is defined as the average flow rate times the peaking factor plus the discharge of any upstream pump stations. The peaking factor shall be calculated from the following equation:

$$P.F. = \frac{18 + \sqrt{population\ in\ thousands}}{4 + \sqrt{population\ in\ thousands}}$$

Conveyance for pressure sewer systems (STEP or Grinder) shall be designed to accommodate the peak flow from all individual systems plus the discharge of any upstream pump stations without adversely affecting the performance of any pump connected to the system. Peak flow for individual STEP or Grinder systems shall be calculated by one of the following equations:

$$Q_P = 15 + [(0.5) \times (number\ of\ dwellings)]$$

Or:

$$Q_P = 15 + [(0.15) \times (population)]$$

Where: $Q_P = peak\ flow\ in\ gallons\ per\ minute$

The General Notes on the following page shall be included on any plans dealing with sanitary sewer design.

GENERAL NOTES (SANITARY SEWER MAIN INSTALLATION)

1. Gravity sewer main shall be PVC, ASTM D 3034 SDR 35 or ASTM F 679 with joints and rubber gaskets conforming to ASTM D 3212 and ASTM F 477.

2. Pre-cast manholes shall meet the requirements of ASTM C 478. Manholes shall be Type 1-48 inch manhole unless otherwise specified on the plans. All manhole bases shall be positive seal type as manufactured by Predl Systems North America Inc. or approved equal. Joints shall be rubber gasket conforming to ASTM C 443 and shall be grouted from the inside. Lift holes shall be grouted from the outside and inside of the manhole. (See Note 1.) Connection of a pipe line to a system where a manhole is not available shall be accomplished by the use of a saddle type or cast-in-place manhole. This is accomplished by pouring a concrete base and setting manhole sections on it. The existing pipe shall not be cut into until the manhole is vacuum tested and approved by the City. (See detail)

3. Manhole frames and Logo Lids shall be EJ or Olympic Foundry WSDOT style ductile iron casting marked “City of Lacey”, “Sewer”, “Made in USA”, “Confined Space”, “Permit Required” and conforming to the requirements of ASTM A-30, Class 25. The frames and lids shall be free of porosity, shrink cavities, cold shuts, cracks, or any surface defects which would impair serviceability. The frames and lids shall be machine finished or ground on seating surfaces so as to assure a non-rocking, self seating fit in any position and be interchangeable in other standard manhole frames.

   Lock-type covers shall be required in all multi-family complexes, on school grounds, on manholes containing odor control devices or as determined by the City. The manhole opening shall be centered over the outlet channel regardless of the location of the ladder rungs. All casting shall be coated with a bituminous coating prior to delivery to the job site.

4. Side sewer services shall be PVC, ASTM D 3034 SDR 35 with flexible gasket joints (see detail). Side sewer connections shall be made by a tap to an existing main or a wye branch from a new main connected above the spring line of the pipe. When a tap is used to connect a new service lateral to an existing sewer main, televising from the closest manhole to 15 feet past the tap is required. Foreign objects and debris shall be removed by high pressure cleaning and/or vacuum removal.

5. All sewer mains shall be field staked for grades and alignment in accordance with section 7A.030 of the Development Guidelines.

6. All plastic pipe and services shall be installed with continuous green tracer tape 12 inches to 18 inches under the proposed finished sub grade. The marker shall be plastic non-biodegradable, metal core or backing, marked “sewer” which can be detected by a standard metal detector. Tape shall be Terra Tape "D" or approved equal. The tape shall be furnished by the contractor.

7. All side sewer locations shall be marked on the face of the curb with an embossed "S" 3 inch high and 1/4 inch into concrete.

8. Bedding of the sewer main shall be a minimum 6 inches of 3/8 inch minus pea gravel under the pipe and a minimum of 12 inches of 3/8 inch minus pea gravel over the pipe. When working in sensitive soils a barrier above the pea gravel may be required to prevent the fine soils from migrating into the pea gravel. All pea gravel shall be washed. Compaction of the backfill material shall be required in accordance with the above mentioned specification (See Note #1). The applicable Chapter 4-8 Trench Restoration details and detail 7-20 shall be used.

9. Install a 4' x 4' square x 8 inch thick concrete pad with #4 rebar around all manhole frames and cleanouts that are not in a pavement area.

10. All lines shall be high velocity cleaned and pressure tested prior to paving in conformance with the above referenced specifications, see note 1. Hydrant flushing of lines is not an acceptable cleaning method. Testing of the sanitary sewer main shall include videotaping of the main by the contractor. Immediately prior to videotaping, enough water shall be run down the line so it comes out the lower manhole. A copy of the video tape shall be submitted to the City of Lacey inspector. Acceptance of the line will be made after the tape has been reviewed and approved by the inspector. A vacuum test of all manholes in accordance with Lacey standard is also required. Testing shall take place after all underground utilities are installed and compaction of the roadway sub grade is completed. After the paving and raising of manholes are complete, the Developer shall clean and videotape the sewer conveyance system again at the Developers expense. The method of cleaning shall be high velocity water pressure cleaning. All rocks and debris shall be removed and disposed at the Developer's expense.

11. Contractors shall be responsible for cleanup of any debris in new or existing manholes and mains associated with the project after the new lines are cleaned as outlined above. The sewer system shall be televised to assure the system is clean.

12. Encasement material shall include ¼ inch steel, ductile iron and in special or unusual cases C-900 DR 14 PVC pipe may be allowed if approved by the Director of Public Works in advance. Concrete, CDF and other methods of encasement shall not be allowed.

Revised: 03/2014

PROCESS TO OBTAIN SEWER SERVICE

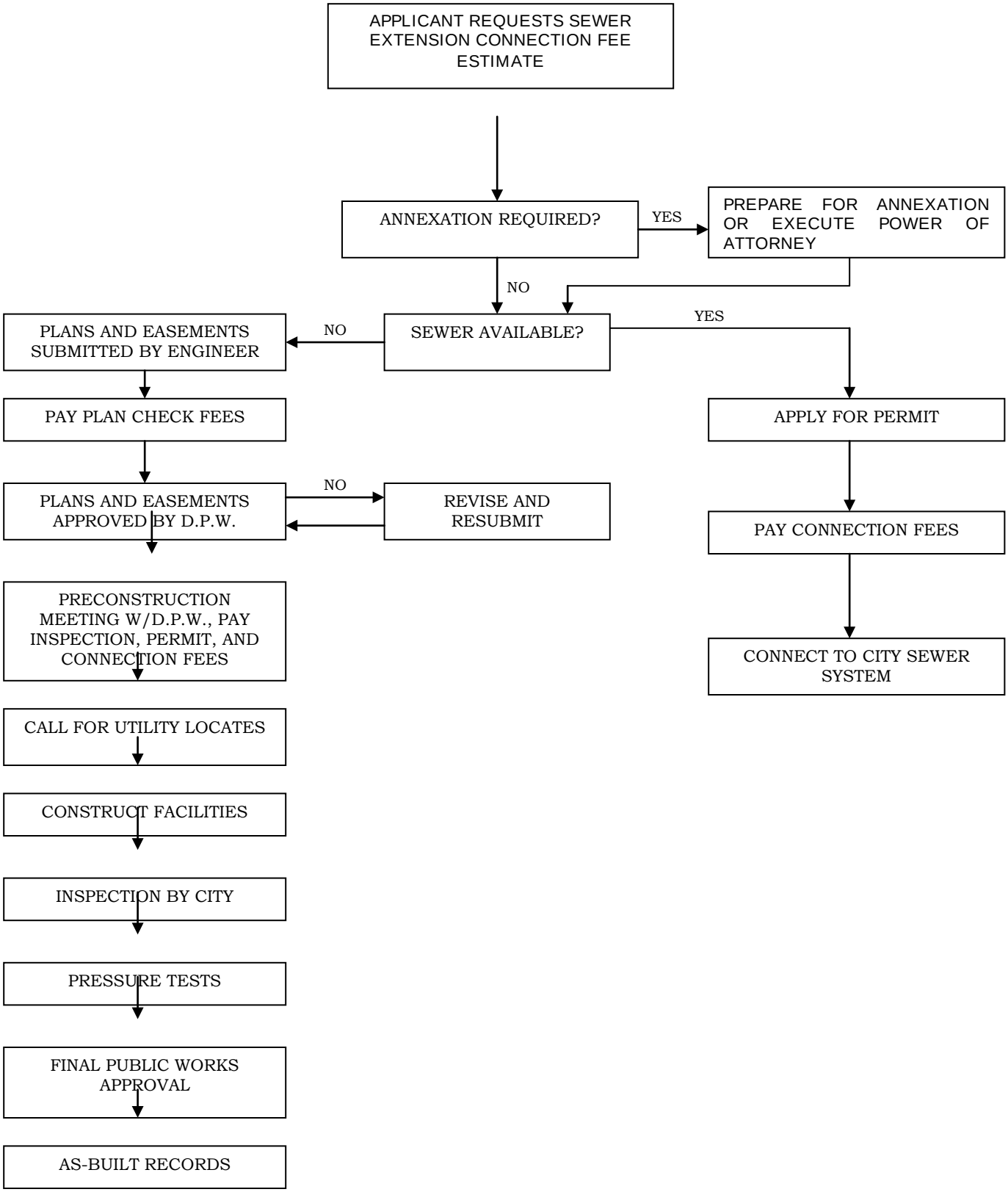

Table 2. DESIGN BASIS FOR NEW SEWAGE WORKS

Discharge Facility	Design Units	Flow* (gpd)	BOD (lb/day)	SS (lb/day)	Flow Duration (hr)
Dwellings	Per person	100	0.2	0.2	24
Schools w/showers and cafeteria	Per person	16	0.04	0.04	8
Schools w/o showers and cafeteria	Per person	10	0.025	0.025	8
Boarding schools	Per person	75	0.2	0.2	16
Motels at 65 gal/person (rooms only)	Per room	130	0.26	0.26	24
Trailer courts at 3 persons/trailer	Per trailer	300	0.6	0.6	24
Restaurants	Per seat	50	0.2	0.2	16
Interstate or through highway restaurants	Per seat	180	0.7	0.7	16
Interstate rest areas	Per person	5	0.01	0.01	24
Service stations	Per vehicle serviced	10	0.01	0.01	16
Factories	Per person per 8-hr. shift	15-35	0.03-0.07	0.03-0.07	Operating Period
Shopping centers	Per 1,000 sq. ft. of ultimate floor space	200-300	0.01	0.01	12
Hospitals	Per bed	300	0.6	0.6	24
Nursing homes	Per bed	200	0.3	0.3	24
Homes for the aged	Per bed	100	0.2	0.2	24
Doctor's office in medical center	Per 1,000 sq. ft.	500	0.1	0.1	12
Laundromats, 9 to 12 machines	Per machine	500	0.3	0.3	16
Community colleges	Per student and faculty	15	0.03	0.03	12
Swimming pools	Per swimmer	10	0.001	0.001	12
Theaters, drive-in type	Per car	5	0.01	0.01	4
Theaters, auditorium type	Per seat	5	0.01	0.01	12
Picnic areas	Per person	5	0.01	0.01	12
Resort camps, day & night, w/limited plumbing	Per campsite	50	0.05	0.05	24
Luxury camps w/flush toilets	Per campsite	100	0.1	0.1	24

* Includes normal filtration

Taken from: "Criteria for Sewage Works Design" By: State of Washington Department of Ecology December 1998

7B.040 Main Line - Gravity

A. Size. Sewer mains shall be sized for the ultimate development of the tributary area. Nothing shall preclude the City from requiring the installation of a larger sized main if the City determines a larger size is needed to meet the requirements for future service.

The minimum size for sub mains and mains shall be 8 inch inside diameter. The minimum size for a lateral shall be 6 inches. See definitions in Chapter 3.025.

B. Material. Sewer main shall be PVC, ASTM D 3034, SDR 35 or ASTM F 789 with joints and rubber gaskets conforming to ASTM D 3212 and ASTM F 477.

C. Depth. Gravity sewer will typically have a minimum depth of 7 feet to provide gravity service to adjoining parcels. Actual depth will be determined by slope, flow, velocity and elevation of existing system.

D. Service Connections. If not made at an existing manhole, all sewer connections to the main shall be made with a wye connection. All new mains connecting to existing mains require the installation of a cast-in-place saddle manhole.

E. Flow. At no time shall a gravity sewer be installed with a reverse direction of flow. The maximum deflection angle through a manhole shall not exceed 90 degrees.

F. Termination of Mains. All sewer mains shall end with a manhole.

7B.050 Connection to Existing System

When connecting to an existing system, all new sewer connections shall be physically plugged until all tests have been completed and the City approves the removal of the plug.

A. Connection of new pipe lines to existing manholes shall be accomplished by using provided knock-outs with sand collars. Where knock-outs are not available, the manhole shall be core drilled for a core and seal boot connection. The transition of connecting channels shall be constructed so as not to interrupt existing flow patterns.

B. Connection of a pipe line to a system where a manhole is not available shall be accomplished by the use of a saddle type or cast-in-place manhole. This is accomplished by pouring a concrete base and setting manhole sections on it. The existing pipe shall not be cut into until the manhole is vacuum tested and approved by the City. (See detail)

C. Connections to manholes requiring a drop shall follow the criteria as outlined in Section 7B.100

D. All multi-family, commercial and industrial sewer lateral connections shall be made at the manhole. A manhole shall be installed for lateral connections if one is not available. All new connections to existing manholes shall be channeled to meet existing flow line.

E. Taps shall not be allowed to protrude into the existing main. A City inspector shall be notified 48 hours prior to any tap of a City sewer main. A City Inspector shall be present to witness the tap. The mainline at the tap location shall be televised from the nearest manhole a minimum of 15 feet beyond the tap after tapping and prior to approval to insure compliance. Taps shall be Romac's style CB sewer saddle with Ductile+Plus saddle, stainless steel strap and rubber gasket meeting ASTM D-2000 3 BA715 or City approved equal. The manufactured bevel on the pipe to be inserted into the saddle shall be cut off to avoid pushing the pipe into the main.

7B.055 Building Sewer (lateral)

A. A building or side sewer refers to the extension from a building beginning two feet outside the outer foundation wall at the structure to a cleanout at the right-of-way line (LMC 13.04.160 and 14.06.015). Side sewer laterals from the main to the right-of-way line shall be minimum 6 inch diameter ending at a clean out. Maintenance of the building or side sewer is the responsibility of the property owner. Prior to connection of a building or side sewer to the public sewer a connection permit shall be obtained. Materials and design criteria for a building sewer are covered by the IBC as adopted by LMC 14.06. Inspection of the building or side sewer is the responsibility of the Community Development Department.

B. Each separate commercial/industrial building shall have its own separate side sewer connection to a manhole. The side sewer from the City's manhole to the building connection manhole shall be the responsibility of the owner of the building. When multiple side sewers are connected to one manhole the private side sewer shall start from that manhole. Each building owner shall be responsible for its own side sewer. If a manhole does not exist, one shall be installed, see 7A.015 for more information. Side sewers for single family residential properties shall not be connected to the system at the manhole. Manhole sizing where side sewers are connected shall be the same as designated in section 7B.060 of this manual.

C. Location of clean out for building sewer is governed by the IBC as adopted by LMC 14.06.010.

7B.060 Manholes and Logo Lids

Precast manholes shall meet the requirements of ASTM C 478. All manhole bases shall be positive seal type as manufactured by Predl Systems North

America Inc. or approved equal. Cast-in-place bases shall be 3000 psi commercial concrete installed per detail. Manholes shall be Type 1, 48 inch diameter minimum. The minimum clear opening in the manhole frame shall be 24 inches. Joints shall be rubber gasketed conforming to ASTM C 443 and shall be grouted from the inside. Lift holes shall be grouted from the outside and inside of the manhole. Manholes constructed of other materials may be approved by the Director of Public Works, provided they meet the requirements of 2.318 of Department of Ecology's "Criteria for Sewage Works Design". Material specifications need to be submitted for review before an alternate material will be considered. See drawing numbers 7-1 and 7-2 for details.

The manhole opening shall be centered over the outlet channel regardless of ladder rung locations.

Manhole frames and Logo Lids shall be EJ or Olympic foundry WSDOT style ductile iron casting marked “City of Lacey”, “Sewer”, “Confined Space”, Permit Required” and conforming to the requirements of ASTM A-30. Class 25 and made in the United States of America.

The frames and lids shall be free of porosity, shrink cavities, cold shuts, cracks, or any surface defects which would impair serviceability. The frames and lids shall be machine-finished or ground-on seating surfaces so as to assure a non-rocking, self seating fit in any position and be interchangeable in other standard manhole frames. All manhole frames and lids with defects shall be replaced with new. All castings shall be coated with a bituminous coating prior to delivery to the job site.

Lock-type covers shall be required in all multi-family complexes, on school grounds, on manholes containing odor control devices or as determined by the City.

Where lock-type castings are called for, the casting device shall be such that the cover may be readily released from the ring and all movable parts shall be made of non-corrosive materials and otherwise arranged to avoid possible binding.

Safety steps shall be fabricated of polypropylene conforming to an ASTM D-4101 specification, injection molded around a 1/2 inch ASTM A-615 grade 60 steel reinforcing bar with anti-slip tread. Steps shall project uniformly from the inside wall of the manhole. Steps shall be installed to form a continuous vertical ladder with rungs equally spaced on 12 inch centers wrapped around the manhole to the shelf. The top two safety steps (hand holds) shall not be installed in the manhole.

Gravity sewers shall be designed with straight alignment between manholes. Curved alignment of the sewer will not be permitted.

Manholes shall be provided at a maximum of 400 foot intervals for 8 inch to 15 inch sewers, 500 foot intervals for 18 inch to 30 inch sewers, at intersections, and at changes in direction, grade, pipe size or as directed by

the City. (See also Section 7B.080). Greater spacing may be permitted in larger sewers.

Minimum slope through the manhole shall be 1/10th of one foot from invert in to invert out.

The manhole opening shall be centered over the outlet channel regardless of the location of the ladder rungs.

Manhole Sizing shall be determined by the following criteria:

A. 48 inch Manhole

1. 2 connecting pipes, 8 inch to 12 inch diameter.

2. 3 connecting pipes, 8 inch to 10 inch diameter, perpendicular.

3. 4 connecting pipes, 8 inch diameter, perpendicular.

B. 54 inch Manhole

1. 2 connecting pipes, 8 inch to 12 inch with less than 45° deflection

2. 3 connecting pipes, 10 inch to 12 inch diameter, perpendicular

3. 4 connecting pipes, 10 inch to 12 inch diameter, perpendicular

C. 72 inch Manhole

1. 2 connecting pipes, 15 inch to 18 inch diameter with less than 45° deflection

2. 3 connecting pipes, 15 inch diameter, perpendicular

3. 4 connecting pipes, 15 inch diameter, perpendicular

In the above criteria deflection" refers to the angle between any 2 pipe channels in the manhole.

For other pipe configurations, the size of the manhole shall be approved by the City.

The above configurations will provide adequate shelves and room for maintenance and televising mains.

7B.070 Slope

All sewers shall be designed and constructed to provide peak design flow velocities of not less than 2.0 feet per second based on Manning's formula using an "n" valve of 0.013. Peak design flow shall not exceed 80% depth of flow in the pipe. Average design flow should be greater than 20% depth of flow in the pipe, or 2.0 fps. Surcharging of manholes will not be allowed. The following minimum slopes should be provided; however, slopes greater than these are desirable.

Sewer Size (Inches)	Minimum % Slope % (Feet per 100')
8	0.40 (0.0040 Ft/Ft)
10	0.28 (0.0028 Ft/Ft)
12	0.22 (0.0022 Ft/Ft)
14	0.17 (0.0017 Ft/Ft)
15	0.15 (0.0015 Ft/Ft)
16	0.14 (0.0014 Ft/Ft)
18	0.12 (0.0012 Ft/Ft)
21	0.10 (0.0010 Ft/Ft)
24	0.08 (0.0008 Ft/Ft)
27	0.07 (0.0007 Ft/Ft)
30	0.06 (0.0006 Ft/Ft)
36	0.05 (0.0005 Ft/Ft)

Sewers shall be laid with uniform slope between manholes.

7B.080 Increasing Size

Manholes shall be provided where pipe size changes occur. Where a smaller sewer joins a larger one, the invert of the larger sewer should be lower. To maintain the same energy gradient, an approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation.

7B.090 High Velocity Protection

Where velocities greater than 15 feet per second are expected, special provisions such as thrust blocking and piping materials shall be made to protect against displacement by erosion and shock.

7B.100 Drops

Straight grades between inverts are preferred over drops whenever possible when connecting to an existing manhole. Care shall be taken when designing steep grades or sweeps so as not to create a situation of excessive velocity or excavation. Grade changes associated with "sweeps" shall not be allowed unless otherwise approved by the Director of Public Works.

An outside or inside drop connection shall be provided for a sewer entering a manhole at an elevation of 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert

is less than 24 inches, the invert shall be filleted to prevent solids deposition. All drop structures shall be constructed per details.

7B.110 Clean outs

Clean outs are not an acceptable substitute for manholes on City sewer mains, Cleanouts may be installed at future main extensions and shall be installed for side sewer laterals at the right-of-way line.

All clean outs in the City right-of-way or easements shall be extended to grade. A 3 foot square by 8 inch thick concrete pad with #4 rebar shall be installed around all clean outs that are not in a pavement area. See clean out detail.

7C LIFT STATIONS

7C.010 General

The need for a sewage lift station, as identified in the Wastewater Comprehensive Plan or necessary for a development as determined by the City, shall be presented by the Developer in a design report. The Developer shall provide information and design the lift station to comply with the following minimum standards.

Lift station sites together with access to the site shall be deeded to the City. Sites for lift stations shall not count toward open space requirements. The minimum site area shall be 5000 square feet.

7C.020 Design Report

If a lift station is determined to be necessary, the Developer shall perform a study prepared and stamped by a Professional Engineer licensed in the State of Washington, to determine that the lift station installation is sized to serve the overall sewage flows generated within the potential service area. The service area study shall include the Developer's plat boundary area and any future service areas that will discharge to the lift station as determined by the City. The final service area shall be the entire area which could be served by the installation of the lift station(s).

The design of any lift station shall conform to City of Lacey standards, Department of Ecology's "Criteria for Sewage Works Design" and applicable standards as set forth in herein and in sections 3.020, 3.040 and 7A.010. The station's design flow capacity shall be based on the sizing criteria in Section 7B.020. Documentation of present and future service area flow rates for lift station size and capacity determination shall be included in the report.

The average and low inflow conditions shall be analyzed to determine the effects of retention of sewage in the wet well. The retention of sewage shall not create odor problems at the wet well or outfall manhole. The design report shall indicate what mitigation measures will be implemented if odor problems are anticipated, or realized after lift station start up and operation.

The wet well shall be sized to provide full submergence of the pumps as recommended by the pump manufacturer. The design shall provide for adequate distance between the approach pipe inlet and outlet elevations to provide for proper programming of pump intervals (lead pump call, lag pump call and high level float override). Cycle times shall be calculated from pump off to pump on for each duty pump (excludes standby pump). The wet well shall have adequate capacity to provide a maximum of six (6) starts per hour under inflow conditions equal to one-half (1/2) of the pumps' capacity.

The lift station shall be sized to meet the maximum calculated flow rate. The size of the receiving sewer shall have adequate capacity for the pump station discharge. At least two (2) pumping units shall be provided at each lift station installation. The pumps shall have sufficient flow and pressure capacity to

efficiently handle the peak design flow with 1 pump out of service, and be selected by the stamping licensed professional engineer.

Three hard copies along with an electronic copy of the Design Report shall be submitted to the City and approved by the City prior to submitting the civil drawings for approval. As a minimum, the report shall include:

1. Project description
2. Projected flows and map of contributing basin
3. Connection point with downstream capacity
4. Wet well sizing and buoyancy calculations
5. Run time calculation and cycle time
6. Pump station head calculation and system curve
7. Pump selection and wet well details
8. Site layout with plan and profile views including the wet well, approach pipe, electrical cabinet and generator
9. Pressure main size, length and material (see section 7D, Pressure Sewer)
10. For pressure mains greater than 1,100 feet in length, a transient analysis shall be completed and identified water hammer conditions mitigated.
11. Electrical requirements and Generator sizing
12. Lift station voltage (confirmed by Puget Sound Energy)
13. Odor and corrosion calculations:
    A detailed analysis and report prepared by an engineering firm with experience in hydrogen sulfide formation and remediation shall be provided for the following:

    a. Collection system to the lift station
    b. Lift station wet well
    c. Pressure main
    d. Downstream gravity system
    e. Verification that odors will not be detected at the lift station site or at the point of release, or the Developer will provide odor control and corrosion reduction at the appropriate locations in accordance with current City of Lacey odor and corrosion control method. See also chapter 7D.080 Pressure Main Termination.

14. Geotechnical analysis for wet well and lift station site
15. Backfill and compaction specifications

7C.030 Design Drawings

The drawings shall be prepared by a Professional Engineer licensed in the State of Washington at a minimum 1:30 scale to show details of the site. See Chapter 3.040. Electronic files are available of the City Standard Lift Station details and electrical wiring diagrams. The Developer's Engineer shall scale and customize the drawings and review all dimensions to ensure the City's lift station layout can be accommodated per the details.

The detailed engineered drawings shall accurately depict the equipment selected by the Engineer. The drawings shall include an equipment list showing manufacturer, model number, and size or capacity for all structures, mechanical and electrical components.

The Developer shall furnish a site layout for the lift station installation per details. Minimum set backs shall be included as depicted on the site layout details.

The lift station shall be located as far as feasible from present and/or proposed residential areas. Sites shall be of sufficient size (based on a 1:1 ratio from the depth of the wet well to the property line on all sides and include all vaults, cabinets, structures, and appurtenances) for vehicle access, maintenance and future expansion or addition, if applicable. The entire site shall be at a maximum slope of 2%.

The lot frontage shall be a minimum of 50 feet wide and provide a minimum paved driveway approach of 20 feet wide.

The site design shall include the distance required for the approach manhole and piping. The approach pipe length shall be a minimum of 100 feet (200 feet is preferred) from the last manhole to the wet well. It shall also have a minimum slope of 2 percent and a maximum of 6 percent.

As a minimum, the following shall be provided on the plans for construction:

1. Complete lift station
2. Standby power generation system
3. Electrical wiring diagrams
4. Telemetry compatible with existing system, including complete start up and revising existing screens at Lacey Operation Center.
5. 2 inch water service with heated Reduced Pressure Backflow Assembly (RPBA) and wash down hydrant.
6. Odor control, as applicable for location and capacity.
7. Site soil conditions. Excavation, select backfill and compaction requirements as determined by a geotechnical engineer.
8. Cuts and fills to provide level site for maintenance.
9. Asphalt or concrete pavement for access as directed by the City.
10. Concrete within the maintenance area shall encompass all components of the site, per detail.
11. Landscaping per City of Lacey development criteria.
12. Six foot high (minimum) black chain link fence with top and bottom rails enclosing the site and a fifteen foot wide lockable access gate.
13. Sign with lift station identification number and street address (to be paid for by the developer and manufactured by the City).
14. Site lighting.
15. All site enclosures such as the control cabinet, generator, etc., shall be keyed the same.

16. The plans shall include an adequate distance between the last manhole and the wet well to accommodate the approach pipe design per the detail.

7C.040 Submittals

After the lift station plans have been approved and prior to the pre-construction conference, the Developer or the Developer's Contractor shall provide submittal data as one single submittal for all proposed equipment. The data shall be provided in printed format bound into a single three-ring binder. The data shall be divided into sections as indicated below, separated by tabbed sheets. Three (3) copies shall be provided in printed format and all data in the submittal shall be included on one electronic medium (CD or DVD) for City use. The electronic media shall be submitted with the printed media. Additional printed copies may be submitted for return to the Developer or Contractor with markup notes.

The following minimum information shall be provided:

1. Pump Data
   - Size and type
   - Pump design performance curves
   - Pump factory test performance curves
   - Head and flow capacity
   - Solids handling capacity
   - Manufacturer/distributor
   - Pump volute and impeller Coating submittal

2. Motor Data
   - Size and type
   - Horsepower
   - Service factor
   - Motor insulation
   - Full load current draw
   - Voltage requirements
   - Frame and type of mount
   - Manufacturer/distributor

3 Controls	• Timers and relay mounting • Motor starter size • Phase monitor • NEMA type 3R enclosure • Thermal magnetic circuit breaker • GFI outlet • Indicating lights, switches, resets • Level controller • Terminal and fuse blocks • Elapsed time meters and event counters • Component manufacturer/ distributor • Current transformers • Ammeters • Programmable Logic Controller • Human Machine Interface Module
4. Telemetry	• Telemetry and SCADA system (shall be compatible with City system) • Lift station radio communication path terrain analysis certified by Accu-Com Inc.
5. Standby Power Generation System	• Diesel generator • Fuel storage tank • Automatic Transfer switch • Battery charger and engine heater • Sound attenuating enclosure
6. Maintenance	• Warranty (See Ch 3 bond requirements) • Staff training upon completion • Tools and equipment required

7. Electrical Service	• Specifications (service size, voltage, motor size, enclosure type, etc.) • Source of power • Power and Load Calculations • One line diagram • Primary distribution equipment • Service entrance • Branch circuit protection • Mechanical equipment power requirements • Control diagrams & schematics • Schedules of fixtures, panel boards & switch gear • Shop drawings • Arc flash calculations
8. Lighting	• Exterior lighting
9. Wet Well	• Size • Storage capacity • Access hatch • Locking mechanism • Penetration seals • Safety entry equipment • Safety grate • Safety rail system • Manufacturer Specifications • Corrosion protection, material, application, warranty.
10. Valve Vault	• Size • Access ladder • Access hatch (3 door hatch LW Model HTD) • Penetration seals • Manufacturer

11. Piping	• Size and material • Valves • Flow meter • Pressure transmitter • Pressure gauges • Bypass pumping fittings • Pipe supports • Corrosion protection, material, application, warranty
12. Testing Plan	• Factory test • Operational test & start up. • Pressure test • Start up & training

The design drawings may be used to provide the information required in the items above. Design drawings shall be reviewed and verified for completeness and compliance by the Design Engineer prior to submittal to the City.

The City's review does not relieve the Engineer and/or Developer of the responsibility for constructing a lift station that is trouble free and suitable for its purpose.

The general notes for gravity sewer and pressure sewer construction found in section 7B and 7D of this chapter shall accompany the following Lift Station General Notes on the plans.

GENERAL NOTES (LIFT STATION INSTALLATION)

1. Any construction changes to the lift station design shall first be reviewed and approved by the project engineer and the City of Lacey.

2. Contractors shall be responsible for cleanup of any debris in the wet well, tanks, vaults and site associated with the project prior to start up.

3. Prior to backfill, all mains, tanks, wet well and vaults shall be inspected and approved by the City of Lacey Construction Inspector. Approval shall not relieve the contractor for correction of any deficiencies and/or failures as determined by subsequent testing and inspections. It shall be the contractor's responsibility to contact City of Lacey to request the required inspections.

4. The Developer shall coordinate power service with serving utilities and make arrangements for power service connection. It shall be the Developer's responsibility to maintain power service for private lift stations serving commercial properties or developments.

5. All pipe and fittings in the wet well shall be, DR11 3408 HDPE or ductile iron thickness class 52. Ductile iron pipe and fittings shall be epoxy lined and polyethylene coated to a minimum of 10 mils thick on the inside and outside with coatings approved for constant contact with H2S (hydrogen sulfide). Coatings shall be applied according to the manufacturers' requirements by a certified applicator of the product. Coatings shall not be applied to pipe, fittings or valves in the field. All bolts, fasteners, brackets and hardware in the wet well shall be 316 stainless steel.

6. Prior to testing and start-up of the lift station, three hard copies along with an electronic copy of the Operation and Maintenance Manual, together with the number of approved copies required by the Developer, shall be submitted to the City for review and approval. The lift station information checklist found in Section 7C. 085 shall be filled out by the developer and included on the face of the engineered as-built drawings and in the Operation and Maintenance manual.

7. The Developer, at its own expense, shall arrange for an authorized factory-trained representative of the company or companies supplying the various items of equipment to check the installation, adjust and test the equipment furnished before the acceptance of the work by the City. The factory representative shall be responsible to check and resolve any unacceptable vibration of the pump assemblies. Furthermore, the Developer's representative(s) shall assist and instruct the City's operating staff in adjusting and operating the equipment during the initial start-up period. Said representative shall be experienced and knowledgeable of the equipment being tested.

8. An instruction program shall be held for City personnel at the Developer's expense. Developer shall furnish the services of qualified instructors from the various equipment manufacturers. Program shall cover basic system operation theory, routine maintenance and repair, and "hands on" operation of equipment. Training shall not proceed until all operation and maintenance manuals are complete and accepted by the City.

9. Developer is responsible to construct and start up a complete and trouble-free system. All design errors and/or construction defects discovered during start up or the warranty period stated in the agreement with the City shall be corrected at the Developer's expense. The City will not accept any facility until successful full operation of all components has been demonstrated. The Developer shall conduct a pre-start up without City staff to verify proper operation of all lift station components prior to scheduling a start up with City of Lacey staff.

10. Developer shall lubricate all equipment as required by the part or component manufacturer.

11. Wet well shall have a rail system installed per Lacey Standard 7C.050 under hatch opening prior to start up and acceptance.

12. Lift station and generator, site, driveway, access, concrete areas, lighting and water service shall all be completed prior to start up and inspection request.

13. Generator and fuel storage tank shall be mounted on concrete pad. The fuel tank shall be full of fuel at the time of start up. Generator shall have weather proof, sound dampening enclosure; block heater; battery charger; auto exerciser; radiator louvers or protection; and shall comply with all requirements in chapter 7C.070.

14. Telemetry set up, including revision of telemetry computer monitors at the Maintenance Service Center, shall be coordinated with TSI Inc. Set up shall be completed prior to start up request and acceptance.

15. Spare parts shall be provided for the station at time of start up acceptance.

    - One set of mechanical seals.
    - One spare pump and motor assembly with impeller coated with Metalclad Ceramally CP+AC as manufactured by ENEON Corporation
    - One set of O-rings.
    - One set of pump wear rings.
    - One complete re-build kit for pump and motor.

    Additionally, any special tools specific to the pump manufacturer shall be provided to the City of Lacey at start up.

16. Duplicate pump and motor data plates shall be provided to the City of Lacey at the time of start up. Acceptance of the pumps will be contingent upon factory test data conformance with design performance data. Contractor

shall be required to remove pumps from wet well for inspection at time of start up .

17. The developer shall provide test data from a state Department of Health certified Backflow Assembly Tester for all backflow devices on site prior to the start up.

18. A geotechnical analysis shall be performed for the wet well and lift station site by a licensed geotechnical engineer. The analysis shall include: soil compaction, testing methodology, recommended suitable backfill material and compaction techniques. A compaction report shall be provided to the City inspector following wet well and valve vault backfill.

19. Check valves shall be sewer rated bronze on bronze style seat with an outside lever and spring. Valves shall be epoxy coated on both the inside and outside a minimum of 10 mils thick with a coating approved for constant contact with H2S (hydrogen sulfide). Check valves shall be ordered and installed in the vault as one right hand and one left hand model with the outside levers furthest away from each other (outside of piping configuration). The valve vault emergency by-pass pumping connections shall be 6 inch 316 stainless steel male cam lock style fittings. Fittings shall have an stainless female cap installed. Cam lock fittings shall face "UP" as shown on the detail and clearly visible and accessible for connection with 6 inch by-pass hose from above.

20. The pump volute and impellers shall be coated with Metalclad Ceramalloy CP+AC manufactured by ENECON Corporation.

21. The control panel shall be manufactured and tested at the control panel manufacturer's facility. After manufacturer has verified the control panel is fully functional, the inspector shall be notified and a City witnessed control panel factory test shall be scheduled and completed before shipment of the control panel. The control panel shall not be shipped from the control panel manufacturer's facility prior to written verification of testing from the City.

Revised: 03/2014

7C.050 Lift Station Design Criteria

The Lift Station shall be submersible style with non-clog pumps mounted in the wet well, and shall meet all of the criteria outlined in Chapter 7C.

Requirements:

Furnish and install submersible non-clog wastewater pumps. Each pump shall be equipped with _____ HP, submersible electric motor, connected for operation on ____ volts, 3-phase, 60 hertz, with 30 feet of submersible cable (SUBCAB) suitable for submersible pump application. The power cable shall be sized according to NEC and ICEA standards and also meet with U.L. and C.S.A. P-MSHA approval. The pump shall be supplied with a mating iron _____ inch discharge connection and be capable of delivering ____GPM at ___ TDH. Shut off head shall be ____ feet (minimum).

Pump Design:

The pumps shall be automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the wet well to the discharge connection. There shall be no need for personnel to enter the wet well.

Pump Construction:

Major pump components shall be of gray cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. All nuts, washers, bolts and studs shall be AISI Type 316 stainless steel construction with passivation, conforming to ASTM F593H. All metal surfaces coming into contact with the sewage, other than stainless steel shall be protected by a factory applied spray coating of high solids poly-amide epoxy, free of any chips, cracks, voids or imperfections. Any coating imperfection caused by handling or installation shall be field repaired using the same coating material.

Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with nitrite or Viton rubber O-rings. Connections or seals will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.

Rectangular cross-sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

Cable Entry Seal:

The cable entry seal designs shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of a single cylindrical elastomer grommet, flanked by washers, all having a close

tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the body containing a strain relief function, separate from the function of sealing the cable. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be separated by a terminal board, which shall isolate the interior from foreign material gaining access through the pump top. Hydromatic epoxy barrier style seals may also be acceptable.

Motor:

The pump motor shall be explosion proof, induction type with a squirrel-cage rotor, shell type design, housed in an oil or air-filled, watertight chamber, NEMA B type. The stator windings and stator leads shall be insulated with moisture resistant, Class F, insulation rated for 155°C (311°F). The stator shall be dipped and baked three times in Class F varnish and shall be heat-shrink fitted or mechanically fastened into the stator housing. The motor shall be designed for continuous duty handling pumped media of 40°C (104°F) and rated for ten (10) to fifteen (15) evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of cast aluminum. Thermal switches set to open at 140°C (250°F) shall be embedded in the stator lead coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The junction chamber shall be hermetically sealed from the motor by an elastomer O-ring seal. Connection between the cable conductors and stator leads shall be made with threaded compression type connectors. The motor and pump shall be designed and assembled by the same manufacturer.

The combined service factor (combined effect of voltage, frequency and specific gravity) shall be a minimum of 1.15. The motor shall have a voltage tolerance of plus or minus 10% (± 10%). The motor shall be designed for operation up to 40°C (104°F) ambient and with a temperature rise not to exceed 80°C (176°F).

Factory test pump performance curves shall be provided showing data for torque, current, power factor, input/output kW and efficiency. The information shall be gathered from factory testing of the actual pumps to be installed. This information shall also include data on starting and no-load characteristics.

The power cable shall be sized according to the NEC and ICEA standards and shall be U.L. and C.S.A. approved and of sufficient length to reach the wet well junction box without the need of any splices. The cable shall be water and oil resistant chloroprene rubber and shall not be cut, stripped or opened in any way prior to entering the decontactor plug assembly. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of sixty-five (65) feet.

The motor horsepower shall be adequate so that the pump operates non-overloading throughout the entire pump performance curve from shut-off

through run-out. The most efficient pump curve for the design criteria shall be utilized as approved by the City.

The power requirements for pumps one horsepower or less shall be 120/240 VAC single phase 60 Hz. Pumps above one horsepower shall operate on no less than 120/208 VAC three phase power. Pumps five horsepower and greater shall be 277/480 VAC three phase.

Bearings:

The pump shaft shall rotate on two bearings. Motor bearings shall be permanently oil or grease lubricated. The upper bearing shall be a single deep groove ball bearing. The lower bearing shall be a two-row angular contact bearing to compensate for axial thrust and radial forces. Single-row lower bearings shall not be acceptable.

Mechanical:

Each pump shall be provided with a tandem mechanical shaft seal system consisting of two totally independent seal assemblies. The seals shall operate in an oil reservoir that hydro-dynamically lubricates the lapped seal faces at a constant rate. The lower, primary seal unit located between the pump and the oil chamber shall contain one stationary ceramic and one positively driven rotating silicon carbide seal ring. Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment nor depend on direction of rotation for sealing. The position of both mechanical seals shall depend on the shaft. Mounting of the lower mechanical seal on the impeller hub shall not be acceptable. For special applications, other seal face materials may be available.

The following seal types shall not be considered acceptable or equal to the dual independent seal specified: shaft seals without positively driven rotating members, or conventional double mechanical seals containing either a common single or double spring action between the upper and lower seal faces.

Cartridge type systems shall be acceptable. No system requiring a pressure differential to offset pressure and to affect sealing shall be used. Pumps requiring use of proprietary seals shall not be allowed.

Each pump shall be provided with an oil chamber for the shaft sealing system. The oil chamber shall be designed to prevent overfilling and to provide oil expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication. The pump shall be able to operate dry without seal or bearing damage.

Pump Shaft:

Pump and motor shaft shall be the same unit. The pump shaft is an extension of the motor shaft. Couplings shall not be acceptable. The pump shaft material shall be AISI type 416F stainless steel in accordance with ASTM A276.

Impeller:

At the minimum impellers shall be of ductile iron ASTM A-536, dynamically balanced, coated with Metalclad Ceramally CP+AC manufactured by ENECON Corporation, double shrouded non-clogging design having a long throughlet without turns. The impellers shall be capable of handling solids, fibrous materials, heavy sludge and other matter found in wastewater. Whenever possible, a full vaned or vortex impeller shall be used for maximum hydraulic efficiency. Mass moment of inertia calculations shall be provided by the pump manufacturer upon request. The impellers shall be keyed to the shaft, retained with an Allen head bolt and shall be capable of passing a minimum 3 inch diameter solid. Impeller wear rings shall be replaceable 304 stainless steel.

Wear Rings:

A wear ring system shall be used to provide efficient sealing between the volute and suction inlet of the impeller. Each pump shall be equipped with a replaceable 410 stainless steel wear ring insert fitted to the volute inlet.

Volute:

The minimum pump volute material shall be single-piece gray cast iron, ASTM A-48 Class 30, coated with Metalclad Ceramally CP+AC manufactured by ENECON Corporation, non-concentric design with smooth passages large enough to pass any solids that may enter the impeller.

Protection:

All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. At 120°C (250°F) the thermal switches shall open, stop the motor and activate the alarm.

A leakage sensor shall be provided to detect water in the stator chamber as per the Approved Electrical Materials List. Either a Float/Seal Leakage Sensor (FLS) small float switch used to detect the presence of water in the stator chamber, or resistance-type shall be acceptable. When activated, the FLS shall send an alarm, to the PLC which will be indicated on the HMI and the SCADA. Use of a trip temperature above 120°C (250°F) shall not be allowed.

The thermal switches and FLS shall be connected to appropriate PLC addresses in the control panel.

Miscellaneous:

The pump guide rails shall be metal to metal M-T-M style with two inch (2") diameter minimum, 316 stainless steel pipe.

All brackets and mounting hardware shall be 316 stainless steel construction with passivation.

Each pump shall be fitted with a 316 stainless lifting bracket large enough to be easily attached to with a crane lifting hook without manned entry into the wet well. Attached lifting chains or guide cables shall not be allowed.

The following spare parts shall be provided:

1. One set of mechanical seals
2. One set of O-rings
3. One set of wear rings
4. One spare impeller coated with Metalclad Ceramally CP+AC manufactured by ENECON Corporation

Wet Well, Valve Vault, Piping, Fittings and Valves:

The wet well shall be ~~a~~ pre-cast manhole meeting the requirements of ASTM C 478 with a flat top cover and aluminum access hatch designed for H-20 loading, Flygt FLED-13 HD heavy duty aluminum hatch, 36" x 60" unobstructed clear opening, or sized as required by the pump manufacturer. or City of Lacey approved equal.. The wet well opening shall be fitted with a City approved Ultra GuardRail safety rail system, see detail. The wet well shall be a minimum of six feet diameter. A larger diameter wet well may be required upon review by the City. The wet well bottom shall have a manufactured hopper bottom that directs solids toward the pumps, see detail.

The wet well shall be core drilled for all conduit and pipe penetrations. Link-seal shall be used around all pipe and conduit penetrations to the wet well and the valve vault. After Link-seal has been installed the openings shall be sealed on both the inside and outside with non-shrink grout. Inside the wet well the non-shrink grout material shall be covered with the hi-grade calcium aluminate (Sewper coat) wet well coating material.

The wet well shall be designed for the soil conditions on the site including soil bearing conditions and ground water levels. Ladder rungs shall not extend below the high water level line.

The valve vault shall be a pre-cast utility vault as manufactured by Utility Vault, Inc. Vault shall have solid walls without knockouts. Pipe penetrations shall be cast or core drilled through walls and floor. All pipes shall be link sealed and grouted in place with non-shrink grout. Vault shall have floor with

drain sump and drain line back to wet well with an inline check valve and an in line P trap to prevent odors from entering the vault.

The valve vault hatches shall be aluminum as manufactured by LW Products Company or Halliday products or City of Lacey approved equal. The aluminum access hatches shall be hinged, spring-assisted hatches designed for H-20 loading.

The inside of the wet well shall be coated as outlined below to prevent corrosion.

As determined by the City during the civil plan review, the outlet of the last manhole prior to the wet well shall be equipped with a plug valve. . See detail.

Wet Well Coating:

The wet well coating material shall be 100% VOC-free self-priming structural polyurethane, SprayWall manufactured by SprayRoq, Inc., Birmingham, AL. The product shall be installed in accordance with the manufacturer's instructions by a factory certified applicator.
The wet well shall be prepared in accordance with the manufacturer's recommendation for the application to remove any dirt, debris or loose material.

The sprayed-on material shall be applied to completely and uniformly cover the wet well, walls and underside of lid a minimum of 250 mils (0.250 inch) in thickness. The sprayed on material shall form a seamless bond between the wet well wall and fiberglass hopper bottom. Some applications may require a greater surface coating; the manufacturer shall determine the proper application thickness. The finished surface shall be smooth and free from defects.

All manhole joints and pipe penetrations shall be watertight to prevent infiltration or ex-filtration prior to application of the product. Any drilling, cutting or fabricating done in the wet well that breaks or disturbs the coating shall be repaired with the same hi grade calcium aluminate coating in accordance with the manufacturer's instructions.

All pipe and fittings in the wet well shall be minimum ductile iron class 52 and shall be epoxy coated or polyethylene lined to a minimum of 10 mils thick on the inside and outside with a coating approved for constant contact with H2S (hydrogen sulfide). Coatings shall be applied according to the manufacturers' requirements by a certified applicator of the product. Coatings shall not be applied to pipe, fittings or valves in the field. All bolts, fasteners, brackets and hardware in the wet well shall be 316 stainless steel.

All pipe, fittings and valves in the valve vault shall be ductile iron class 52 and shall be epoxy or polyethylene lined to a minimum of 10 mils thick on the inside only with a coating approved for constant contact with H2S (hydrogen sulfide). Coatings shall be applied according to the manufacturers'

requirements by a certified applicator of the product. Coatings shall not be applied to pipe, fittings or valves in the field. The outside of the pipe, fittings and valves in the vault shall be painted with a minimum of 2 coats green hi-grade enamel after all components in the vault have been assembled.

An additional option for piping in the wet well and valve vault shall be welded HDPE meeting ASTM standard D 3350, SDR 11 3408.

Isolation valves in the valve vault shall be full port, 100% opening sewer rated plug valves. Valves shall be epoxy coated on both the inside and outside a minimum of 10 mils thick with a coating approved for constant contact with H2S (hydrogen sulfide). 4 inch and 6 inch valves shall have standard 2 inch hub with 10 position operating lever. Valves sized 8 inch and larger shall have gear reduction operation and hand wheels.

Check valves shall be sewer rated, bronze on bronze style seat with outside lever and spring. Valves shall be epoxy coated on both the inside and outside a minimum of 10 mils thick with a coating approved for constant contact with H2S (hydrogen sulfide). Check valves shall be ordered and installed in the vault as one right hand and one left hand model with the outside levers furthest away from each other (outside of piping configuration).

The valve vault emergency by-pass pumping connections shall be 6 inch aluminum male cam lock style fittings. Fittings shall have a female cap installed. Cam lock fittings shall face “UP” as shown on detail and clearly visible and accessible for connection with 6 inch by-pass hose from above.

7C.060 Electrical

General:

Definition of all terms, etc., shall be according to AIA and IEEE standard definitions. Shop drawings shall be submitted during design review on all special equipment, and approval obtained before manufacture. Drawings shall be diagrammatic; locations of all outlets will be checked and verified on project site.

Electrical cabinets shall be equipped with a metal cabinet roof. The minimum overhang shall be a minimum of 4 feet on the front face with one foot on all other sides. The design shall be approved by the City.

Where conflict occurs with other equipment, consult City for final decision. The engineer is responsible for obtaining rough-in dimensions from supplier for equipment.

All work shall be done per National Electrical Code as amended by WAC 296-46, City of Lacey electrical code as adopted by LMC 14.13 and City of Lacey Standards. The most stringent standard shall apply. The Developer shall obtain all permits and arrange inspections.

The Developer shall coordinate power service with serving utilities and make arrangements for power service connection.

The pump control and electrical equipment shall be factory manufactured and field installed. It shall be fabricated and assembled by an approved U.L. or ETL listed manufacturer, and constructed in conformance with U.L. 508A standards.

Pump Station Telemetry & Controls:

Multiple pump control function: Each pump shall operate in an alternating configuration providing rest for the last lead pump. Each pump shall be provided with a HAND-OFF-AUTO (HOA) selector switch which shall control the pump as follows:

1. Hand Position: When the HOA switch is placed in the HAND position, the pump shall immediately start and run until HOA switch is placed in the OFF position. Pumps shall not be controlled by level sensors when the HOA switch is in the HAND position.

2. OFF Position: When the HOA switch is placed in the OFF position, the pumps shall immediately stop, except when the high water alarm has been tripped.

3. AUTO Position: When the HOA switch is placed in the AUTO position, the pumps shall start and stop automatically in response to the water level and in the sequence determined by the controller. One pump shall start as the lead pump when the water level rises above the Lead Pump-On level. The pump shall run continuously until the water level decreases to the Pump-Off level. When both pumps are called to run, the lag pump will be set to shut off at a point 10% before to the lead pump shut off.

Pump Running Indication: Provide indicating lights (green) that shall indicate the pump running condition. The light shall glow steadily when pump is running and shall be turned off whenever the pump is not running.

Alarms: Alarms shall be reported locally at the control panel Human Machine Interface (HMI). In the event of an alarm, the corresponding indicator shall light showing the alarm condition/fault. All alarms shall be relayed by the Programmable Logic Controller (PLC) to the Master Telemetry Unit (MTU) for logging and display in the SCADA system.

The schematic and line diagrams shall show the following input/output addresses.

The controller shall be wired using the following addresses:

Standard Lift Station		PLC Input Address
High Water Level		I: 0/0
--		I: 0/1
Intrusion		I: 0/2
Control Volt Fail		I: 0/4
High Water Reset		I: 0/5
--		I: 0/6
Generator Run		I: 0/7
Generator Fail		I: 0/8
Water Level		I: 1/0
Force Main Pressure		I: 1/1
Force Main Flow		I: 1/2
Pump 1 Auto		I: 2/0
Pump 1 Hand		I: 2/1
Pump 1 Overload		I: 2/2
Pump 1 Seal Fail		I: 2/3
Pump 1 Overtemp	--	I: 2/4
Pump 1 Run-CV SW	--	I: 2/5
Pump 1 Fail Reset		I: 2/6
Pump 1 Jog		I: 2/7
Pump 2 Auto		I: 2/8
Pump 2 Hand		I: 2/9
Pump 2 Overload		I: 2/10
Pump 2 Seal Fail		I: 2/11
Pump 2 Overtemp	--	I: 2/12
Pump 2 Run-CV SW	--	I: 2/13
Pump 2 Fail Reset		I: 2/14
Pump 2 Jog		I: 2/15
Pump 3 Auto		I: 3/0
Pump 3 Hand		I: 3/1
Pump 3 Overload		I: 3/2
Pump 3 Seal Fail		I: 3/3
Pump 3 Overtemp	--	I: 3/4
Pump 3 Run-CV SW	--	I: 3/5
Pump 3 Fail Reset		I: 3/6
Pump 3 Jog		I: 3/7
Pump 4 Auto		I: 3/8
Pump 4 Hand		I: 3/9
Pump 4 Overload		I: 3/10
Pump 4 Seal Fail		I: 3/11
Pump 4 Overtemp	--	I: 3/12
Pump 4 Run-CV SW	--	I: 3/13

Pump 4 Fail Reset	I: 3/14
Pump 4 Jog	I: 3/15

Control cabinets shall have the following minimum features:

1. Enclosure (cabinet) shall be stainless steel NEMA 3R construction, with drip shield installed by the manufacturer. The cabinet shall be custom manufactured at the cabinet manufactured facilities to receive the 3R rating and labeled before leaving the manufactured factory. A NEMA 12 cabinet that has a field installed 3R drip shield will not be accepted. Cabinet shall be UL listed and labeled accordingly.

2. Intrinsically safe barriers for liquid level sensor circuits within hazardous areas.

3. A short circuit study and Arc-Flash calculations shall be completed. Pertinent Arc-Flash labels shall be applied within the cabinet per OSHA WISHA standards.

4. Indicating light units shall be oil tight sealed type. Units shall use a full voltage LED lamp and shall be of the illuminated push-button type with the push-button wired for both the push to test function and reset function as indicated. Lens caps for lights shall be colored as specified in the applicable wiring diagram.

5. Elapsed time meters shall have a 5-digit non-reset register with the last digit indicating tenths of an hour. Lag pump counter shall be a 5 digit re-settable meter.

6. Control relays shall be hermetically sealed, industrial grade rated for 600 Volts AC. Contacts shall be silver alloy. Parts shall be corrosion-resistant or treated in an approved manner to resist corrosion. Selector switches shall be 3-position maintained type meeting NEMA Type 4X requirements. Legend plate shall be marked HAND-OFF-AUTO. Each pump power supply wiring shall be equipped with a thermal-magnetic circuit breaker within the pump control panel equipped with a lockable actuator accessible from the outside of the control panel.

7. A control power transformer is required for all 277/ 480 systems. The primary of the transformer shall be protected with the appropriate size circuit breaker and the secondary shall be connected to the load center main breaker only. The transformer shall have 7.5 KVA minimum capacity sized to supply 125% of the total control, heating, lighting, and other miscellaneous 120 VAC loads.

8. Panel wiring shall be Stranded Type MTW rated 90°C with a minimum size of No. 14 AWG. Compression or ring tongue type

lugs shall be used for transformers. Wires crossing hinges shall be installed in a manner to prevent chaffing. Plastic wire gutters and nylon cable wrap and wires shall be used to guide and train the wire as necessary.

9. Radio communication and data transfer between lift station and the operations center Supervisory Control And Data Acquisition (SCADA) system shall be fully operational prior to station acceptance. The contractor or developer shall provide services by Technical Services Inc. (TSI) to have the SCADA screens programmed to the City's specifications to accommodate the new lift station.

10. Main power service disconnect shall be mounted on the outside of the controls cabinet. The service disconnect shall be lockable in both the on and off positions. The main circuit breaker and transfer switch shall be mounted inside the enclosure.

11. Radio antenna, mast and weather head for telemetry shall be mounted per detail. All mounting hardware shall be 316 stainless steel.

12. Electrical control cabinet shall be wired and supplied with a "Pendant Station" for remote operation of the pumps. Pendant shall be Woodhead model 4052 for two pump systems, Woodhead model 4023 for three pump systems and Woodhead model 4024 for four pump systems.

High Level Sensors: Level sensors shall be a float switch type utilizing a mercury switch mounted in a chemical resistant casing suspended on its own cable. If the sensor comes in contact with the rising liquid level, the sensor shall tilt and cause the internal mercury switch to close its contact. The sensor shall stay tilted until the liquid level decreases below the sensor. The level sensor shall be designed for intrinsically-safe low power applications. The cable shall be 45 feet long. Sensor shall be provided for high wet well level alarm and pump down override.

The following list of approved materials shall be shown on the plans and include brand name, model and part numbers.

CITY OF LACEY LIFT STATION
APPROVED ELECTRICAL MATERIALS LIST:

Wiring / Instrumentation / Controls:

A. Conduit and fittings - Shall be PVC coated rigid steel R.M.C. with polyethylene inner coat, RobRoy Plasti-Bond, T&B Ocal-Blue or approved equal. All bends 11.5º or greater shall be factory formed elbows. All enclosure penetrations shall be sealed with a PVC coated Myers type hub and sealing locknut.

B. Supports and mounting brackets - Shall be 12 gauge, 7/8 and or 1-5/8 inch, stainless steel Unistrut channels with stainless steel clamps, nuts, bolts and mounting hardware.

C. Control Panel Wire – #14 AWG minimum, stranded copper MTW only. No vinyl covered wire.

D. Main Cabinet Enclosure – Stainless Steel NEMA 3R with rain gutter (pre-installed by the manufacturer) and weather tight seal, standard Burgess Lock #Al36 and double entry doors. Minimum cabinet size 72x72x24 inches with 12 inch high stainless steel floor stands. Cabinet shall display a permanent mounted identification tag with model, serial number; make manufacturer information and UL or ETL electrical fabrication shop information.

E. Enclosure heater – Hoffman # DAH2002A or properly sized for cabinet, 120 208/240 VAC.

F. Enclosure fan and inlet air filter – ICEqube inc. IQ`150FPWSS-126Enclosure Thermostat – Stego ZR 01175.0-01

G. Enclosure light - Hoffman ALF16M24R or GE 16547

H. Area Light – Lithonia Lighting Model # KAD-100S-R4-120SP-D04 on 12’ pole

I. Pump control panel –or Hoffman CSD Series enclosure min size 36”H x 30”W x 12”D, or Orenco duplex community systems shall use standard Orenco large fiberglass control panel box. The door openings shall be coordinated between the separate internal enclosures to avoid interfering door openings.

J. Load center and housing– Cutler Hammer 12 circuit

K. Intrusion switch – Cutler Hammer E49M11MP1 or E49M11UP1.

L. Timers – Crouzet Chronos OUR1-120VAC

M. Control relays – IDEC RH_B-UL, contact sets and coil voltage as required.

N. Intrinsic safe barriers – Turck IM1-22Ex-R DIN rail style mounted intrinsically safe relay barrier. Turck IM31-22Ex-I DIN rail style mounted intrinsically safe analog barrier. 2 inch minimum separation between intrinsically safe wiring and other wiring. All analog wiring shall be shielded twisted pair.

O. Phase Fail Relay – Crouzet #84873220

P. Transient voltage surge suppressor – GE 9L15ECC001 for 3 phase applications, GE 9L15FCB001 for 120/240 applications.

Q. Indicator lights – Cutler Hammer or Idec HW Series, 22 mm, 120 VAC LED or incandescent. push to test. Color as indicated on wiring diagram.

R. Fuses and fuse holders – Bussmann fuses. Fuse holders with blown fuse indicator light, Bussmann, Allen-Bradley, Idec or Sprecher Schuh.

S. Motor Starters – Cutler Hammer XTOB series with reset modules or Sprecher Schuh CA7 series across the line starters, Cutler Hammer or Sprecher Schuh soft starters required for applications using pump motors greater than 20 HP.

T. Motor Overload Relays – Cutler Hammer XTOB series with rest modules or Sprecher Schuh CEP7 series equipped with CEP7-EMDR reset modules. Soft starters shall be equipped with electronic overload protection that can be reset remotely through the designated 120 VAC PLC output addresses. Automatic reset overload protection is not acceptable.

U. Motor Circuit Breaker – Cutler Hammer HMCPE0xxHIC (Size) R3C with Cutler Hammer EHMVD (length) R lockable operator. Size breaker for motor service factor current draw. Operator shall be on outside of Motor Control Panel door, length is enclosure dependent. Note: xx = current size.

V. Selector Switches – Sprecher Schuh, Idec HW series, or Cutler Hammer, Class 9001, Type TL3, 22 mm

W. Float Switch –Opti-Float

X. Limit Switches –Cutler Hammer part # E50BLL16P; stainless steel adjustable arm part # E50KL538 Thermal Magnetic Circuit Breakers –Cutler Hammer

Y. Control Circuit Breakers – Cutler Hammer WMT Series Allen Bradley 1489-A1Cxx0 or Sprecher Schuh

Z. Automatic Transfer Switch – Eaton service entrance rated ATC 300+ rated at 125% full load minimum. Transfer switch must have an auto exerciser for the generator that can be set to operate 24/7, 365 days.

AA. Manual transfer switch – Cutler Hammer, knife style with center off position

BB. Generator Plug – Appleton ADJA1044-150-RS 250VDC 600VAC

CC. Ammeters – Yokogawa, transformer type. Size to read not more than 50% of full scale at full load amp draw.

DD. GFCI Receptacle – Leviton 20A - 120V with LED indicator and weatherproof cover.

EE. Level Controller – Siemens LUT. #7ML5050-OAA11 and Siemens Echomax XPS-15 level transducer (no splice allowed in cable). The alarm relay sequence is: relay 1 high wet well, relay 2 low level. Provide analog signal to PLC through shielded twisted pair cable. The location of the transducer head shall not be in conflict with pump removal, piping, or components inside the wet well.

FF. Strain Relief Cord Grips – Max-Loc Cord Grip with Plastic Mesh, Type 3R. Manufacturer: Woodhead L.P. Part # 55xxNM (xx = cable size range). Hubbel Single Mesh 024010xx. xx being cable diameter.

GG. Uninterruptable power supply – Cutler Hammer, APC or Sola, 650 VA minimum, heavy duty type. UPS mounts on a shelf in the controls enclosure backplane.

HH. Control Power Transformers – Cutler Hammer or Sola, minimum 7.5 KVA or larger sized accordingly, heavy duty.

II. Power supply – SOLA SDN9-12-100P. Mount inside pump control panel.

JJ. Terminal blocks – Sprecher Schuh V7-W4 Series or Allen Bradley 1492-W4

KK. Pendant station – Woodhead 4052 for 2 pump systems, Woodhead 4023 for 3 pump systems, or Woodhead 4024 for 4 pump systems.

LL. Plastic wiring duct – Panduit or IBOCO

MM. Programmable logic controller – Allen Bradley MicroLogix 1100 P/N 1763-L16DWD base unit.

NN. PLC input/output expansion cards – Allen Bradley 1762-IF4 analog input, 1762-IQ16 digital input (12 VDC), and 1762-OW16 discreet output.

OO. HMI Screen – Allen Bradley 2711P-B6C1A PanelView Plus 700. Allen Bradley H.M.I. panel view plus 700 color touch screen, 120 VAC, Ether Net/IP communication and RS-232 Printer port.

PP. Force Main Pressure Transmitter – Foxboro IGP10-AD1D3F-Z1 with PSTAD-25USSS2SBS1 NPT seal and flush port, Sea-Port Technical Controls SO 1471880. Pressure transmitter and mechanical gauges shall be mounted with an annular seal manufactured by Onyx valve.

QQ. Flow transmitter – Element: Foxboro series 9100A or Siemens Sitrans FM Mag 5100W. Shall be designed for wastewater, be elastomer lined, and have SS sensors. Transmitter: Foxboro IMT 25 or Siemens Mag 6000I.

RR. Padlocks – BestLock 11-B772 with MA cores. Minimum 5 required, additional locks may be required depending on site layout and security requirements.

Radio Telemetry:

A. UHF radio – DataRadio Integra – TR wireless modem Part No. 242-4048-510, 9600 KBPS, 2W, 450-470 MHz 12.5 KHZ Bandwidth, 12 VDC Powered.

B. UHF antenna – Antenex Y4506, Yagi; 10.2 dB gain 450-470 MHz

C. Lighting Arrestor - Poly Phaser IS-B50LN-C2, -N-Type Fittings 125-1000 MHz, 125 W. Connect directly to earth ground rod system with #8 AWG or larger Cu wire.

D. Special Note:

All penetrations made to enclosures, panels, breaker boxes, cabinets, etc. shall be made with PVC coated water tight fittings such as Myers Hub type. All penetrations shall be in bottom of the enclosures.

7C.070 Standby Power Generator System

General:

Diesel standby power generation equipment designed with capacity and rating to safely carry the entire connected lift station load shall be provided at the lift station site to operate the lift station in the event of a power outage. The Developer shall provide the City of Lacey the design load calculations during the submittal process. All generators equal to or greater than 500 kW shall be equipped with a permanent load bank sized for 80 percent of the engine

generators rated capacity. This shall be installed within the discharge air duct work for the generator.

The auxiliary power unit shall include, but not be limited to, the following:

1. Generator, control panel and circuit breaker.
2. Engine, radiator and exhaust system.
3. Fuel tank (capacity for 24 hours full load, plus 25%).
4. Locking generator enclosure, keyed with standard City of Lacey cabinet key for all cabinets.
5. Automatic transfer switch.
6. Radiator protection (as approved by the City) or automatic louvers.
7. Block heater connected to L.S. power supply and not generator.
8. Battery and rack.
9. Battery charger connected to L.S. power supply and not generator.
10. Conduit, wire and piping.
11. Coolant recovery system

The generator set shall be Cummins/Onan, Katolite, Kohler or City approved equal complying with the latest edition of Onan Corporation standard specifications and with the City standards.

The generator set shall include the following:

Engine:

- Single phase, 750, 1000, 1500, 2250 or 3000 watt coolant heater manufactured by Universal Engine Heater Co., INC (509-276-5923) 115 volt or 230 volt sized accordingly for the engine displacement. All heaters 1500 watt or larger shall be 230 volt. All engine heaters shall also have the Universal 59-T adjustable thermostat installed.
- A replacement parts kit shall also be supplied for the heater. The kit shall include a replacement water element, thermostat and all gaskets and seals needed to rebuild the heater. Engine heater shall have a proper sized cord connector and receptacle.

Generator Set:

- Mainline circuit breaker
- Weather-protective/sound dampening enclosure with mounted silencer (maximum noise level of 64 dBA at 23 feet).

- 5-year basic power warranty.

Accessories:

- Batteries
- Battery Charger, 2 AMP, 12 VDC, 120 VAC Input. Shall maintain a float charge. The battery charger shall be manufactured by the generator manufacture or by Deltran Battery Tender Plus battery charging system. www.batterytender.com Battery charger shall have a proper sized cord connector and receptacle.
- Vibration Isolators, Pad Type

Control Panel:

- Annunciator relays (12)
- Run relay package (3)
- Low coolant level shutdown
- Anti-condensation space heater, 120 VAC
- Oil temperature gauge
- Emergency stop switch

Fuel System:

- Diesel

Alternator:

- Anti-condensation heater, 120 VAC

Exhaust System:

- Exhaust silencer (64dBA AT 23 feet)

Control Features:

- Run-stop-remote switch
- Remote starting, 12-volt, 2-wire
- Coolant temperature gauge
- Field circuit breaker
- DC voltmeter
- Running time meter
- Lamp test switch
- Oil pressure gauge
- Fault reset switch
- Cycle cranking
- 12-light engine monitor with individual 1/2 amp relay signals and a common alarm contact for each of the following conditions:
- Run (Green Light)
- Pre-Warning for low oil pressure (Yellow Light)

- Pre-Warning for high coolant temp (Yellow Light)

- Low oil pressure shutdown (Red Light)
- High coolant temperature shutdown (Red Light)
- Over crank shutdown (Red Light)
- Over speed shutdown (Red Light)
- Switch off (Flashing Red Light - indicates generator set not in automatic start mode)
- Low coolant temperature (Yellow Light)
- Low fuel (Yellow Light)
- Two customer selected faults (Red Light)
- All lights shall be L.E.D.

AC Meter Package:

Order with NFPA 110 monitor to meet code requirements.
- AC voltmeter (dual range)
- AC ammeter (dual range)
- Voltmeter/ammeter phase selector switch with an off position
- Dual scale frequency meter/tachometer
- AC rheostat (panel mounted) for +5% voltage adjust

The transfer switch shall include the following:

- Sized for full station and auxiliary equipment load, plus 25%

Pole Configuration:

- Poles - 3 (Solid Neutral)

Frequency:

- 60 Hertz

Application:

- Utility to generator set with programmable automatic transition
- Service entrance rated with circuit breakers and neutral bonding provision
- Programmable exercise clock for 365 days

System Operation:

- Single-phase 3 wire or three phase, 4-wire wye, voltage to match utility power supply.

Enclosure:

- B002 Type 3R; Intended for outdoor use (dust proof and rainproof) shall have radiator grill protection or automatic louver system (as approved by the City).

Listing:

- Listing - UL 1008

Programmed Transition:

- Program Transition - 1-60 sec.

Exerciser Clock:

- 365-day solid-state exerciser clock

Application Modules:

- Monitor - Phase Sequence/Balance

Suitable guards shall be provided on all electrical parts to minimize the personal shock hazard.

Generator shall be broken-in sufficiently to permit application of full load immediately upon installation.

Generator supplier shall provide all tools for the generator set as recommended and required by the manufacturer.

Generator installation shall be checked by the supplier after installation to determine that the installation is correct. Written confirmation shall be provided to the City. Generator supplier shall perform a full load test for two (2) hours after installation is complete. Results from the start up load tests and generator checklists shall be provided to the City.

Generator supplier shall provide a minimum of four (4) hours of training for City personnel at the station site during start-up.

Generator manufacturer shall provide three (3) copies along with an electronic copy of the maintenance and operation manual. These manuals shall be complete and shall include all information necessary to all City personnel to maintain the generator.

The Developer shall provide the following spare parts for the generator: one complete replacement set, combustion air filters, two complete replacement sets, lube oil filters, two complete replacement sets, fuel filter (if required), two complete replacement sets, coolant filters (if required), one complete replacement set, all V-belts, one complete replacement set, special tools for engine or generator.

Generator and fuel tank mounting pad shall be per the manufacturer's requirements.

7C.080 Odor Control

Odor control shall be provided at the lift station and/or at the pressure main discharge manhole as determined and required by the City.

Refer to chapter 7D.080 for pressure main termination and odor control requirements.

7C.081 Lift Station Safety/Security

Prior to acceptance of the lift station along with the lift station signage, the developer shall be invoiced for five (5) Best Lock 11-B772 with cores. Additional locks may be required depending on site layout and security requirements.

7C.085 Lift Station Information Checklist

The lift station information checklist shall be filled out by the developer and included on the face of the engineering drawings and in the Operation and Maintenance manual.

7C.090 Lift Station Inspection Checklist

The lift station inspection checklist on the following pages will be used by the City when doing a final inspection of a lift station. Additional items may be added depending on the type and style of station constructed. This list is provided to help the contractor prepare for the final inspection.

LIFT STATION INSPECTION CHECKLIST

Inspectors: _____ Date: _____

Name of Lift Station:_____

Location: _____

Address:_____

Assigned Lift Station Number: _____ Residential / Commercial / Combo

Type of Pump(s) and Quantity (Submersible), (Dry Well/Wet Well), (Step Submersible)
Type:_____Quantity:_____

Nameplate Data:

Motor(s)	**Pump(s)**
Manufacturer: _____	Manufacturer: _____
Model #:_____	Model #: _____
Serial #:_____	Serial #:_____
Voltage/Phase:_____	Capacity (GPM):_____
Horsepower :_____	TDH (ft) :_____
RPM :_____	RPM :_____
	Impeller Size/Type:_____

Motor Nameplate Amps: #1_____ #2_____ #3_____ #4_____

Motor Nameplate SF Amps: #1_____ #2_____ #3_____ #4_____

Comments:_____
_____
_____
_____
_____

Auxilary Generator Nameplate Info:

Generator	**Engine**	**Transfer Switch**
Manufacturer:_____	_____	_____
Model:_____	_____	_____
Serial:_____	_____	_____
Voltage/Phase:_____	Spec/CPL#:_____	Voltage/Phase:_____
Size (KW):_____	Fuel Type:_____	Auto: ___ Manual:___
Phase:_____	Water Cooled:_____	APU Plug:_____
Main Breaker Size:_____	Block Heater:_____	Battery Charger:____

Auxiliary Generator Operation OK Yes / No
Transfer Switch Operation OK Yes / No
Generator Condition OK Yes / No
Generator Voltage Taken at Terminal Block: L1_____ L2_____ L3_____

Comments:_____
_____
_____
_____
_____

RP Backflow Device Information:

Manufacturer:_____
Model #: _____
Serial #: _____
Size:_____
Date Inspected:_____
Pass/Fail:_____
Inspected By:_____

Pressure Transducer Info:

Manufacturer:_____
Model #:_____
Serial #:_____
Size:_____
Type:_____
Pressure Gages: Yes / No
# of Pressure Gages:_____

Comments:_____
_____
_____
_____
_____

Wet Well Information:

Diameter:_____ Gallons Per Inch:_____
Rim Elevation:_____
Influent I.E.:_____
Bottom I.E.:_____
Influent Pipe Size:_____

Force main Piping:

Diameter:_____
Discharge Elevation:_____
Pipe Length:_____
Type:_____

Wet Well:

Corrosive Resistant Coating Yes / No
Wet Well Hatch & Latch Yes / No
Wet Well Safety Grate Yes / No
Wet Well Safety Railings Yes / No
Debris in Wet Well Yes / No
Infiltration Points Yes / No
Wet Well Ladder Yes / No (Ladder Not To Extend Below High Water Level)
Wet Well Piping Proper Size Yes / No
Piping Epoxy Coated Yes / No
Wet Well Mechanical Components Installed: Yes / No
Wet Well (Nuts, Bolts, & Anchors to Spec, Grade (316S.S) and in place) Yes / No
Wet Well Surcharging Upstream Yes / No
Fall Protection Railings: (Installed around Hatch) Yes / No
Motor Leads / Float cord Grips: (Installed & Meet spec.) Yes / No
(Woodhead Max- Log Cord Grip with Plastic Mesh)

Flow Meter: Yes / No

Manufacturer:_____
Model #:_____
Serial #:_____
Size: _____
Type: _____

Debris Tank:

Debris Tank Size**:** _____ Gallons.
Risers installed and sealed: Yes / No _____
Lids Install and Screwed in Place No Cracks: Yes / No _____
Bio Tubes: (Installed and Removable) Yes / No _____
Sanitary Tees Installed and Functional: Yes / No _____
External J Box: (Operation Ok) Yes / No _____
Septic Float: (Installed & Set, Splice Ok) Yes / No _____
Fall Protection Railings or Grates in Place: Yes / No _____

Comments:_____
_____
_____
_____
_____

Odor Control:

Product Tank: (Installed & sized correctly) Yes / No Tank Size: _____
Control Cabinet: (Installed & Wired Correctly) Yes / No _____
Pumps & Bellows: (Installed & Sized Correctly) Yes / No _____
Calibration Cylinder and Valves: (Installed) Yes / No _____
Y-Strainer: (Installed and Sized Correctly) Yes / No _____
(Injection in Force main not Wet Well:) Yes / No _____

Comments:
_____
_____
_____
_____

Check Valve Vault:

Operation of Vault Hatch & Latch Yes / No
Isolation Valves Operation Ok Yes / No
Vault Drain/Sump/Clean/ Yes / No
Isolation Valves Handles Ok Yes / No
Isolation Valves Operation Ok Yes / No
Check Valve Operation Yes / No
Emergency Bypass Operation Yes / No
Check Valve Limit Switches Yes / No
Limit Switches: (Operational Ok) Yes / No

Comments:_____
_____
_____
_____
_____

Station Control:

Type: Floats:	Yes /No	Number of Floats: _____	
Milltronics:	Yes / No	XPS-15 Ultrasonic Transducer	Yes / No
Pulsar:	Yes / No	Black Box Ultrasonic 130D	Yes / No
Red Lion PM	Yes / No	Submersible Transducer:	Yes / No

Level Settings:

Set to Engineers Spec.: Yes / No
Relay # 1 High Water Alarm: _____: ft/in. / High Water Off: _____ft/in
Relay # 2 Lag Counter: _____: ft/in. / Lag Counter Off: _____ft/in
Relay # 3 Lag Pump On _____: ft/in. / Lag Pump Off: _____ft/in
Relay # 4 Lead Pump On _____: ft/in. / Lead Pump Off: _____ft/in
Relay # 5 Low Level On _____: ft/in. / Low Level Off: _____ft/in
Empty Distance to Transducer:_____: ft/in. / Wet Well Depth: _____ft/in

Comments:_____
_____
_____
_____
_____

Electrical / Controls:

Electrical Service Size:_____
Main Breaker Size:_____
Panel Size: _____
Voltage:_____
Phase:_____

Voltage Taken @ Terminal Blocks: L1_____ L2_____ L3_____
Control Panel Appropriate UL Labels: Yes / No _____
Control Panel Lighting: Yes / No _____
Wiring Schematics for Correlation: Yes / No _____
Legend Plates / Labels: Yes / No _____
Wire Gauge Correct/ Color: Yes / No _____
Raceways & Electrical Conduits for Defects (OK):Yes / No _____
Terminal Blocks: (Ok for Size and Type) Yes / No _____
All Wires: (Connected & Grounding Ok): Yes / No _____
Panel Wiring: (Labeled and Identified) Yes / No _____
Panel Lights: (Operation Ok / Push to Test) Yes / No _____
HOA (Operation Ok) Yes / No _____
Ammeters: (Installed & Sized Correctly) Yes / No _____
Phase Monitor: (Operation & Set Correctly) Yes / No _____
UPS: (Connected and Operational) Yes / No _____
Power Supplies: (Connected and Operational) Yes / No _____
Transformers: (Sized and Fused Correctly) Yes / No _____
Load Center: (Sized and Labeled Correctly) Yes / No _____
Electrical Cabinet Heater: (Operation Ok) Yes / No _____
Electrical Cabinet Fan & T-Stat: (Operation Ok) Yes / No _____

Disconnect: (Operation Ok) Yes / No _____
Proper Sized Circuit Breakers & Fuses: Yes / No _____
Electrical Control Devices Sized for Motors: Yes / No _____
Overload Devices, Trip Test & Manual Reset: Yes / No _____
Hour Meter Readings: (Operation Ok) Yes / No _____
Pump#1_____ Pump#2_____ Pump#3_____ Pump#4_____
Event Counter Readings: (Operation Ok) Yes / No _____
Pump#1_____ Pump#2_____ Pump#3_____ Pump#4_____
Lag Counter: (Operation Ok & Resettable) Yes / No _____
Pendant Station: (Installed & Operation Ok) Yes / No _____
All Equipment UL Listed & to City of Lacey spec. Yes / No _____

Comments:
_____
_____
_____
_____

Telemetry / SCADA / Alarm Functions:

Antenna: (Installed & Sealed / Aimed at Repeater) Yes/No: _____

	(Operation Ok) At Site:	(Operation Ok) At Shop:
Communications: (OK)	Yes / No: _____	Yes / No: _____
RTU Power Fail:	Yes / No: _____	Yes / No: _____
High Wet Well:	Yes / No: _____	Yes / No: _____
Low Wet Well:	Yes / No: _____	Yes / No: _____
Intrusion:	Yes / No: _____	Yes / No: _____
Phase Lose/C-volt Fail:	Yes /No: _____	Yes / No: _____
Pump#1 Run:	Yes / No: _____	Yes / No: _____
Pump#1 Fail:	Yes / No: _____	Yes / No: _____
Pump#1 Motor Over/Temp:	Yes / No: _____	Yes / No: _____
Pump#1 Soft Starter Fail:	Yes / No: _____	Yes / No: _____
Punp#1 Seal Fail Alarm:	Yes / No: _____	Yes / No: _____
Pump#2 Run:	Yes / No: _____	Yes / No: _____
Pump#2 Fail:	Yes / No: _____	Yes / No: _____
Pump#2 Motor Over/Temp:	Yes / No: _____	Yes / No: _____
Pump#2 Soft Starter Fail:	Yes / No: _____	Yes / No: _____
Punp#2 Seal Fail Alarm:	Yes / No: _____	Yes / No: _____
Pump#3 Run:	Yes / No: _____	Yes / No: _____
Pump#3 Fail:	Yes / No: _____	Yes / No: _____
Pump#3 Motor Over/Temp:	Yes / No: _____	Yes / No: _____
Pump#3 Soft Starter Fail:	Yes / No: _____	Yes / No: _____
Pump#3 Seal Fail Alarm:	Yes / No: _____	Yes / No: _____
Pump#4 Run:	Yes / No: _____	Yes / No: _____
Pump#4 Fail:	Yes / No: _____	Yes / No: _____
Pump#4 Motor Over/Temp:	Yes / No: _____	Yes / No: _____
Pump#4 Soft Starter Fail:	Yes / No: _____	Yes / No: _____
Punp#4 Seal Fail Alarm:	Yes / No: _____	Yes / No: _____
Generator Run:	Yes / No: _____	Yes / No: _____

Generator Fail: Yes / No: _____ Yes / No: _____
Septic High Level: Yes / No: _____ Yes / No: _____
Control Override: Yes / No: _____ Yes / No: _____
Flood Alarm: Yes / No: _____ Yes / No: _____
Smoke Alarm: Yes / No: _____ Yes / No: _____

Analog Signals:

Wet Well Level: Yes / No: _____Yes / No: _____
L.S Station Flow: Yes / No: _____Yes / No: _____
L.S Station PSI: Yes / No: _____Yes / No: _____
Water System PSI: Yes / No: _____ Yes / No: _____

Comments:
_____
_____
_____
_____

Pump/Motor/Operation & Performance Test:

Note: Check that motors are not exceeding their nameplate amperage multiplied by the motor service factor, (i.e., with Full Load Amps (FLA) FLA = 10 and Service Factor (SF) SF = 1.15, the amperage recorded should not exceed 11.5 amps). The motor will operate satisfactorily under the following conditions of voltage and frequency variation, but not necessarily in accordance with the standards established for operation under rated conditions.

- The voltage variation may not exceed 10% above or below rating specified on the motor nameplate.
- The frequency variation may not exceed 5% above or below motor nameplate.
- The sum of the voltage and frequency variations may not exceed 10% above or below motor nameplate rating, provided the frequency variation does not exceed 5%.

Pump #1 Running Amps: L1 _____ L2 _____ L3 _____
Pump #2 Running Amps: L1 _____ L2 _____ L3 _____
Pump #3 Running Amps: L1 _____ L2 _____ L3 _____
Pump #4 Running Amps: L1 _____ L2 _____ L3 _____

Pump Performance during Startup: (In Gallons per Minute) TDH: _____
Pump#1_____ Pump#2 _____ Pump#3 _____ Pump#4 _____
Pumps# 1&2&3&4: (Running Together) _____GPM

	OPERATION OKAY	
	Yes	**No**
Unusual Noise or Vibration #1 Pump or Motor:	_____	_____
Comments: _____		
Unusual Noise or Vibration #2 Pump or Motor:	_____	_____
Comments: _____		
Unusual Noise or Vibration #3 Pump or Motor:	_____	_____
Comments: _____		
Unusual Noise or Vibration #4 Pump or Motor:	_____	_____
Comments: _____		
Proper Pump Rotation:	_____	_____
Comments: _____		
Sealed Bearings:	_____	_____
Comments: _____		
Pump Alternator Operation:	_____	_____
Comments: _____		

Comments:
_____
_____
_____
_____

Site Layout & O/M Manuals / Spare Parts:

	Operation Okay	
	Yes	**No**
2 inch Wash down hydrant and RPBA: Comments: _____	_____	_____
Locks: (Developer Invoiced -Six Locks) Comments: _____	_____	_____
Site lighting: Comments: _____	_____	_____
Fence (7' high) and gate Area: (Min: 15 foot Gate) Comments: _____	_____	_____
Driveway / Access: Comment: _____	_____	_____
Site Paving & Site Rock (Done to Spec) Comments: _____	_____	_____
O & M Manuals (3 copies each):	_____	_____
Lift Station: Comments: _____	_____	_____
Generator: Comments: _____	_____	_____

Spare Parts Received:

Generator:	Yes	No	Pump:	Yes	No
Filters:	____	_____	Mechanical seals	_____	_____
Belts:	_____	_____	O-Rings:	_____	_____
Hoses:	_____	_____	Wear Rings:	_____	_____
Spare Pump and Motor:				_____	_____
Keys Received:				_____	_____
Warranty:				_____	_____

Comments:
_____
_____
_____
_____
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_____
_____
_____

Other Comments:

_____
_____
_____
_____
_____
_____
_____
_____
_____

Inspectors Signature of Acceptance :

Project Inspector: _____ Date: _____

Shop Operations: _____ Date: _____

7D PRESSURE SEWER (PRESSURE MAIN)

7D.010 General

Low pressure systems, such as S.T.E.P. or grinder may be considered for situations where conditions make gravity sewer impractical. Lift station pressure mains will also fall under these same design criteria.

7D.020 Design Standards

The design of any sewer extension/connection shall conform to City standards, Department of Ecology's "Criteria of Sewage Works Design", and any applicable standards as set forth herein and in sections 3.010, 3.040, and 7A.010.

The layout of extensions shall provide for the future continuation of the existing system as determined by the City. In addition, main extensions shall be extended to and through the site of the affected property fronting the main.

The system shall be designed as per Section 7B.020.

Privately owned pressure mains shall have a isolation valve installed on the main at the right of way.

Grinder system pressure mains shall not be combined with or connected to S.T.E.P. pressure sewer mains. Grinder and/or S.T.E.P. sewers may be allowed to connect to gravity sewer mains. Grinder mains shall be sized as per Section 7B.020 and reviewed by Environment One. Environment One comments shall be forwarded to the City for approval. If permitted by the Director of Public Works grinder pressure mains may be allowed to connect to lift station pressure mains. S.T.E.P. sewers shall not be allowed to connect to lift station pressure mains.

S.T.E.P. and lift station pressure sewer pipe shall be even sizes only (i.e. 2 inch, 4 inch, 6 inch, etc.) Minimum pressure sewer pipe size for S.T.E.P. shall be 2 inch diameter. Grinder mains of odd sizes shall require the use of HDPE. Minimum pressure sewer (pressure main) pipe size for lift stations shall be 4 inch diameter. HDPE pipe shall be sized by inside pipe diameter (see table). Typically, IPS HDPE pipe is used in Lacey; however, in case where the required inside diameter of the pipe cannot be obtained using IPS HDPE, ductile iron pipe size (DIPS HDPE) pipe may be required.

TYPICAL SIZES AND DIMENSIONS FOR IRON PIPE SIZE (IPS) PE3408
HIGH DENSITY POLYETHYLENE (HDPE) PIPE

PRESSURE RATING		DR 11 (160 PSI)		
NOMINAL SIZE	ACTUAL O.D.	MINIMUM WALL THICKNESS	AVERAGE I.D.	WEIGHT LB/LF
2”	2.375”	0.216”	1.917”	0.639
3”	3.500”	0.318”	2.825”	1.387
4”	4.500”	0.409”	3.633”	2.294
5”	5.375”	0.489”	4.339”	3.272
5”	5.563”	0.506”	4.491”	3.505
6”	6.625”	0.602”	5.348”	4.971
7”	7.125”	0.648”	5.752”	5.750
8”	8.625”	0.784”	6.963”	8.425
10”	10.750”	0.977”	8.678”	13.089
12”	12.750”	1.159”	10.239”	18.412
14”	14.000”	1.273”	11.302”	22.199
16”	16.00”	1.455”	12.916”	28.994
18”	18.00”	1.636”	14.531”	36.696
20”	20.00”	1.818”	16.145”	45.304
22”	22.00”	2.000”	17.760”	54.818
24”	24.00”	2.182”	19.375”	65.237
26”	26.00”	2.364”	20.989”	76.563
28”	28.00”	2.545”	22.604”	88.795
30”	30.00”	2.727”	24.218”	101.934

NOTE:

Average inside diameter calculated using nominal OD and minimum wall plus 4% for use in estimating fluid flows. Actual ID will vary.

The applicable General Notes in section 7B.020 shall be included on any plans dealing with pressure sanitary sewer design.

GENERAL NOTES (PRESSURE SEWER MAIN INSTALLATION)

1. All sewer mains shall be field staked for grades and alignment in accordance with section 7A.030 of the Development Guidelines.

2. All side sewer locations shall be marked on the face of the curb with an embossed "S" 3" high and 1/4 inch into concrete.

3. Bedding of the pressure sewer main and compaction of the backfill material shall be required. (See detail).

4. A 3 foot square x 8 inch thick concrete pad with #4 rebar shall be installed around all valves that are not in a pavement area.

5. Temporary street patching shall be allowed for as approved by the City Engineer. Temporary street patching shall be provided by placement and compaction of 1 inch maximum asphalt concrete cold mix. Contractor shall be responsible for maintenance as required.

6. Erosion control measures shall be taken by the contractor during construction to prevent infiltration of existing and proposed storm drainage facilities and roadways.

7. All buried power for S.T.E.P/Grinder systems shall be installed with continuous tracer tape installed 12 inches above the buried power. The marker shall be plastic non-biodegradable, metal core backing marked "power". Tape shall be furnished by contractor.

8. Pressure mains less than 4 inches in diameter shall be HDPE SDR 11 or Schedule 80 PVC ASTM D1784 with rubber gasket joints. Pressure mains 4 inches in diameter or greater shall be HDPE SDR 11 or PVC C-900DR 14. Certain-Teed Certa-Lok C-900 R/J pipe is approved for use where restrained joints are required. Welded Poly (HDPE) pipe shall be Hi density ASTM D 3350, SDR 11 3408 socket welded or butt fusion welded. HDPE pipe shall be sized by inside pipe diameter. Fittings and valves shall comply with section 7E.040 of the Development Guidelines. Piping for sewer lines shall be green, white or black. HDPE sewer pipe shall be green or black with a green stripe manufactured on the pipe.

9. S.T.E.P/Grinder service line from main connection to service ball valve shall be 1 ¼ inch or 2 inch diameter schedule 80 PVC. HDPE pipe shall be hi density ASTM D 3350, SDR 11 3408 socket or butt fusion welded.

10. All plastic pipe and services shall be installed with continuous tracer tape installed 12 inches to 18 inches under the proposed finished sub grade. The marker shall be plastic non-biodegradable, metal core or backing marked sewer which can be detected by a standard metal detector. In addition, S.T.E.P systems and pressure mains shall be installed with 12 gauge direct bury, U.S.E. green coated copper wire wrapped around all plastic pipe, brought up and tied off at valve body. Continuity testing of the wire will be done by the City. Tape

shall be Terra Tape "D" or approved equal. The tape and wire shall be furnished by the contractor.

11. Prior to acceptance of the project the pressure mainline and service lines shall be subject to a hydrostatic pressure test of 200 pounds for 15 minutes and any leaks or imperfections developing under said pressure shall be remedied by the contractor. No air will be allowed in the line. The main shall be tested between valves. Insofar as possible, no hydrostatic pressure shall be placed against the opposite side of the valve being tested. The pressure test shall be maintained while the entire installation is inspected. In addition, all Pressure mains shall be pigged in the presence of the City Inspector prior to placing main in service.

12. Prior to backfill, all mains and appurtenances shall be inspected and approved by the City of Lacey Construction Inspector. Approval shall not relieve the contractor for correction of any deficiencies and/or failures as determined by subsequent testing and inspections. It shall be the contractor's responsibility to notify the City of Lacey for the required inspections.

13. Single and duplex family S.T.E.P. pumping systems installed in Lacey shall be an Orenco certified package and be accompanied by a certificate of origin letter from Orenco. The certificate of origin letter shall be presented to the City of Lacey inspector at time of installation and inspection of the pumping system. Package components and installation requirements shall also comply with Lacey details. A PDF version of the certificate of origin letter and the manufacturer’s submittal data of the required components can be found online at the City of Lacey website under the Public Works heading then under Development Guidelines and Public Works Standards.

Revised: 03/2014

7D.030 S.T.E.P./Grinder/Lift Station Pressure Main

A. Material: Pressure mains less than 4 inches in diameter shall be HDPE SDR 11 or Schedule 80 PVC, ASTM D1784, with rubber gasket joints. Pressure mains 4 inches in diameter or greater shall be HDPE SDR 11 or PVC C-900DR 14. Certain-Teed Certa-Lok C-900 R/J pipe is approved for use where restrained joints are required. Welded Poly (HDPE) pipe shall be Hi density ASTM D 3350, SDR 11 3408 socket welded or butt fusion welded. HDPE pipe shall be sized by inside pipe diameter. Fittings and valves shall comply with section 7E.040 of the Development Guidelines. Piping for sewer lines shall be green, white or black. HDPE sewer pipe shall be green, black or black with a green stripe manufactured on the pipe. For 14 to 24 inch mains, pipe shall be PVC C905 Class 235 or HDPE SDR 11 with ductile iron fittings and gasket joints. A more rigid pipe may be required where unlimited trench widths occur. All ductile iron fittings shall be either epoxy coated or PE lined both inside and outside. The coating material shall be designed for use with corrosive materials. The use of ductile iron pipe will be limited to the lift station site only. Ductile iron pipe will not be used downstream of the lift station check valve vault. Pipe material & fittings for pressure mains larger than 24 inches shall be reviewed by the City of Lacey. Sewer rated C-151 class 50 ductile iron pipe may allowed under special circumstances as deemed necessary by the Director of Public Works. Welded poly pipe shall be hi density ASTM D 3350, SDR 11 3408 socket welded or butt fusion welded. HDPE sewer pipe shall be green, black with a green stripe manufactured on the pipe. Butt fuse welded pipe shall be de-beaded on the inside of each weld. HDPE pipe that is directionally bored underground or under the road shall have a locating wire installed with the pipe.

B. Installation. The process for HDD shall follow the standard three step process of (1) drilling the pilot hole (2) enlarging the hole/ back reaming (3) pulling through the transmission pipeline. The use of drill fluid such as bentonite or polymer is required. A properly sized hole and ample amount of drill fluid shall be used to prevent damage to the pipe being installed. During the installation of the transmission pipe, a second smaller HDPE DR 14 pipe a minimum of ¾ inch diameter shall be pulled through alongside the transmission pipe the smaller pipe shall have a standard 12 gauge direct bury U.S.E. green coated copper tracer wire pulled through and connected to the tracer wire of the main at each end using the low voltage grease-type splice kits. Soils that have too many cobbles may not be approved by the City for HDD.

C. Depth: Pressure mains shall have a minimum 68 inches of cover to top of pipe. This minimum assumes 42 inches cover to an 8 inch diameter water pipe and 18 inches separation from the bottom of water pipe to the top of the sewer line. See Chapter 6.130 for sanitary sewer/ water main crossing requirements.

D. Pressure Main Velocity: The minimum velocity allowed is 2 feet per second (fps) at average Dry Weather Flow. 2 fps is required to maintain solids in suspension although 3 fps is desired to scour settled solids. Maximum velocity allowed shall be 8 fps.

7D.035 Connections to Pressure mains.

Connection to an existing PVC or AC pressure main shall be done with an all stainless steel tapping saddle such as Romac SST with a stainless steel flange. Connection to an existing ductile iron pressure main shall be done with a fabricated steel tapping saddle such as Romac FTS style. Fabricated steel saddles shall have optional fusion epoxy coating 8 to 12 mils lined and coated. Tapping saddle gaskets shall be rated for sewer. The tapping valve shall be an epoxy coated resilient wedge gate valve conforming to AWWA C-515 latest revision requirements. Refer to detail 7-12.2 for specific requirements when connecting a new S.T.E.P. or grinder service to an existing pressure main. S.T.E.P. sewers shall not be allowed to connect to lift station pressure mains.

The check valve shall be made accessible for maintenance or replacement. Installation of a manhole with bottom shall be required to facilitate access to the check valve.

7D.040 Lift Station Pressure Main Surge Protection

PVC is subject to fatigue failure due to cyclic surge pressures. The pressure main shall be constructed to minimize rapid changes in velocities. A properly sized surge tank may be required on the pressure main.

7D.045 Valves

All valves up to 2 inch shall be red handle Cepex Poly True Union FIPT x FIPT ball valves with appropriate couplings. All valves four to 24 inch shall be M&H, Clow, Pratt, DeZurik or Milliken plug valves or approved equal. Plug valves shall be full port (100% opening) and epoxy coated on the inside and outside as specified in 7D.030. All plug valves shall have a 2 inch operating nut. Plug valves 6 inches & larger shall have gear reduction operation. Tapping valves shall be resilient wedge gate valves and be epoxy coated on the inside and outside.

A. Pressure Main Valve Spacing: Valves shall be installed at all locations where the size of the pipe changes. (See also 7D.065 pig port requirements for pipe line size changes and spacing). Three valves shall be installed at each cross and two valves shall be installed at every tee. In no case shall valve spacing exceed 1000’ for mains up to 10 inch. Valve spacing shall not exceed 500’ for mains over 10 inches. At every lift station, a pressure main isolation valve is required within ten feet of the station.

B. Air Release Valves: Air release valves shall be ARI model D-021 for S.T.E.P and grinder mains and ARI D-025 for Lift station mains. Air release valves and air/vacuum valves shall be located at the high points of the line. Air release valves shall be fitted with an activated carbon canister to absorb compounds with disagreeable odors prior to releasing the air to the surrounding area. Grades shall be designed to minimize the need for air/vacuum valves when practical. Vehicular access to valve is required for maintenance. See detail.

C. Pressure Sustaining Valve Assembly: Pressure sustaining valves are sometimes required in the design of S.T.E.P systems to keep the pipeline full during periods of low or no flow or when siphoning conditions exist. Pressure sustaining valve and assembly shall be reviewed by the City of Lacey prior to approval.

7D.055 Fittings

A. All pipe fittings shall have a minimum working pressure rating equal to the pipe with which they are connected. Fittings shall be PVC 1120, rubber joint complying with ASTM D-1784, D-2466, or D-2467.

B. Fittings for welded poly pipe shall be electro fusion welded. Tee connections shall be electro fusion branch saddles or side wall fusion reducing tees. Connection to existing poly mains shall be by self tapping electro fusion saddles or Romac SST-H.

7D.060 Pressure Main Low Point Drain

Provisions to drain a pressure main to facilitate repairs or to temporarily remove pressure main from service shall be provided. This may be accomplished through the use of a valved tee connected to a drain line at the low point of the line. See detail.

7D.065 S.T.E.P./Grinder Pressure Main Pigging Ports

A pipeline pig is a projectile that is forced through the inside of a pipe to clean pressure pipelines. A pigging port is used as a point to send or retrieve the pig. Pigging ports shall be required:

1. At every change in pipeline size (or as determined during the plan review).
2. At the end of every dead end line.
3. At the connection point to the main when the main being constructed will be a secondary main.
4. Location and number of pigging ports required are subject to review and approval by the City of Lacey. See detail.

7D.070 Thrust Blocking

Location of thrust blocking shall be shown on plans. Thrust block concrete shall be Class B poured against undisturbed earth. A barrier shall be placed between all thrust blocks and fittings.

Designed and approved restraining joint systems may be allowed in lieu of thrust blocking. "Megalug" type joint restraints will not be allowed on PVC pipe. Mechanical restraints shall be split grip ring type. Restraining joint brand, type, and size shall be specified on the plans.

7D.080 Pressure Main Termination

Sewer odors and gases, hydrogen sulfide odors (H2S), and the buildup of sulfuric acid (H2SO4) occur in the operation of a pressure main and/or S.T.E.P/ Grinder system.

Odor and corrosion control measures shall be addressed on pressure sewer systems connecting to a gravity sewer system.

A determination of need for odor and corrosion prevention shall be prepared and stamped by a Professional Engineer licensed in the State of Washington. The report, along with said engineer's history of odor control experience and references shall be submitted during design phase for review by the City of Lacey. As a minimum, the odor control system shall be designed and installed according to current method of City of Lacey odor control treatment. If required, an odor control facility shall be installed in order to inject a treatment product into the system so that both odor and corrosion issues generated by the system are addressed. The pressure main shall be sized to provide adequate contact time for treatment to be effective. All manholes with 400 feet downstream of the out fall manhole and including the out fall manhole shall be entirely coated to the top grade ring with ISO 9000 certified hi grade calcium aluminate material, Kerneous Sewper Coat PG a minimum of one inch thickness or 100 % VOC-free self-priming structural polyurethane SprayRoq – SprayWall product. The coating shall be applied under direction of the product representative, by a factory trained/certified applicator of the product. If new gravity manholes are to be installed at the terminus, all of the new manholes shall be coated as well. The pressure main discharge shall be made with a smooth transition of flow into the existing flow so as to not cause splashing of the effluent at the discharge.

7E S.T.E.P SYSTEM:

7E.010 General

A Septic Tank Effluent Pump (S.T.E.P) system may be installed to serve single family residential (1 EDU), multi-family residential (duplex, 2 EDU's), (Small Community Systems (3 to 6 EDU's), and commercial applications where approved by the City. A chart (City of Lacey S.T.E.P System Requirement Chart) outlining the general S.T.E.P system design requirements can be found in this section. A S.T.E.P application with a proposed site plan is required for each individual on-site system. An example of the S.T.E.P application can be found in Appendix D.

Any new single family subdivision designed with S.T.E.P sewers shall include an easement on the face of the plat for access to all lots as shown in the appendix. Other S.T.E.P applications shall require easements as outlined in the appendix.

Single family subdivisions designed with individual S.T.E.P. sewers shall provide civil drawings including the building envelopes, 10 foot private utility trench, driveway, water meter, service box and the S.T.E.P. tank locations in the front of the lot drawn to scale to assure all improvements can be accommodated on site.

A S.T.E.P system is a facility consisting of a tank or tanks for settling and digesting wastewater solids, and a pressure piping system for conveying the supernatant liquid into the sewer system.

The single family and duplex S.T.E.P. tanks shall be located in the front yard of the residence. If the lot size is too small for the S.T.E.P. tanks, a community S.T.E.P. system (3 to 6 EDU's) may be required and sized according to the City of Lacey S.T.E.P. system sizing chart.

Multifamily Equivalent Dwelling Unit Sizing Chart

Equivalent Dwelling Units (EDU's)	Number of Bedrooms
1.0	3
0.75	2
0.5	1

The above chart is for design purposes only and cannot be utilized for connection fee calculations.

The Small Community S.T.E.P. tank pump facility shall be located on an adequately sized lot or open space with an easement granted to the City. An additional 15' easement shall be granted around all sides of the facility for maintenance access. A driveway and/or adequate parking shall be provided at the facility for City of Lacey maintenance vehicular access as determined by the City. Driveway shall be constructed as a permanent all weather surface capable of supporting an 80,000 lb. vehicle.

Operation and maintenance of the tank, pump, and pump controls for the small community systems shall be the responsibility of the City only after the system has been inspected and approved and an easement is granted to the City and the warranty period of one year has expired. The one year warranty period for the onsite S.T.E.P. tanks and/or pump facilities shall begin when the residence or business discharging effluent into the tanks becomes occupied. The one year warranty period for the pressure main will begin when the S.T.E.P. tank /pump facilities connected to the main become occupied and begin pumping effluent into the conveyance system. It is required by the City that the easements for a new development be granted on the plat, otherwise, an easement for each lot will have to be granted at the time of connection. The City will be responsible for mapping the single family and duplex on-site system for "as built" purposes. The small community pump station facilities shall be installed/constructed per the approved plans and as-built by the designing engineer.

Power for the single family, duplex or commercial system shall be provided by the customer. Power for the small community type pump stations shall be provided by the homeowner's association.

All sewer pipe, drains and plumbing between the tank and the building for single family, duplex or commercial systems shall be the responsibility of the customer.

Community type pump systems shall use the applicable criteria outlined in Chapter 7B for the design and construction of the gravity sewer.

Commercial S.T.E.P. systems and tanks installed for the purpose of pumping industrial cleaning effluent, truck wash bays or car washes shall require the installation of an oil water separator prior to the S.T.E.P. pump tank. The entire facility shall be owned and maintained by the customer to the location of the service valve/check valve box located downstream of the facility. Verification of maintenance shall be provided to the City of Lacey yearly.

7E.015 S.T.E.P. Customer Responsibilities

All S.T.E.P. tank riser lids shall be set to grade for maintenance access. No shrubs, bushes, trees or ground cover vegetation other than grass shall be planted within a 3' radius of any tank lid. All of the tank lids shall be visible.

The property owner must maintain access to the septic tank and controls at all times for City maintenance purposes. The tank riser lid may not be covered or buried although the owner may place a bird bath, potted plant or other yard decoration on the riser lid, as long as it can be readily removed for repair or maintenance.

The plumbing from the home to the interceptor tank is the responsibility of the property owner. The City will service and maintain all equipment excepting that which is mentioned above after the warranty period of one year has expired.

The customer shall be responsible for notifying the City when the control panel alarm buzzer is activated. The customer shall be responsible for curtailing water usage until City forces respond to the customer's notification in the event of an alarm or problem. The City will accept no responsibility for damages resulting from a plumbing backup, such as may occur if water usage is not curtailed during an alarm condition or if the customer disables the alarm.

7E.020 Design Standards

The design of any S.T.E.P sewer system shall conform to City standards and any applicable standards as set forth herein and in Sections 3.010, 3.040 and 7A.010.

The layout of extensions shall provide for the future continuation of the existing system as determined by the City. In addition, main extension shall be extended to and through the side of the affected property fronting the main. Individual S.T.E.P service boxes shall be located at the corner of the lot opposite the water meter. S.T.E.P service boxes shall not be installed in driveways.

The largest tank accepted by City of Lacey shall be 8,000 gallon fiberglass as shown in the City of Lacey S.T.E.P. system requirement chart and the details at the end of this chapter.

Odor control measures shall be addressed on S.T.E.P/Grinder sewer systems as per 7D.080.

The standards outlined in section 7D "Pressure Sewer" of this manual shall be used for the design and construction of S.T.E.P/Grinder pressure mains.

Pump, pipeline, and appurtenant component sizing shall conform to the criteria as set forth in the Lacey "Comprehensive Sanitary Sewer Plan" and this chapter of the Development Guidelines and Public Works Standards.

The applicable General Notes in section 7B.020 shall be included on any plans dealing with pressure sanitary sewer design.

The standards outlined in Section 7D.080, "Pressure Main Termination" shall be used for S.T.E.P main termination.

7E.025 S.T.E.P. Components and Testing

All S.T.E.P. pumping equipment shall comply with the City of Lacey/Orenco Certificate of Origin package.

Hydrostatic Leakage test shall begin when the tank is filled with water to two inches above base of tank riser. The test duration shall be two hours (maximum allowable loss is one gallon. One gallon is 232.6 cubic inches or about 0.5 inches of depth in a 24 inch riser.)

Pressure tests between the pump chamber and the service box shall be 150 pounds per square inch for fifteen minutes. No leakage is allowed.

All electrical work shall be to National Electric Code (NEC) standards. The control box shall be located within three feet of the meter base or City approved location.

All underground wiring shall be a minimum #14 stranded wire for the float switches and a minimum #12 wire for the motor, color coded, in schedule 40 conduit, a minimum 18 inches deep, with warning tape in trench above conduit.

7E.030 Service Lateral Pipe and Building Sewer

A. Service line: See City of Lacey S.T.E.P. System Requirement Chart for pipe size. Pipe shall be schedule 80 PVC water pipe, solvent weld joint located at 90 degrees to the mainline when possible. Solvent cements and primer for joining PVC pipe and fittings shall comply with ASTM D 2564 and shall be used as recommended by the pipe and fitting manufacturers. Poly pipe shall be green or black with a green stripe, hi density ASTM D 3350, SDR 11 3408 socket or butt fusion welded. Services shall have a minimum 24 inches cover to top of pipe. Pressure services shall cross under any water line. See chapter 6.130 for water & sewer separation requirements.

B. Building Sewer: The gravity building sewer pipe between the building and the tank for single family, duplex and commercial systems shall be designed and installed in accordance with the Uniform Plumbing Code (UPC) as adopted in LMC 14.06. A clean out shall be installed on the gravity building sewer, located between the structure and the tank, raised to grade and installed per UPC.

C. All pipe shall be installed with continuous tracer tape installed 12 to 18 inches under the proposed finished grade. The marker tape shall be plastic; non-biodegradable, metal core or backing which can be detected by a standard metal detector. Tape shall be Terra Tape "D" or approved equal. In addition to tracer tape, install 12 gauge green coated copper wire, wrapped around the pipe, brought up and tied off at the valve boxes.

7E.035 Fittings

Solvent weld fittings for one inch through two inch pipe shall be socket type Schedule 80 and shall comply with ASTM D 1784 and ASTM D 2466. Poly fittings shall be electro fusion welded hi density ASTM D 3350 socket or butt fusion welded and of the same pressure rating and classification as the pipe.

7E.040 Service Lateral Valves

A. All service valves shall be 1 ¼ or 2 inch Cepex Poly or KBI True Union FIPT x FIPT ball valves. Valves shall be left "off" and have a threaded plug installed in the end until the lot is connected.

B. Check Valves: Check valves used on service lines shall be Spears True Union ball check Schedule 80 PVC. Valves shall have a working pressure of 200 psi. Valves shall be designed for use with corrosive fluids. A check valve shall be installed at the end of the service stub out at the property line to be installed in a valve box. The check valve shall be mounted horizontally and be visible in the valve box along with the ball valve. Check valve shall not be buried. A Cepex GR 1100-SB, Cepex GR 1000-SB or Schedule 80 PVC assembly as shown in the details may be utilized.

C. Service Valve Box Lids. Valve box lids shall be specified to be marked "SEWER" so they can quickly be distinguished from valves in the water system.

D. Service Valve Boxes:

Earth Bury:
- Carson 1419E. For single service.
- Carson 1730 E. For large or community type service.

Traffic Areas:
- Midstates Plastics BCF 1419SL. For single family service.
- Midstates Plastics BCF 1730 SL for large or community type service.

7E.060 Concrete S.T.E.P. / Septic Tanks

Approved S.T.E.P tanks and sizes are listed in the City of Lacey S.T.E.P. System Requirement Chart. Tanks shall be rectangular, pre-cast concrete, dual chamber, and shall have been designed by a registered structural engineer. The chambers shall be divided in such a way that 1/3 of the tank capacity is designed as the pumping chamber and 2/3 of the tank capacity is designed as the settling chamber. All tanks shall be manufactured for acceptance of pump assemblies and effluent filters. Tanks shall use Orenco flanged tank adapters cast into the concrete for the 8 inch, 24 inch and 30 inch openings to allow positive attachment of the risers. The manufacturer shall provide the structural design and certification to the City for review. The design or analysis shall be in accordance with accepted engineering practice. Tanks 1.5 to 4 feet in depth shall be designed for the following loading conditions:

A. Top of tank 400 pounds per square foot.

B. Lateral load of 62.4 pounds per square foot (62.4 pcf equivalent fluid).

C. The tank shall be designed to support a 2,500 pound wheel load with minimum allowable earth cover.

D. The tank shall be designed to withstand hydrostatic loading equal to the maximum depth of bury, in addition to the soil loading. Maximum depth of bury shall be measured from the ground elevation to the invert of the sewer line entering the tank.

Deeper installations, if required by local conditions, will require special consideration, as will tanks located where a vehicle might be driven over them. Tanks approved as traffic bearing tanks shall be designed to withstand an H-20 live load with a minimum soil cover of 18 inches. Load rating of tank shall be clearly stamped in lid and side of tank. A specific design done by a Structural Engineer needs to be submitted to verify that the tank specified is designed for the depth and loading to be incurred.

All tanks shall be guaranteed in writing by the tank manufacturer for a period of two years from the date of delivery to the project. Manufacturer's signed guarantee shall accompany delivery.

Systems installed on a site where an existing septic tank exists may not use the existing tank. The existing tank shall be removed or abandoned per DOH and/or county requirements.

Concrete material and construction shall meet the requirements of section 6-02 of the WSDOT/APWA Standard Specifications for Road, Bridge, and Municipal Construction most current edition.

The concrete mix shall not be modified unless the mix design is reviewed and approved by the City.

Walls, bottom and top of reinforced-concrete tanks shall be designed across the shortest dimension using one-way slab analysis. Stresses in each face of monolithically-constructed tanks may be determined by analyzing the tank cross-section as a continuous fixed frame. The walls and bottom slab shall be poured monolithically. Concrete shall achieve a minimum compressive strength of 4000 psi in 28 days. Date of manufacture shall be clearly stamped in lid and side of tank.

Reinforcing steel shall be ASTM A-615, Grade 60, fy = 60,000 psi. Details and placement shall be in accordance with ACI 315 and ACI 318.

Modification of completed or existing tanks will not be permitted for structural, warranty, and liability reasons. In order to demonstrate water tightness, tanks shall be tested prior to acceptance. Each tank shall be tested at the factory, by filling with water to the base of the riser and letting stand. After 24 hours, the tank shall be refilled to the soffit and the ex-filtration rate shall be determined by measuring the water loss during the next two hours. The two hour water loss shall not exceed one gallon.

Tanks shall not be moved from the manufacturer's site to the job site until the tank has cured for at least 7 days and has reached two thirds of the design strength.

Tanks shall be bedded on 6 inches 5/8 inch crushed rock or pea gravel. Backfill material shall be sand to within 12 inches of the finished grade Sides

shall be compacted in 2 foot lifts to the same or greater density than the surrounding area.

After the tanks have been set in place and the riser installed, but prior to back filling, each tank shall be tested by filling the tank riser with water to the top or to a level that equals 3 PSI against the tank to riser seal for a 2 hour period. Water loss during the test shall not exceed 1 gallon. Electrical "J" box shall not be submerged during the test.

Tanks installed where groundwater levels are above tank bottom require precautions to prevent flotation. In general, tanks shall immediately be filled with water and shall not be pumped down more than 3 feet below top of tank.

Finish grading, cleanup, and restoration shall be completed prior to final acceptance by the City.

7E.065 Fiberglass Septic Tanks

Fiberglass tanks approved for use in the City of Lacey will be of the sizes called out in the City of Lacey S.T.E.P. System Requirement Chart found prior to the sewer details in this section. 1500 gallon fiberglass tanks shall be Orenco Model #T1500-23-19/19-11 only. 8000 gallon fiberglass tanks for small community systems shall be Xerxes Inc. or Containment Solutions Inc. or approved equal and shall meet the following specification:

Single-wall fiberglass septic tanks approved for use in the City of Lacey shall meet UL 1316 and ASTM D4021 specification.

All tanks shall be guaranteed in writing by the tank manufacturer for a period of two years from the date of delivery to the project. Manufacturer's signed guarantee shall accompany delivery.

Systems installed on a site where a septic tank exists may not use the existing tank. The existing tank shall be removed or abandoned per DOH and/or county requirements.

Connection of the PVC inlet and the outlet pipe shall be made with Epoxy coated Romac 501 flexible coupler or Ford Ultraflex. Fernco type coupler with hose clamp connections shall not be installed.

The tank gallon size used shall be determined by the City of Lacey S.T.E.P. System Requirement Chart and details found in this chapter. Actual diameter and length of the tank shall be determined by site conditions such as gravity

system depth requirements feeding the primary tank, space available, or groundwater and soil conditions.

Fiberglass tanks shall only be installed by persons who have attended an installation class sponsored by the manufacturer of the tank being installed.

All factory requirements shall be strictly adhered to during the delivery, storage and installation process of the fiberglass tank(s).

In areas of high groundwater concrete dead man anchoring of the fiberglass tank(s) may be required. All factory anchoring installation requirements of the tank(s) shall be met.

All backfill requirements recommended by the manufacturer of the fiberglass tank being installed shall be met.

All fiberglass tanks shall be air tested for leakage at the factory prior to shipment. A second air test shall be done at the job site and witnessed by the City of Lacey Inspector prior to back filling to verify no damage or leakage has occurred during shipment or during storage at the job site. All air tests shall be done according to factory specifications.

A standard hydrostatic test for the riser connection shall be required and witnessed by the City of Lacey inspector immediately after installing and back filling the tank(s) by filling the tank riser with water to the top or to a level that equals 3 PSI against the tank to riser seal (approx. 7 feet) for a 2 hour period. Water loss during the test shall not exceed 1 gallon.

7E.070 Tank Risers and Lids

Pump chamber risers shall be 8, 24 or 30 inch diameter, fiberglass ribbed or PVC as manufactured by ORENCO SYSTEMS, INC., 2826 Colonial Road, Roseburg, Oregon 97470 or approved equal. Solids compartment risers shall be 24 inch diameter. Clean outs or inspection ports between compartments on 1,500 and 3,000 tanks shall be 8 inch diameter. Pump chamber risers shall be 30 inch diameter. 3,000 and 1,500 gallon tank riser height shall not exceed 48 inch from top of tank to finished grade. All tank riser lids shall be set to grade for maintenance access.

No shrubs, bushes, ground cover or trees shall be planted within a 3' radius of the tank lids. Small community system tank riser height shall not exceed 96 inches from top of tank to finished grade. All tank riser lids shall be set to grade for maintenance access.

Pump chamber risers shall be factory equipped with the following:

A. Appropriately sized (IPS) neoprene grommets shall be installed no less than eight inches from the top of the riser and no more than twelve inches from the top of the riser around the pump discharge pipe(s) and electrical splice box conduits where they exit the riser and create a seal to prevent the infiltration of ground water into the tank.

B. S.T.E.P. tank splice boxes shall be Orenco model SBEX 1-4.

C. A lid shall be furnished with each riser. It shall be latching and constructed of fiberglass with an aggregate finish. Riser and lid combination shall be able to support a 2500 pound wheel load. This does not imply that PVC risers are intended for traffic areas.

Each riser shall be bonded to the flanged tank adapter with a two-part epoxy that shall be supplied with the riser by the manufacturer. The epoxy shall be applied in accordance with the manufacturer's recommendations. The epoxy shall be allowed four hours curing time at 64 degrees Fahrenheit; otherwise a greater time shall be allowed based on the manufacturer's recommendations before backfill is placed over tank. Care shall be exercised during the curing period to avoid dislodging the riser. Fiberglass tanks shall have a portion of the risers manufactured as part of the tank and sized to fit the standard Orenco risers and lids. The two part epoxy mentioned above shall be used to attach the Orenco riser to the fiberglass riser along with the adapter ring. Attachment of Orenco riser to PRTA tank adapters, FRTA tank adapters and fiberglass tank adapters shall be done using OSI ADH100 adhesive or adhesive required by the tank manufacturer.

7E.080 Pumping Tank Equipment

Pumps shall be UL listed for use in effluent. All pumping systems shall be Orenco Systems Model OSI S 4000 Series High Head Pumping Assemblies or approved equal. See City of Lacey S.T.E.P System Requirement Chart and City of Lacey/Orenco certified S.T.E.P. package requirements found in Appendix.

All pumping systems shall be installed in accordance with the manufacturer's recommendations.

7E.090 Control Panel Power

See details at the end of this chapter for control panel location requirements. Single family and duplex family S.T.E.P. control panels shall be mounted within three feet of the meter base on the building and be wired to a properly sized dedicated breaker. This is required to avoid damage or overload to system and appliances. Power to the S.T.E.P control box shall be provided to and maintained by the owner of the building that the system serves.

The control cabinet for the small community systems shall be a free standing stainless steel enclosure mounted on a concrete pad at the pump tank site. See detail at the end of this chapter for all applicable requirements.

If S.T.E.P systems are to be installed for commercial buildings, a copy of the proposed manufacturer’s specifications and load calculations shall be submitted to the City for review and approval prior to installation. The property owner per Thurston County Assessor’s records shall be responsible

to supply and maintain the dedicated power circuit to the S.T.E.P system control panel.

All buried power shall be installed with continuous tracer tape installed 6 inches above the buried power. The marker tape(s) shall be plastic non-biodegradable and be labeled with the appropriate marking.

Wiring from the pump control panel to the splice box in the wet well riser shall be a minimum #14 stranded wire and colored insulation matching the Orenco/City of Lacey Certificate of Origin package requirements. Connections in the riser junction box shall be installed as per the City of Lacey specification. A good quality heat shrink shall be used on all leads. Splices shall be capable of lifting out of the junction box a minimum of six inches. The motor and control circuits will be megered as part of the inspection procedure and shall be no less than 50 mega-ohms before acceptance by the City.

7E.095 Control Panels

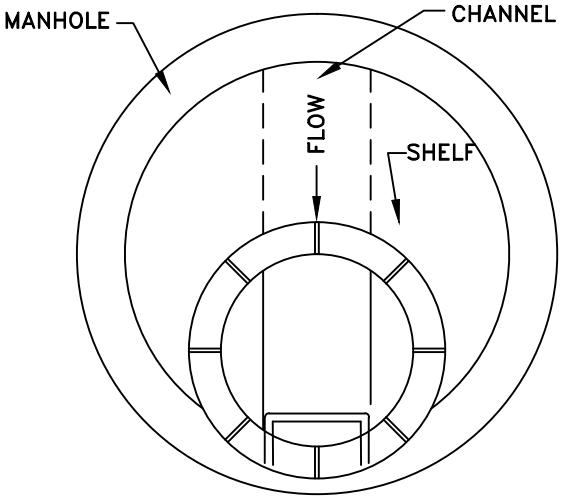
A. S.T.E.P. Control panels shall be Orenco Systems models as called out in the Orenco/City of Lacey Certificate of Origin Package for the size system being installed. Control panel boxes shall not be painted. The control panel and riser junction box shall be dry and clean before acceptance.

1. All wiring systems shall be installed in accordance with the National Electrical Code (NEC) and City of Lacey specifications, and the manufacture's specifications. In cases of conflict the most stringent standard shall apply.

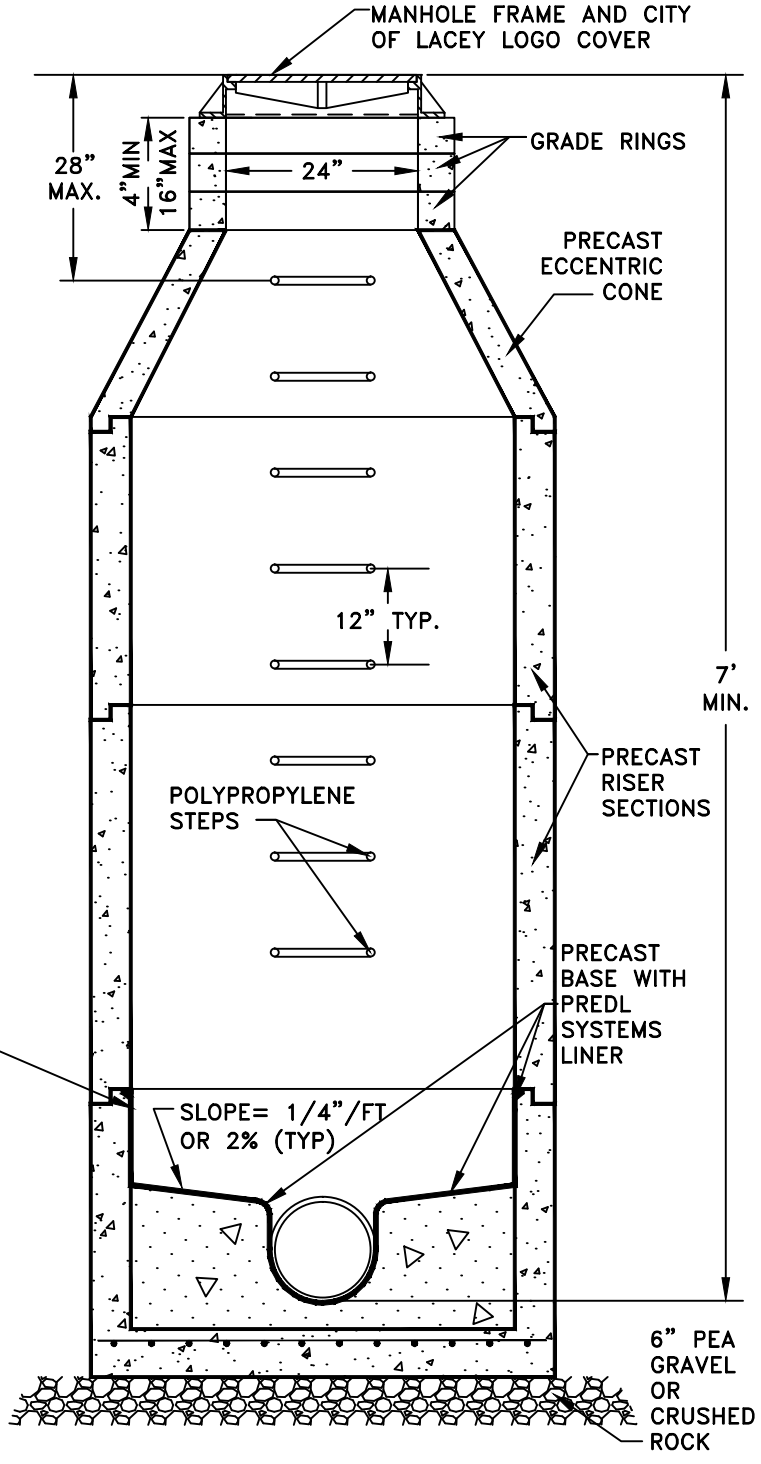
2. When required, the Thurston County disconnect switch shall be mounted directly below the control panel of the single family and duplex family systems and shall be constructed as follows: Hubbell-Pro, Heavy duty 20A, 120-277 VAC Single Pole switch #4902-1 or approved equal. Thomas & Betts red dot Dry-Tite device box #IH3-1-LM with Bell weather proof cover, Rayntite #5031-0, Single Gang aluminum pad-lockable cover.

LIST OF CHARTS, PHOTOS, DIAGRAMS & DRAWINGS

CHAPTER 7 SEWER



DUCTILE IRON MANHOLE
FRAME & COVER AND
RUNG PLACEMENT



GENERAL NOTES:

1. PRECAST MANHOLES SHALL MEET THE REQUIREMENTS OF ASTM C478. JOINTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C443 AND IN ADDITION THE JOINTS SHALL BE SEALED WITH BEST SEAL MASTIC.
2. THE DUCTILE IRON FRAME AND COVER FOR THE MANHOLE SHALL BE INSTALLED OVER THE OUTFALL CHANNEL AND PIPE.
3. STEPS IN THE MANHOLE SHALL HAVE 6" MINIMUM CLEARANCE.
4. PREDL SYSTEM LINER–BASES SHALL EXTENDED TO THE FIRST JOINT OR BARREL OF ALL MANHOLES.
5. CONNECTION TO EXISTING MANHOLES SHALL BE MADE BY KOR–N–SEAL BOOT OR SAND COLLAR.
6. ALL JOINTS AND LIFTING HOLES SHALL BE GROUTED FROM THE INSIDE AND OUTSIDE.
7. SEE DETAIL 7–3 FOR MANHOLE COLLAR INSTALLATION.
8. A SEWER GUARD SHALL BE INSTALLED IN ANY MANHOLE SUBJECT TO FLOODING.

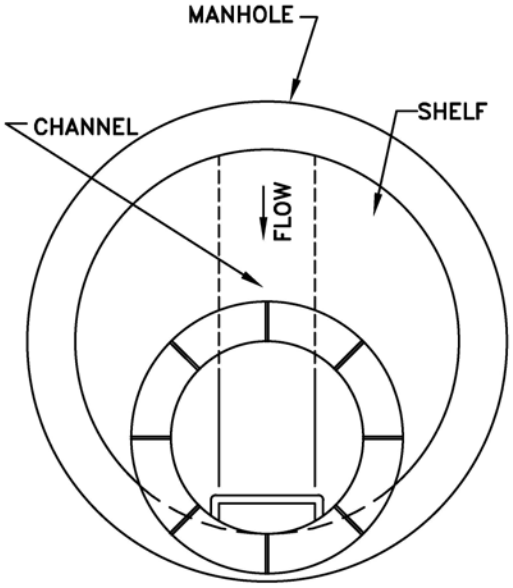
DG7–1.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

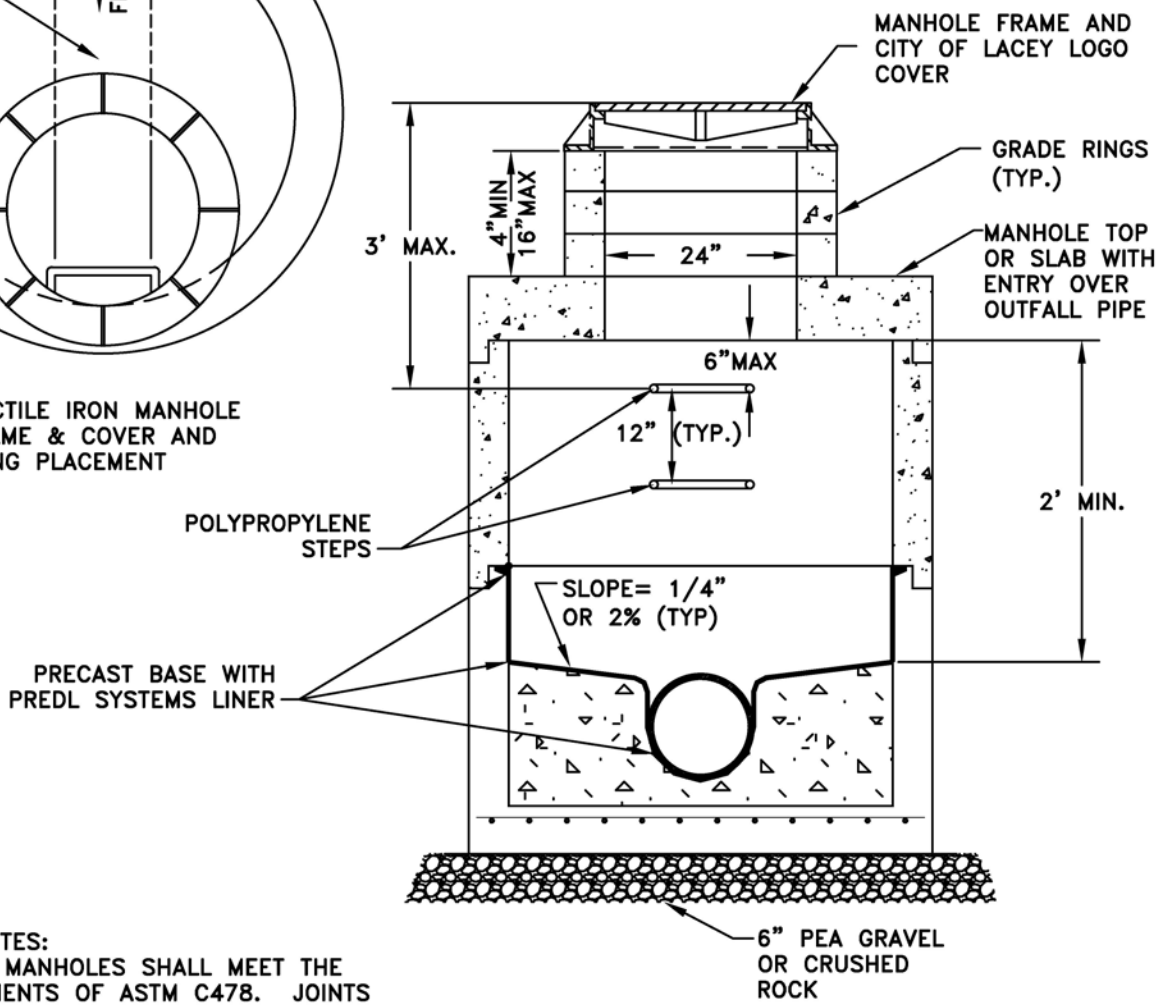
TYPE 1 MANHOLE

APPROVED	DWG. NO.
CITY ENGINEER	7–1

DES	DWN	CKD	DATE
WHO	WHO	RAS	



DUCTILE IRON MANHOLE FRAME & COVER AND RUNG PLACEMENT



GENERAL NOTES:

1. PRECAST MANHOLES SHALL MEET THE REQUIREMENTS OF ASTM C478. JOINTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C443 AND IN ADDITION THE JOINTS SHALL BE SEALED WITH BEST SEAL MASTIC.
2. THE DUCTILE IRON FRAME AND COVER FOR THE MANHOLE SHALL BE INSTALLED OVER THE OUTFALL CHANNEL AND PIPE.
3. STEPS IN MANHOLE SHALL HAVE 6" MINIMUM CLEARANCE.
4. PREDL SYSTEM LINER-BASES SHALL EXTENDED TO THE FIRST JOINT OR BARREL ON ALL MANHOLES.
5. CONNECTION TO EXISTING MANHOLE SHALL BE MADE BY KOR-N-SEAL BOOT OR SAND COLLAR.
6. ALL JOINTS AND LIFTING HOLES SHALL BE GROUTED FROM THE INSIDE AND OUTSIDE.
7. SEE DETAIL 7-3 FOR MANHOLE COLLAR INSTALLATION.
8. A SEWER GUARD SHALL BE INSTALLED IN ANY MANHOLE SUBJECT TO FLOODING.

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

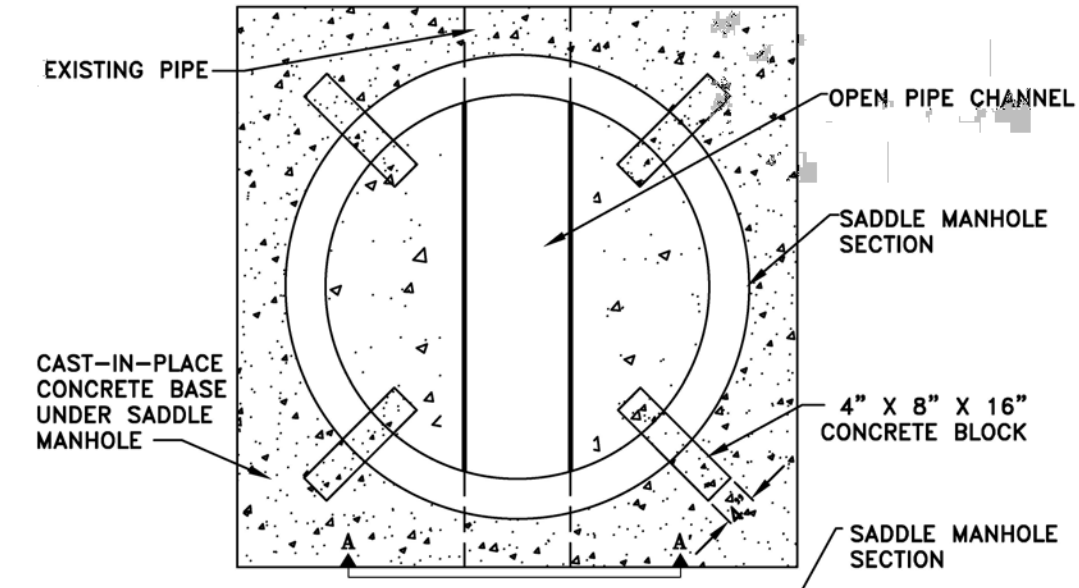
SHALLOW MANHOLE

Roger A Schoessel
CITY ENGINEER

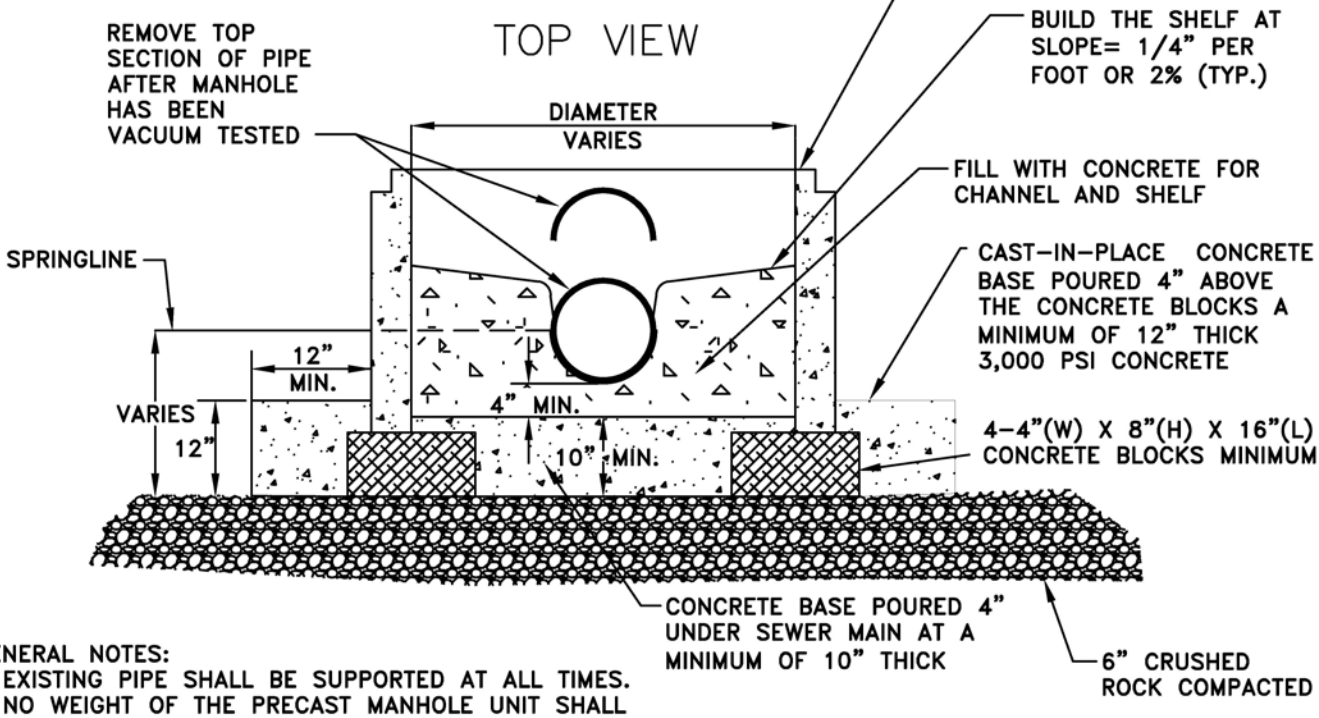
DWG. NO. 7-2

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7-2.DWG



TOP VIEW



GENERAL NOTES:

1. EXISTING PIPE SHALL BE SUPPORTED AT ALL TIMES.
2. NO WEIGHT OF THE PRECAST MANHOLE UNIT SHALL BEAR ON THE EXISTING PIPE.
3. CAST-IN-PLACE BASE SHALL BE COMMERCIAL CONCRETE.
4. PRECAST MANHOLE SECTION SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARD PLAN FOR THE SPECIFIED MANHOLE SIZE AND TYPE.
5. THE PRECAST BASE SHALL SIT ON 4-4"(W) X 8"(H) X 16"(L) CONCRETE BLOCKS PLACED ON COMPACTED SUB-GRADE.
6. THE UPPER HALF OF THE EXISTING PIPE SHALL BE REMOVED WHILE THE BOTTOM SHALL REMAIN AS THE CHANNEL OF THE NEW MANHOLE. IF PVC THE OUTSIDE OF THE PVC PIPE SHALL BE MADE ABRASIVE USING PRIMER AND SAND.
7. THE CAST-IN-PLACE MANHOLE SHALL NOT BE INSTALLED OVER A BELL SECTION OR JOINT OF THE SEWER MAIN. THE MINIMUM DISTANCE FROM THE OUTSIDE WALL OF THE MANHOLE AND A BELL SECTION OR JOINT SHALL BE 2'.

DG7-2.1.DWG

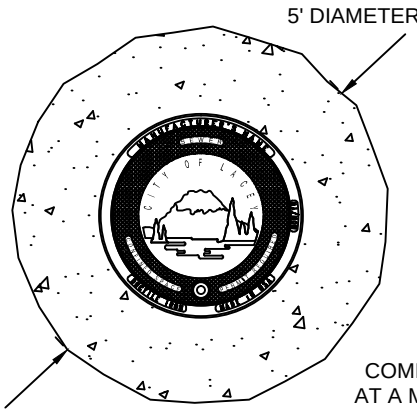
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

SADDLE MANHOLE W/CAST-IN-PLACE BASE

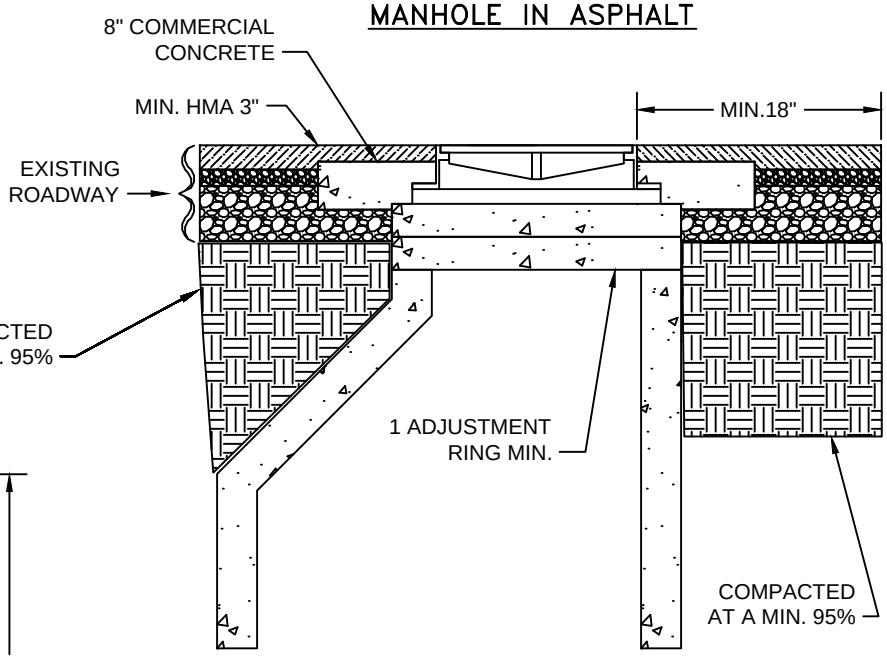
Roger A Schoessel
CITY ENGINEER

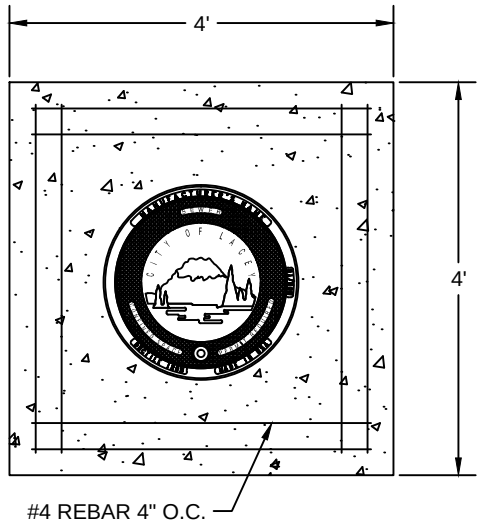
DWG. NO. 7-2.1

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

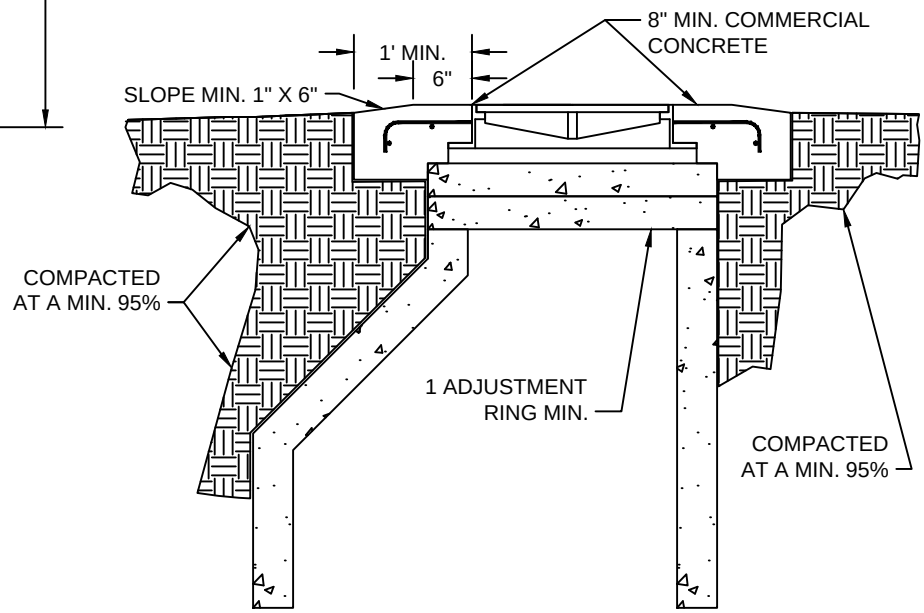


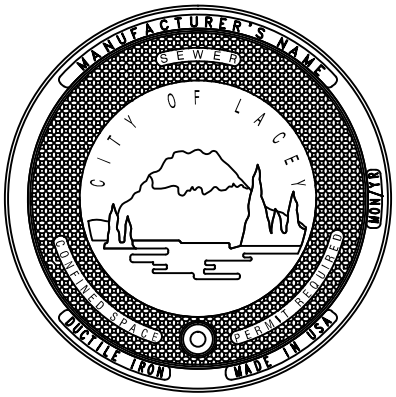
MANHOLE IN ASPHALT





MANHOLE OUTSIDE ASPHALT





NTS

GENERAL NOTES:

1. ALL CONCRETE PADS FOR MANHOLES OUTSIDE THE ASPHALT SHALL HAVE REINFORCING STEEL AS SHOWN ABOVE, REBAR TO MEET ASTM A615 GRADE 60 FY=60,000 P.S.I.
2. ALL MANHOLE FRAME AND COVER ASSEMBLIES SHALL BE EJCO OR OLYMPIC FOUNDRY, WSDOT STYLE #41 WITH THE CITY LOGO CAST IN IT, DUCTILE IRON AND MANUFACTURED IN THE USA. NO BOLT DOWN LIDS SHALL BE ALLOWED UNLESS REQUIRED BY THE CITY.
3. ADJUST GRADE RINGS WITH BRICK WEDGES OR GROUT. NO WOOD OR ROCKS SHALL BE USED AS ADJUSTMENT SPACERS.
4. THE FRAME AND COVER ASSEMBLIES SHALL BE A MATCHED SET AND SHALL BE NON-ROCKING, NO CLANKING OR NOISE WHEN DRIVEN OVER.

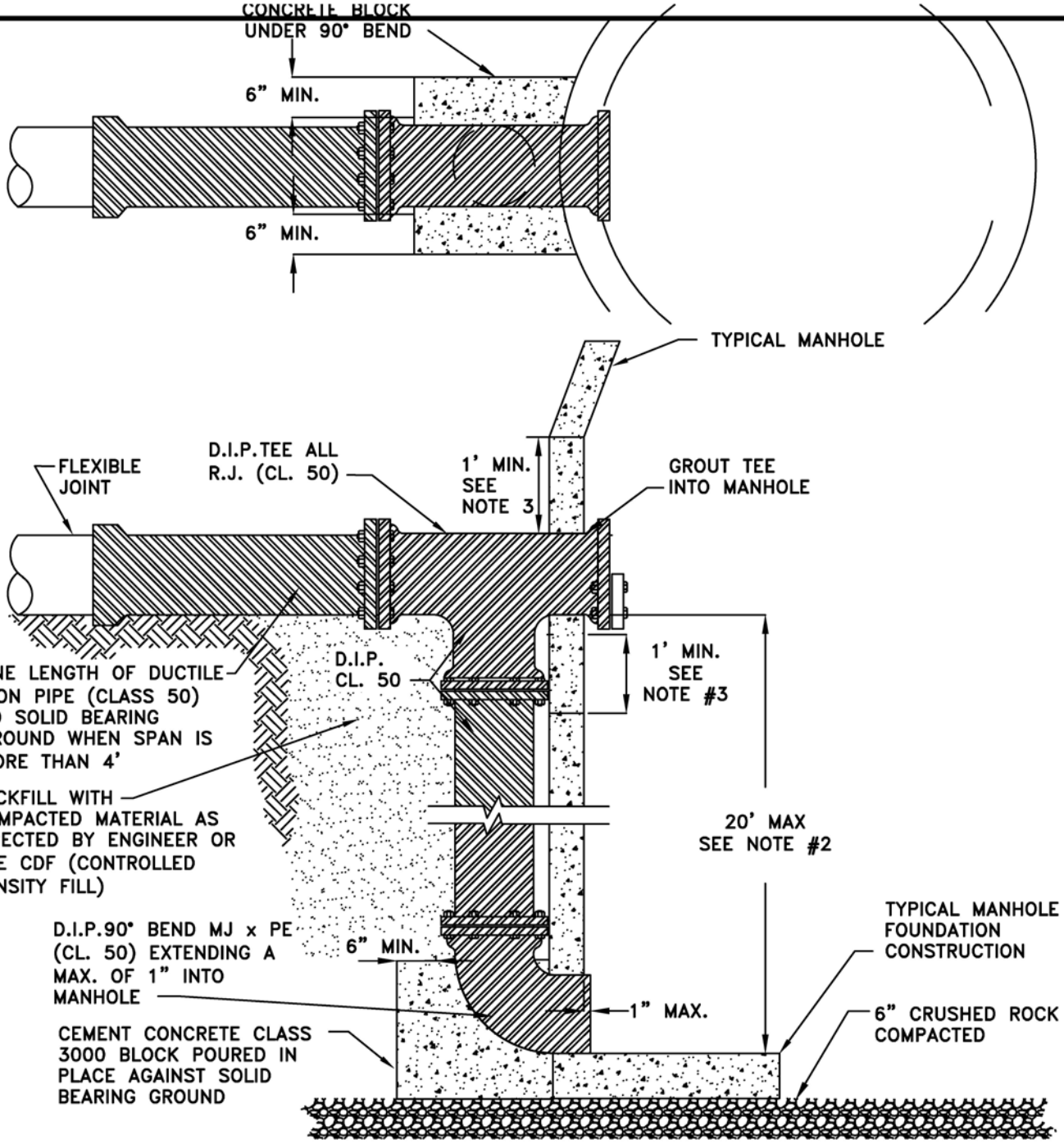
DG7-3.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

SEWER MANHOLE LOGO COVER & FRAME INSTALLATION

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-3

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. ALL DUCTILE IRON PIPE INTENDED FOR SEWER INSTALLATION SHALL HAVE ITS INTERIOR COATED WITH PROTECTO 401 CERAMIC EPOXY APPLIED IN A CONTROLLED ENVIRONMENT BY A CERTIFIED FIRM OR BY THE MANUFACTURER. THE PROTECTO 401 CERAMIC EPOXY COATING SHALL BE APPLIED AT 40 MIL THICKNESS AND SHALL BE TESTED TO THE MANUFACTURER'S REQUIREMENTS.
2. DEPTHS OVER 20' MAY BE ALLOWED IF MEGA-LUG JOINTS ARE USED.
3. MAINTAIN A MINIMUM OF 1' BETWEEN MANHOLE JOINTS AND TEE.

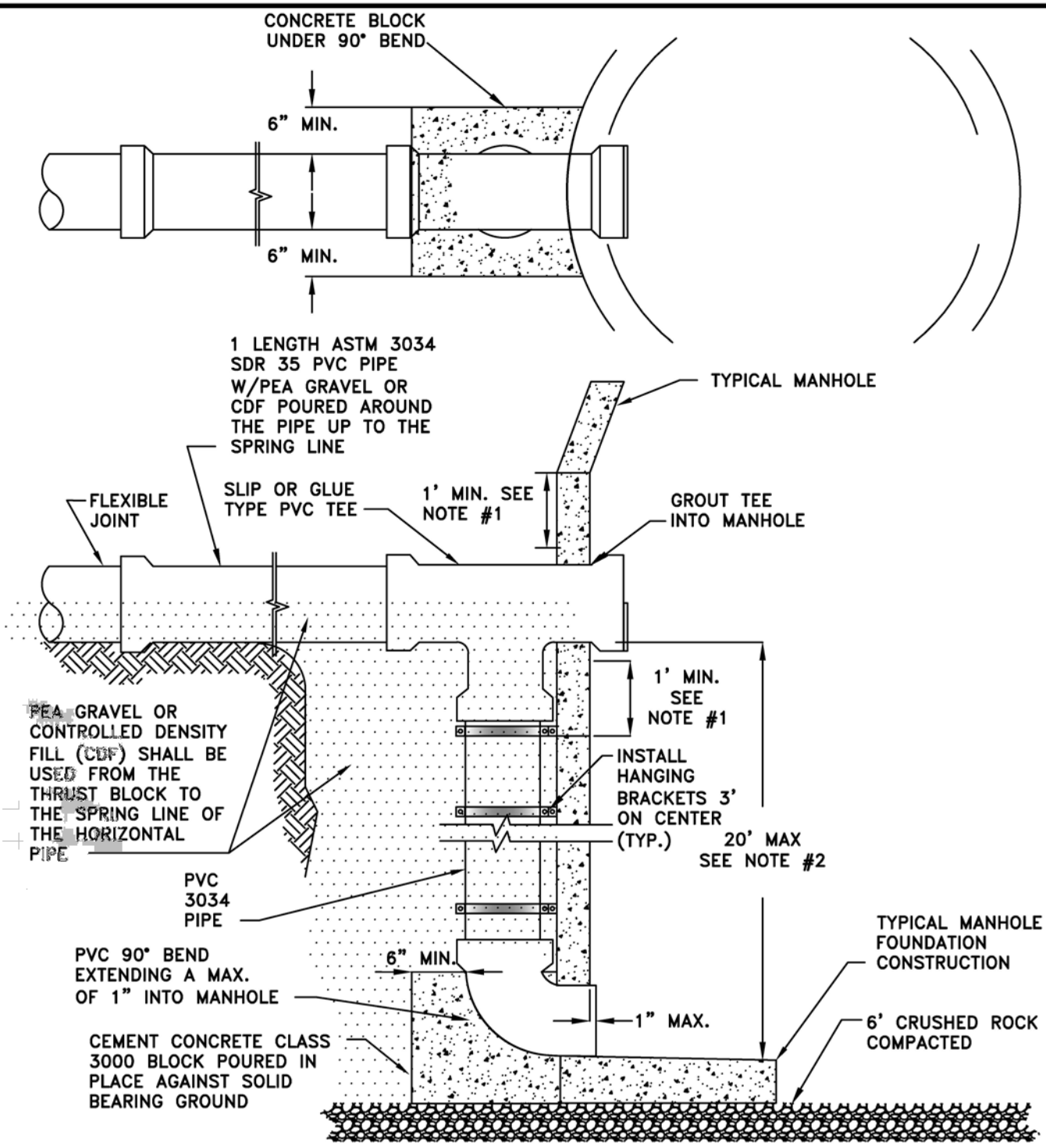
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

DROP CONNECTION DUCTILE IRON

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-4

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7-4.DWG



GENERAL NOTES:

1. MAINTAIN A MINIMUM OF 1' BETWEEN MANHOLE JOINTS AND TEE.
2. WHEN INSTALLING THE VERTICAL PIPE STAINLESS STEEL (316) BRACKETS/HANGERS SHALL BE INSTALLED AT 3' ON CENTERS.
3. FILL THE ENTIRE DROP AREA WITH CDF OR PEA GRAVEL UP TO THE SPRING LINE OF THE HORIZONTAL PIPE.
4. PREDL LINED BASE IS REQUIRED WHEN INSTALLING OUTSIDE DROPS.

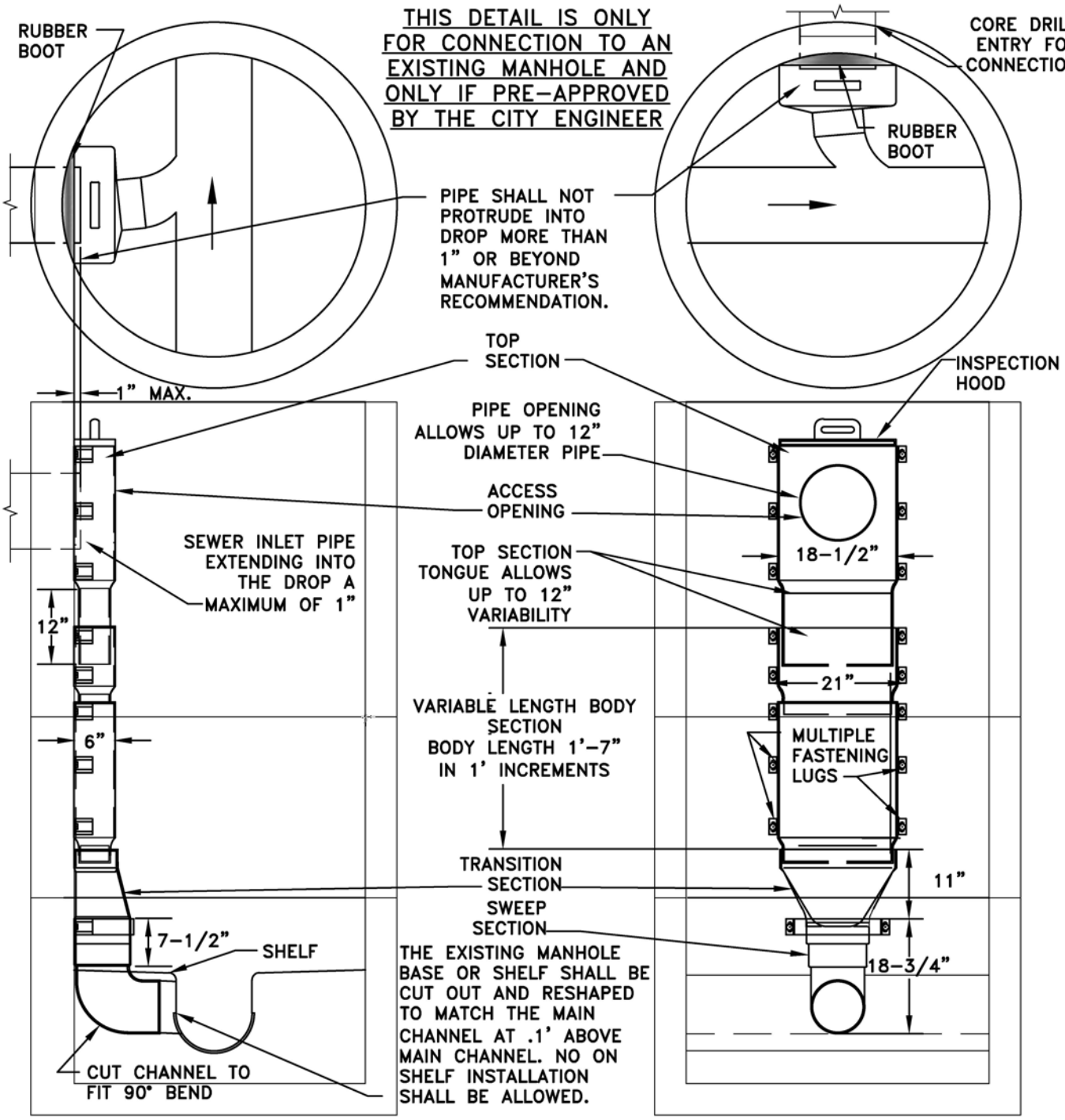
DG7-4.1.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

PVC OUTSIDE DROP CONNECTION

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-4.1

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. MAINTAIN A MINIMUM OF 1' BETWEEN MANHOLE JOINTS AND TEE. ONLY ALLOWED FOR 8" AND 6" PIPES.
2. VERTICAL PIPING SHALL NOT BE IN CONFLICT WITH LADDER. LADDER SHALL NOT BE REMOVED.
3. INTRAFLOW PIPING SHALL BE PER MANUFACTURER'S INSTRUCTIONS.
4. ALL JOINTS SHALL BE CAULK WITH A BEAD OF MANUS DURING ASSEMBLY PER THE MANUFACTURES INSTRUCTIONS.
5. CONNECTION TO AN EXISTING MANHOLE SHALL BE MADE BY CORE DRILLING THE MANHOLE AND SEALING THE HOLE AROUND THE PIPE WITH STAINLESS STEEL LINK SEAL.
6. ATTACH 1/4" POLY ROPE TO INSPECTION HOOD AND TIE IT OFF AT THE TOP LADDER RUNG.

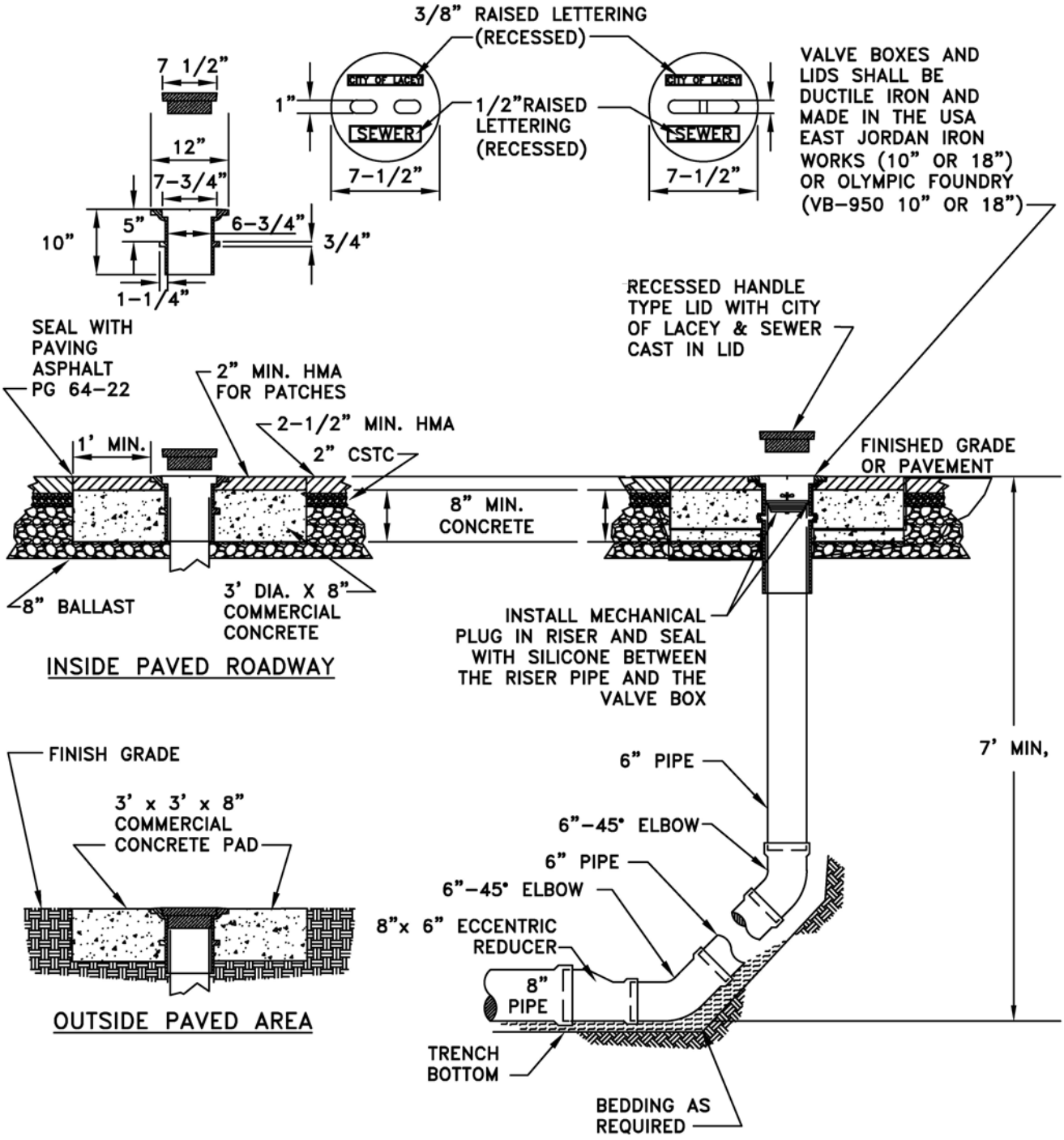
DG7-4.2.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

ROYAL-INTRAFLOW LOW PROFILE INSIDE DROP CONNECTION TO EXISTING MANHOLE

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-4.2

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:
1. ALL SEWER PIPE SHALL BE PVC ASTM 3034 SDR 35.
2. LOCATED IN CENTER OF CUL-DE-SAC.
3. VALVE BOXES AND LIDS SHALL BE DUCTILE IRON AND MANUFACTURED IN THE USA (UNITED STATES OF AMERICA).

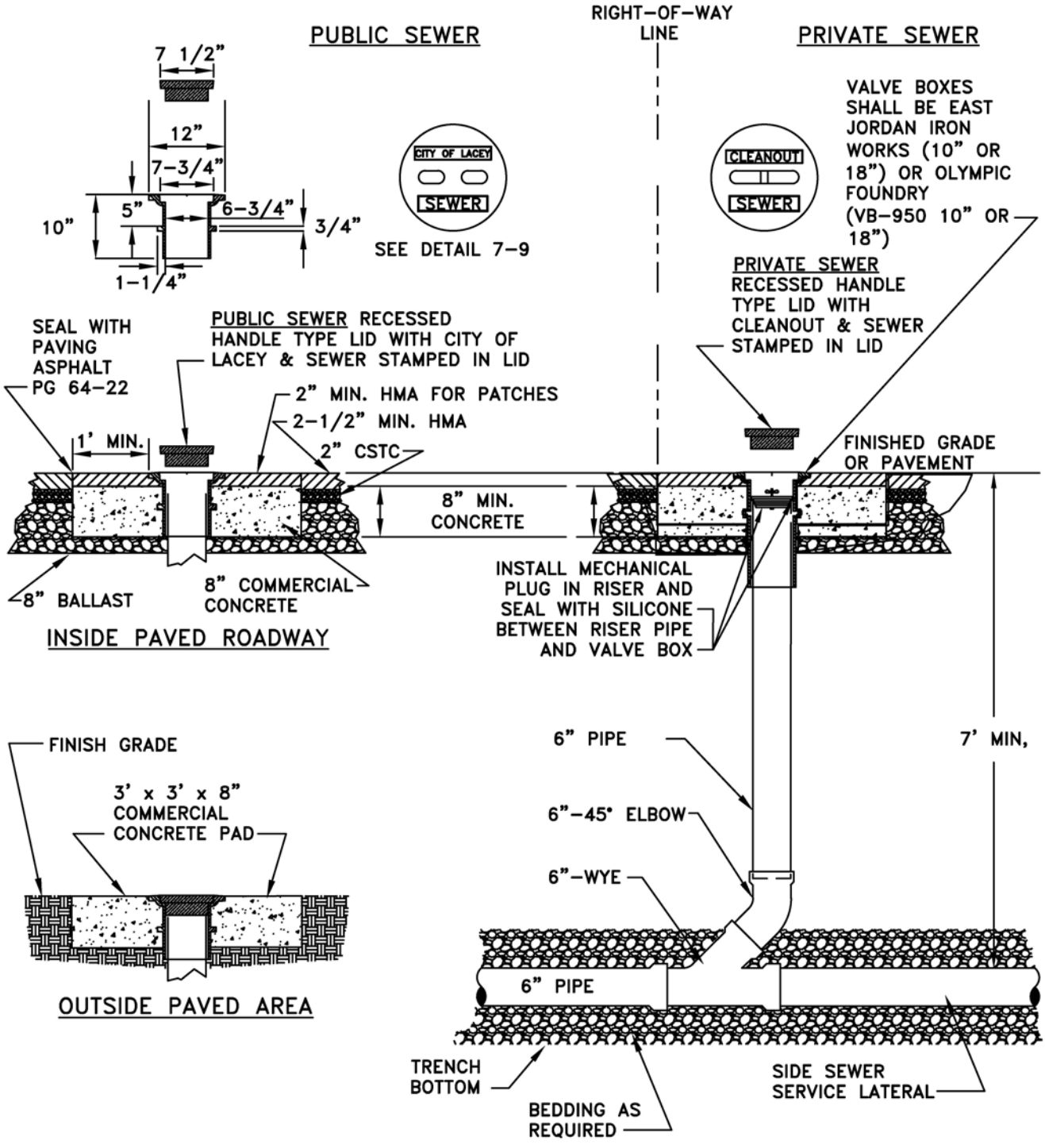
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

CITY OF LACEY CLEANOUT

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-5

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7-5.DWG



GENERAL NOTES:

1. ALL SEWER PIPE SHALL BE PVC ASTM 3034 SDR 35.
2. SIDE SEWER CLEANOUTS ARE REQUIRED TO BE INSTALLED BEHIND THE SIDEWALK OR 1 FOOT INSIDE OF THE UTILITY EASEMENT.
3. LIDS FOR PRIVATE SIDE SEWER CLEAN OUTS SHALL STATE CLEAN OUT OR SEWER. CITY OF LACEY SEWER LIDS SHALL NOT BE UTILIZED.

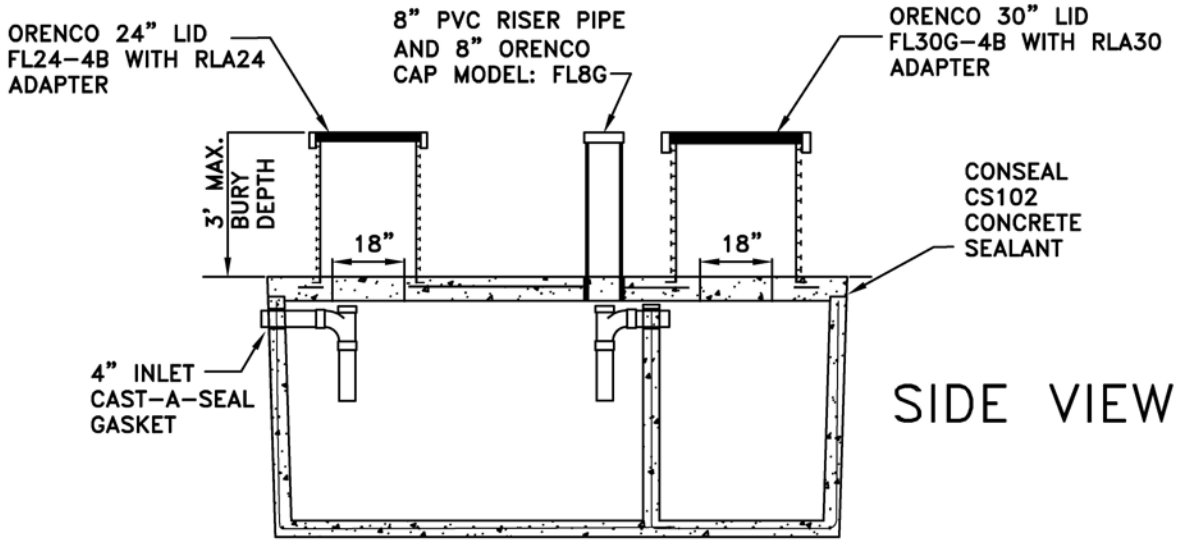
DG7-5.1.DWG

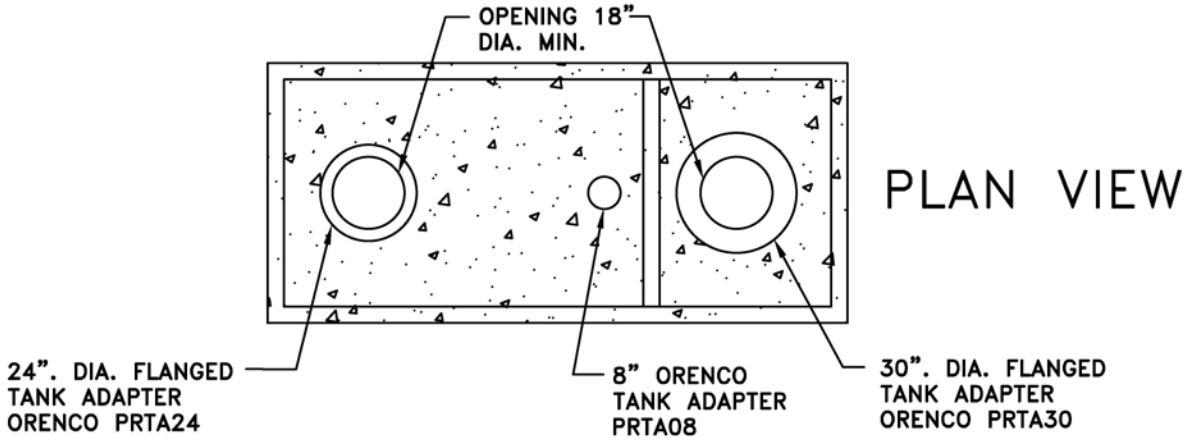
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

CLEANOUT TYPE II PRIVATE

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-5.1

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014





GENERAL NOTES:

1. TANKS SHALL BE DESIGNED BY A REGISTERED STRUCTURAL ENGINEER AND SHALL BE APPROVED BY THE CITY OF LACEY. THE CITY DOES NOT ACCEPT ANY REBAR SUBSTITUTIONS SUCH AS NOVOMESH OR SIMILAR PRODUCTS.
2. TANKS AND/OR LIDS SHALL NOT BE TRANSPORTED FROM THE PRE-CAST MANUFACTURER'S SITE EARLIER THAN 7 DAYS AFTER MANUFACTURED DATE.
3. TANKS SHIPPED EARLIER THAN 7 DAYS WILL BE REJECTED.
4. TANK MANUFACTURED DATE SHALL BE CLEARLY MARKED ON THE TANK AND LID.
5. TANKS APPROVED AS TRAFFIC BEARING TANKS SHALL BE DESIGNED TO WITHSTAND AN H-20 LIVE LOAD WITH A MINIMUM SOIL COVER OF 18 INCHES. LOAD RATING OF THE TANK SHALL BE CLEARLY STAMPED IN THE LID OR SIDE OF TANK. THE H-20 LID SUBMITTAL SHALL BE APPROVED BY THE CITY OF LACEY BEFORE DELIVERY AND INSTALLATION.
6. FLEXIBLE 4" INLET CONNECTION SHALL BE CAST-A-SEAL MANUFACTURED BY PRESS-SEAL GASKET CORPORATION.
7. THE S.T.E.P TANK SHALL BE DESIGNED TO HOLD THE RATED CAPACITY OF STORAGE INSIDE THE TANK WHEN FILLED TO THE NORMAL WORKING LEVEL. THERE SHALL BE AN ADDITIONAL 200 GALLONS OF STORAGE (MINIMUM) FROM WORKING LEVEL TO THE TOP OF THE TANK TO ALLOW 24 HOUR ADDITIONAL STORAGE IN THE EVENT OF A POWER OUTAGE.
8. THE INSIDE AND OUTSIDE SURFACES OF THE TANK SHALL BE PROTECTED BY APPLYING A HEAVY CEMENT-BASE WATERPROOF COATING OF THOROSEAL OR AN APPROVED EQUAL.
9. SEE SECTION 7E.060 FOR CONCRETE TANK CONSTRUCTION REQUIREMENTS.

DG7-6.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

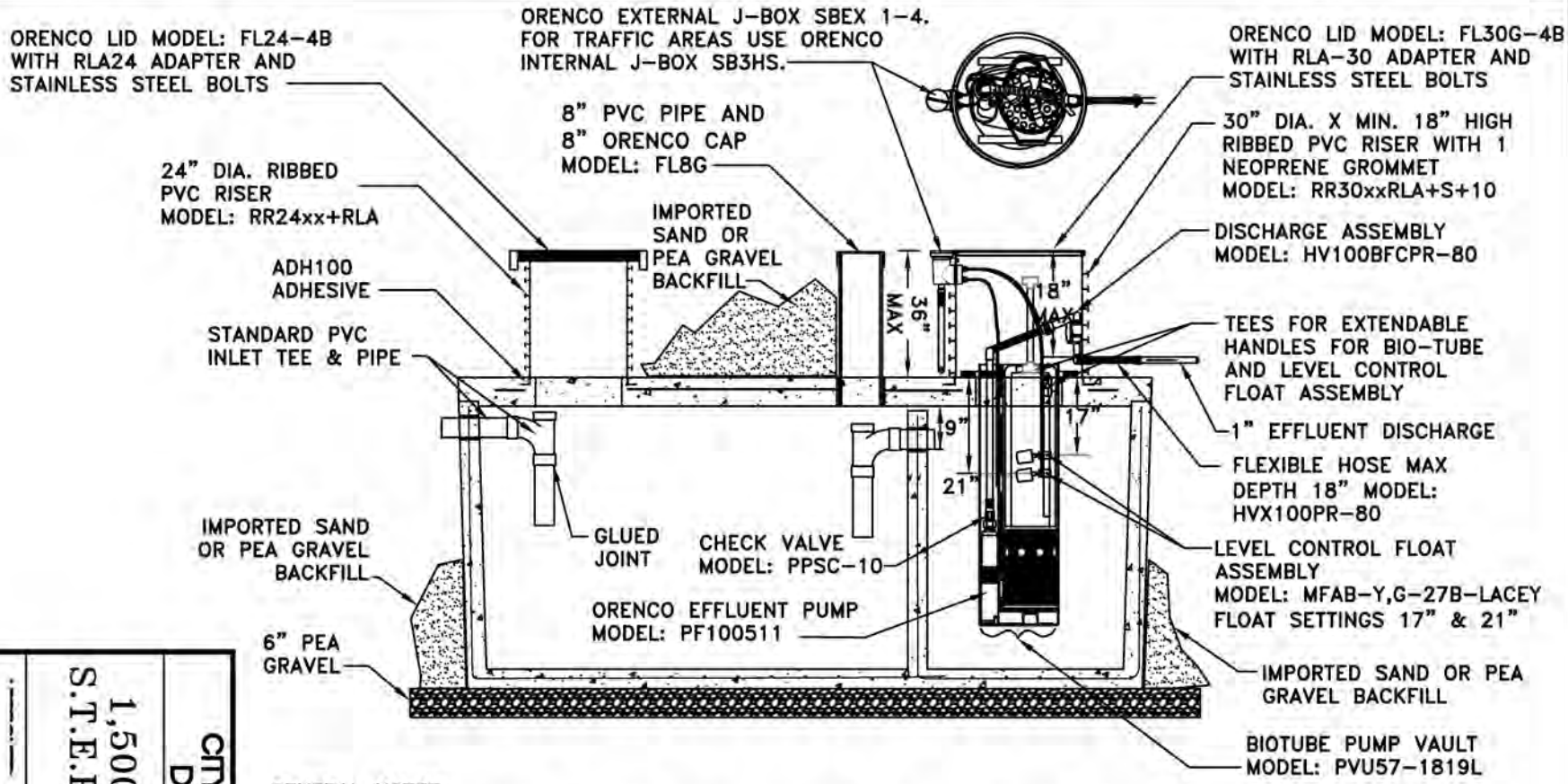
1,500 AND 3000 GALLON S.T.E.P. TANKS

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-6

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7-7.DWG



GENERAL NOTES:

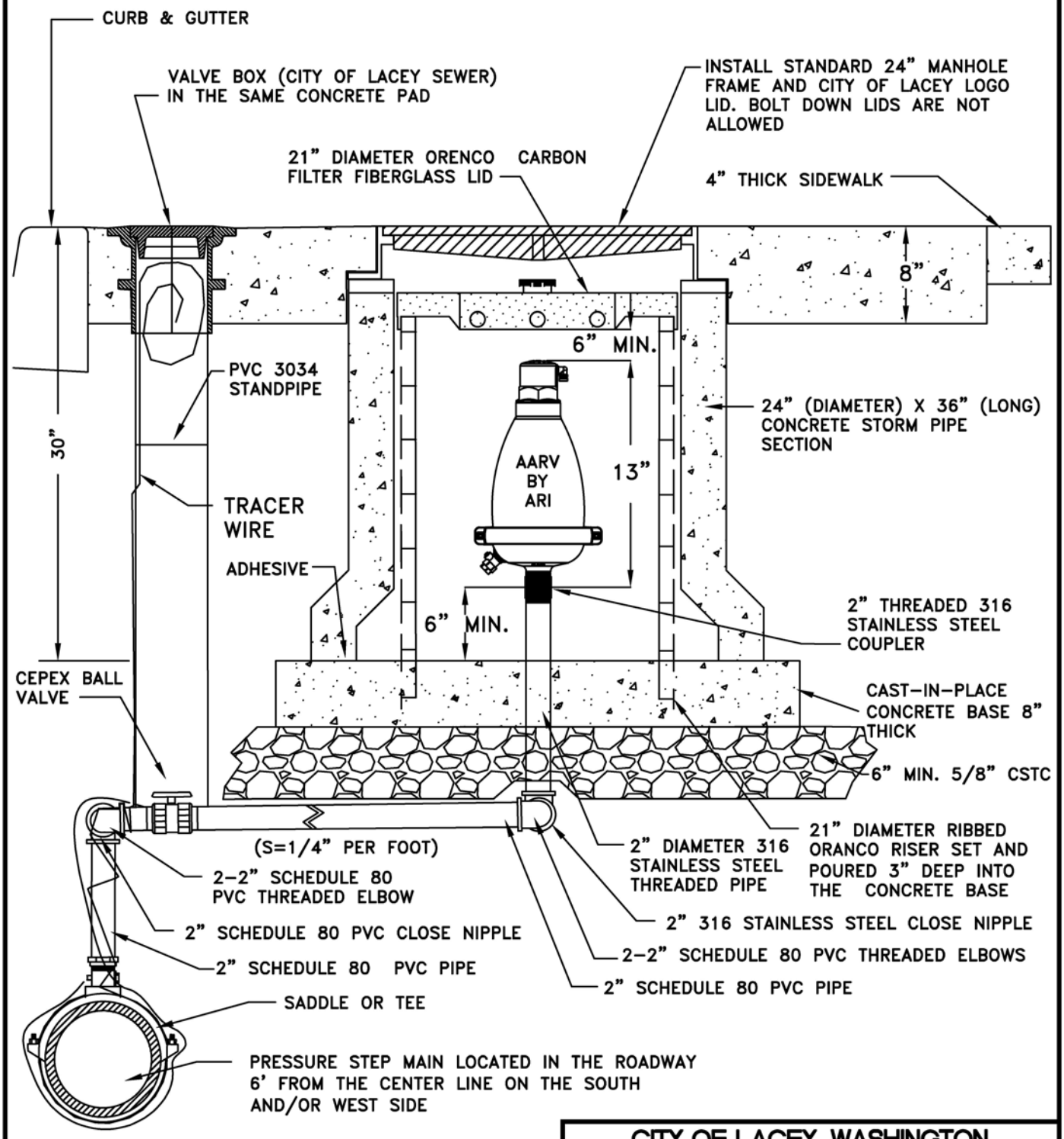
1. ALL TANKS SHALL BE INSTALLED ON 6 INCHES OF PEA GRAVEL. THE BACKFILL MATERIAL FOR THE SIDES OF THE TANK SHALL BE IMPORTED SAND OR PEA GRAVEL COMPACTED IN 2 FOOT LIFTS TO 90% COMPACTION. NO NATIVE MATERIAL SHALL BE USED TO BACKFILL AROUND THE TANK.
2. PIPING FROM THE MAINLINE TO THE SERVICE BOX SHALL BE 1 1/4" SCHEDULE 80 PVC BEDDED IN IMPORTED SAND 6" BELOW THE PIPE AND 6" ABOVE THE PIPE.
3. PIPING FROM THE SERVICE BOX TO THE PUMP SHALL BE 1" SCHEDULE 80 PVC OR HDPE SDR 11 BUTT OR SOCKET FUSED PIPE AND COUPLERS. MINIMUM BURY DEPTH IS 24". SEWER SHALL NEVER CROSS OVER WATER.
4. FOR PIPE ZONE BEDDING SEE DETAIL 7-20. WATER CROSSINGS OVER SEWER SHALL BE SLEEVED.
5. TANK COMPONENTS SHALL BE ORENCO PSA10-S1DS-LACEY CERTIFIED PACKAGE.
6. SEE CITY OF LACEY S.T.E.P. SYSTEM SIZING REQUIREMENT CHART FOR APPROVED TANKS.
7. MAXIMUM RISER HEIGHT SHALL BE 36". THE MINIMUM RISER HEIGHT SHALL BE 18".
8. TO TRANSITION FROM HDPE TO PVC A 316 STAINLESS STEEL "POLY CAM" CONNECTOR SHALL BE USED.
9. TANKS SET IN TRAFFIC AREAS SHALL BE PRE-APPROVED. THE 30" LID SHALL BE COVERED WITH GMI 36" COMPOSIT LID. THE 24" LID SHALL BE COVERED WITH GMI 30" COMPOSITE LID. THERE SHALL BE A MINIMUM 3" AND MAXIMUM 6" CLEARANCE UNDER THE GMI COMPOSITE LID.
10. ALL RISER LIDS SHALL BE INSTALLED TO FINISH GRADE. THE BACKFILL MATERIAL SHALL BE PLACED UP THE SIDES OF THE TANK TO WITHIN 10" OF FINISH GRADE COVERING THE TOP OF THE TANK

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

1,500 AND 3000 GALLON S.T.E.P. TANK COMPONENTS

Roy A Schamel
CITY ENGINEER

DES	DWN	CKD	DATE	DWG. NO.
WHO	WHO	RAS	12/15/2014	7-7



GENERAL NOTES:

1. THE CONCRETE CYLINDER SHALL BE BONDED TO THE BASE TO PREVENT THE EFFLUENT FROM SEEPING INTO THE GROUND.
2. THE AIR RELEASE VALVE FOR THE S.T.E.P. SEWER SHALL BE S-021 AUTOMATIC AIR RELEASE VALVE BY ARI.
3. A RAIN GUARD SHALL BE REQUIRED.
4. LIFT STATION SEWER FORCE MAINS SHALL USE ARI MODEL D-025.

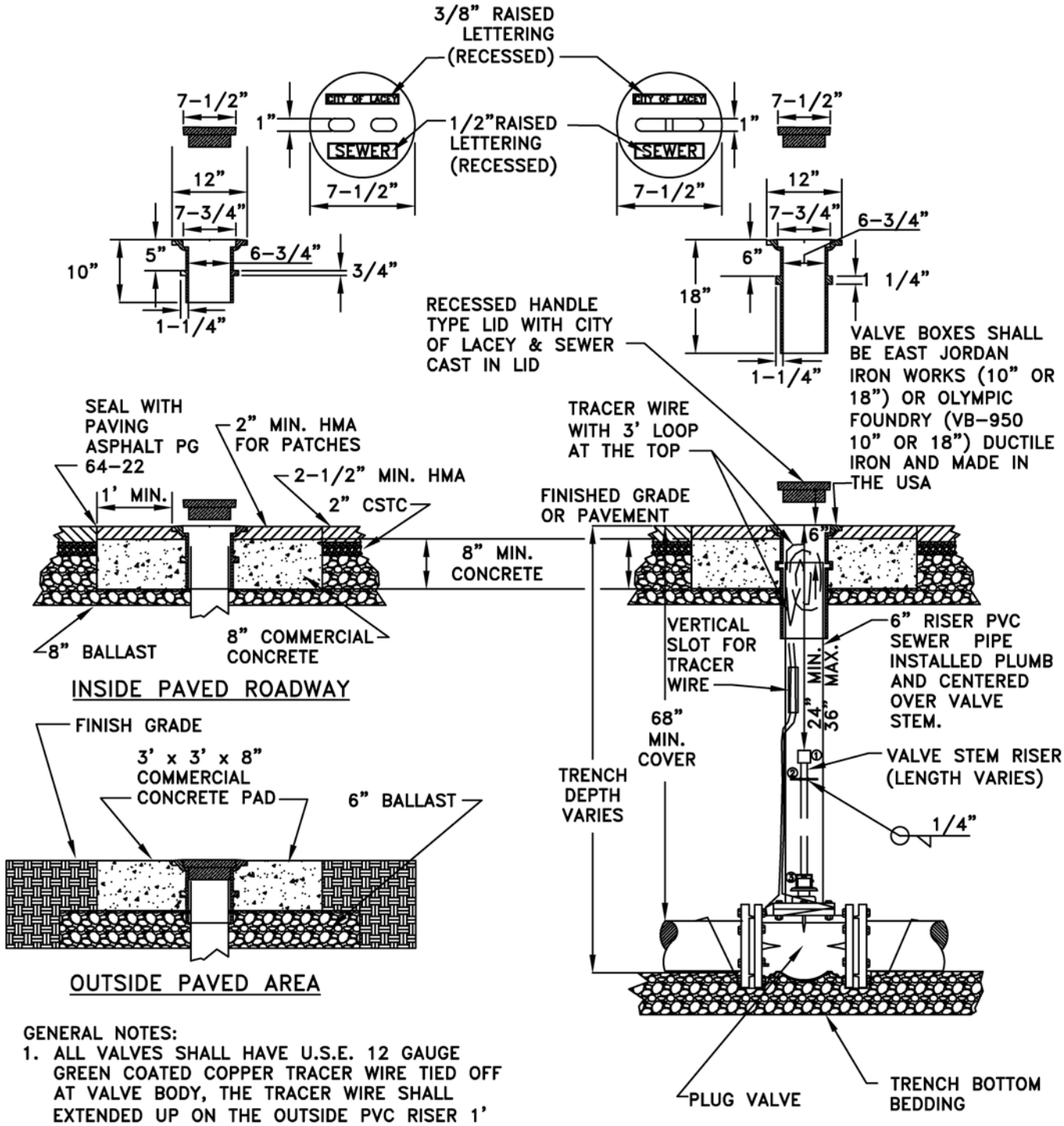
DG7-8.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

AIR RELEASE VALVE

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-8

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. ALL VALVES SHALL HAVE U.S.E. 12 GAUGE GREEN COATED COPPER TRACER WIRE TIED OFF AT VALVE BODY, THE TRACER WIRE SHALL EXTENDED UP ON THE OUTSIDE PVC RISER 1' ABOVE THE HUB THEN SHOULD ENTER THE RISER PIPE AND EXTEND THREE FEET ABOVE THE TOP OF VALVE BOX.
2. ALL WELDS TO THE SHAFT SHALL BE FILLET WELD, AROUND THE ENTIRE PLATE PER #2 BELOW.

VALVE STEM EXTENSION LEGEND

① VALVE OPERATING NUT OR 1-7/8" X 1-7/8" X 2" HIGH GRADE STEEL WELDED TO GUIDE PLATE.
② 3/16" THICK X 5 1/5" DIA STEEL GUIDE PLATE WELDED TO RISER SHAFT.
③ 2"X2"X 3/16" SQUARE STRUCTURAL STEEL TUBING TO FIT OPERATING NUT. LENGTH AS REQUIRED.

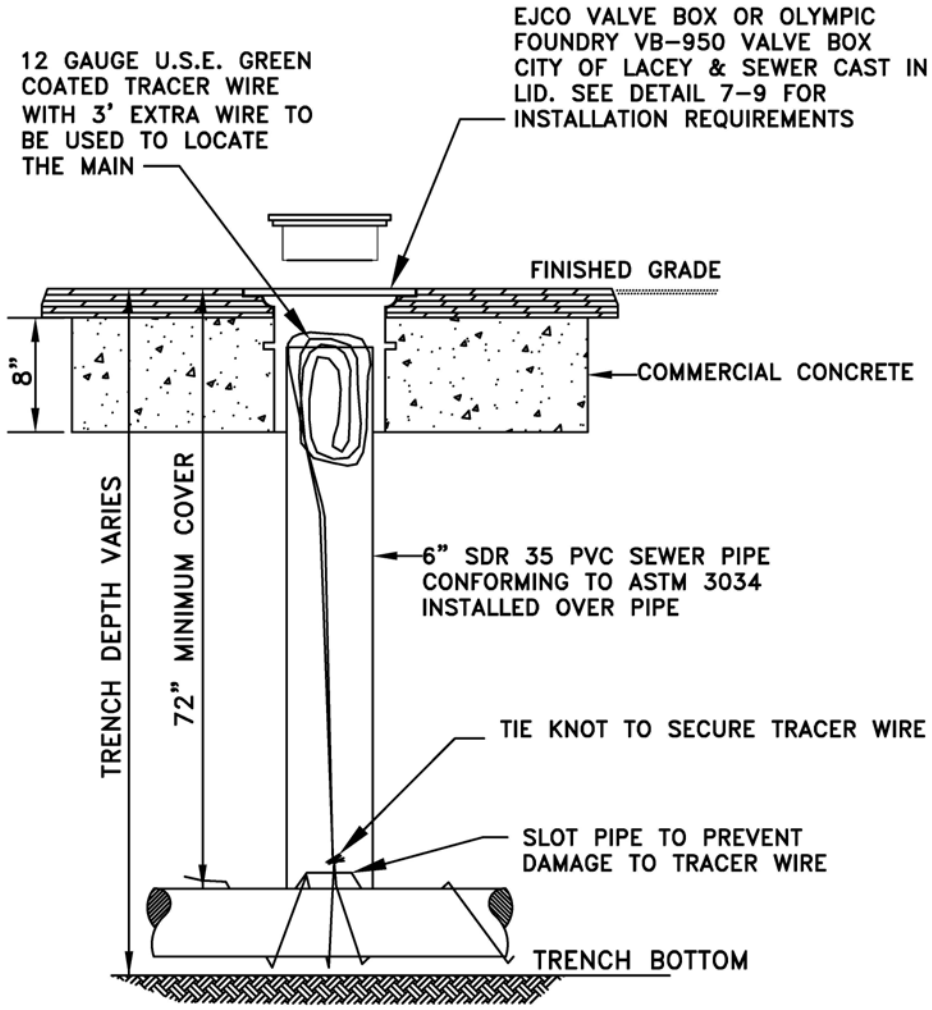
DG7-9.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

STANDARD VALVE BOX INSTALLATION

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-9

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

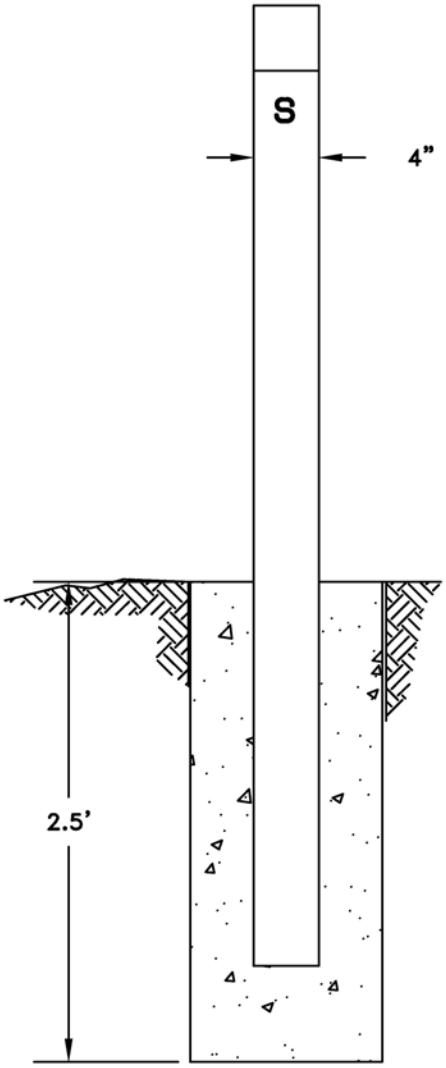


GENERAL NOTE:

1. TRACER WIRE ACCESS PORT SHALL BE INSTALLED EVERY 500 FEET WHEN NO APPURTENANCES ARE CONNECTED TO IT.

CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
LOCATE WIRE ACCESS PORT			
APPROVED Roger A Schoessel CITY ENGINEER			DWG. NO. 7-9.1
DES EHA	DWN WHO	CKD RAS	DATE 12/15/2014

DG7-9.1.DWG



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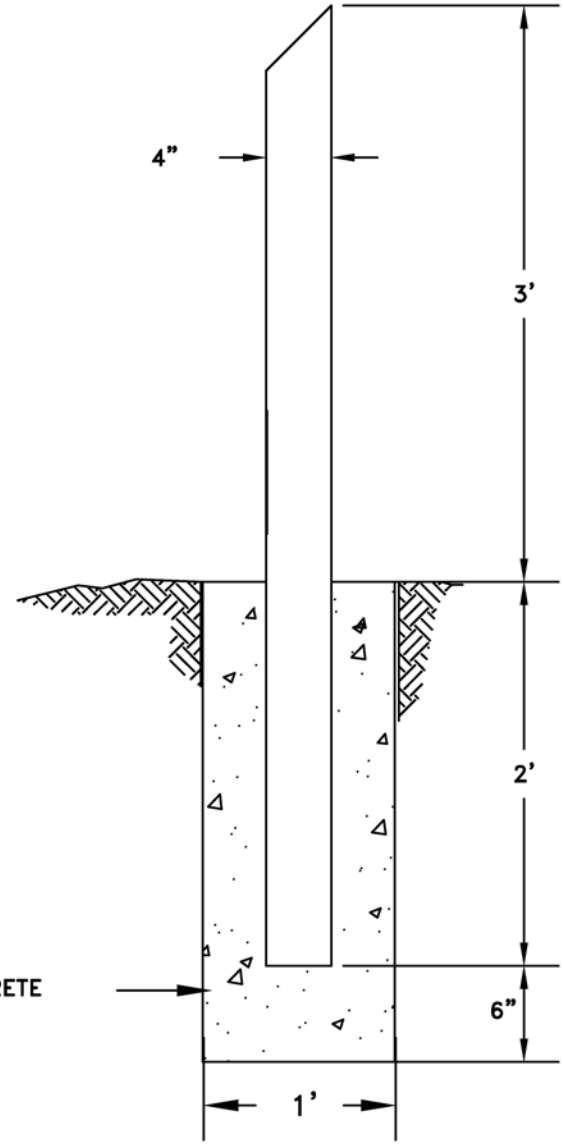


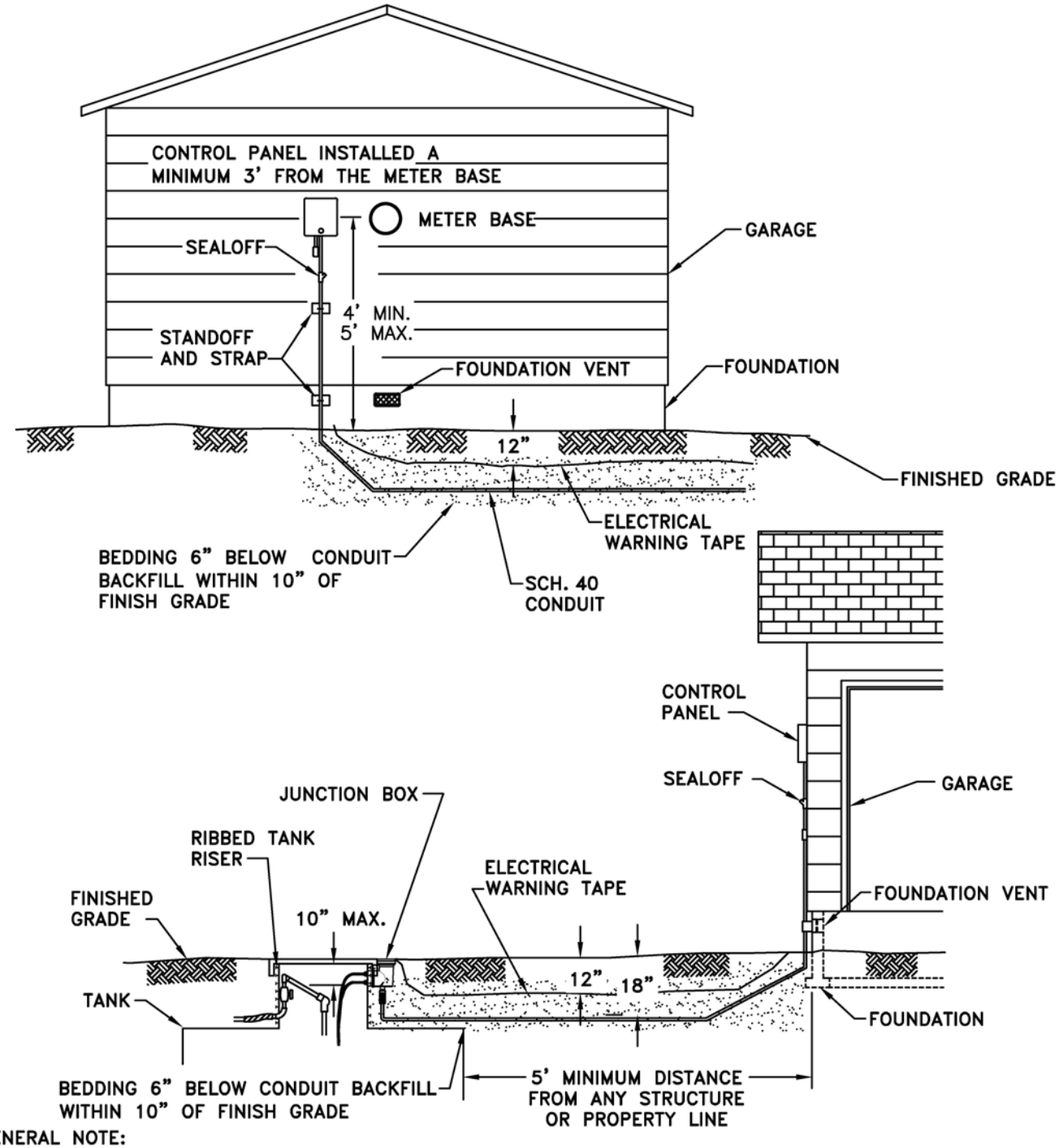
SIDE

GENERAL NOTES:

1. 4" SCHEDULE 40 STEEL OR REINFORCED CONCRETE MARKER POST STAMPED WITH A GREEN "S" AND DISTANCE TO VALVE.
2. THE POST TO BE COATED WITH ONE PRIME COAT AND TWO COATS OF OUTDOOR OIL BASE ENAMEL (WHITE).

DG7-10.DWG

CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
SEWER VALVE MARKER POST			
APPROVED Roger A Schoessel CITY ENGINEER			DWG. NO. 7-10
DES WHO	DWN WHO	CKD RAS	DATE 12/15/2014



GENERAL NOTE:

1. CONTROL PANEL REQUIREMENTS ARE IN SECTION 7E.095.
2. ELECTRICAL CONDUIT MUST BE BEDDED IN SAND OR PEA GRAVEL. STEP LINES UNDER DRIVEWAYS SHALL BE CASED IN 2" CLASS 200 PVC EXTENDED 2 FEET BEYOND THE DRIVEWAY EDGES.
3. IN THE COUNTY THE FOLLOWING SHALL BE INSTALLED: HUBBELL–PRO. HEAVY DUTY 20A, 120–277 VAC SINGLE POLE SWITCH #4902–1 OR APPROVED EQUAL. THOMAS & BETTS RED DOT DRY–TITE DEVICE BOX #IH3–LM. BELL WEATHER PROOF COVER, RAYNTITE #5031–0, SINGLE GANG, ALUMINUM PAD–LOCKABLE COVER.
4. THE CONTROL PANEL FOR A 3000 GALLON SYSTEM SERVING A DUPLEX SHALL BE SERVED BY A DEDICATED POWER METER AND 20 AMP BREAKER.
5. USE OF POST MOUNTED PANEL SHALL BE PRE–APPROVED BY THE CITY OF LACEY.

DG7–11.DWG

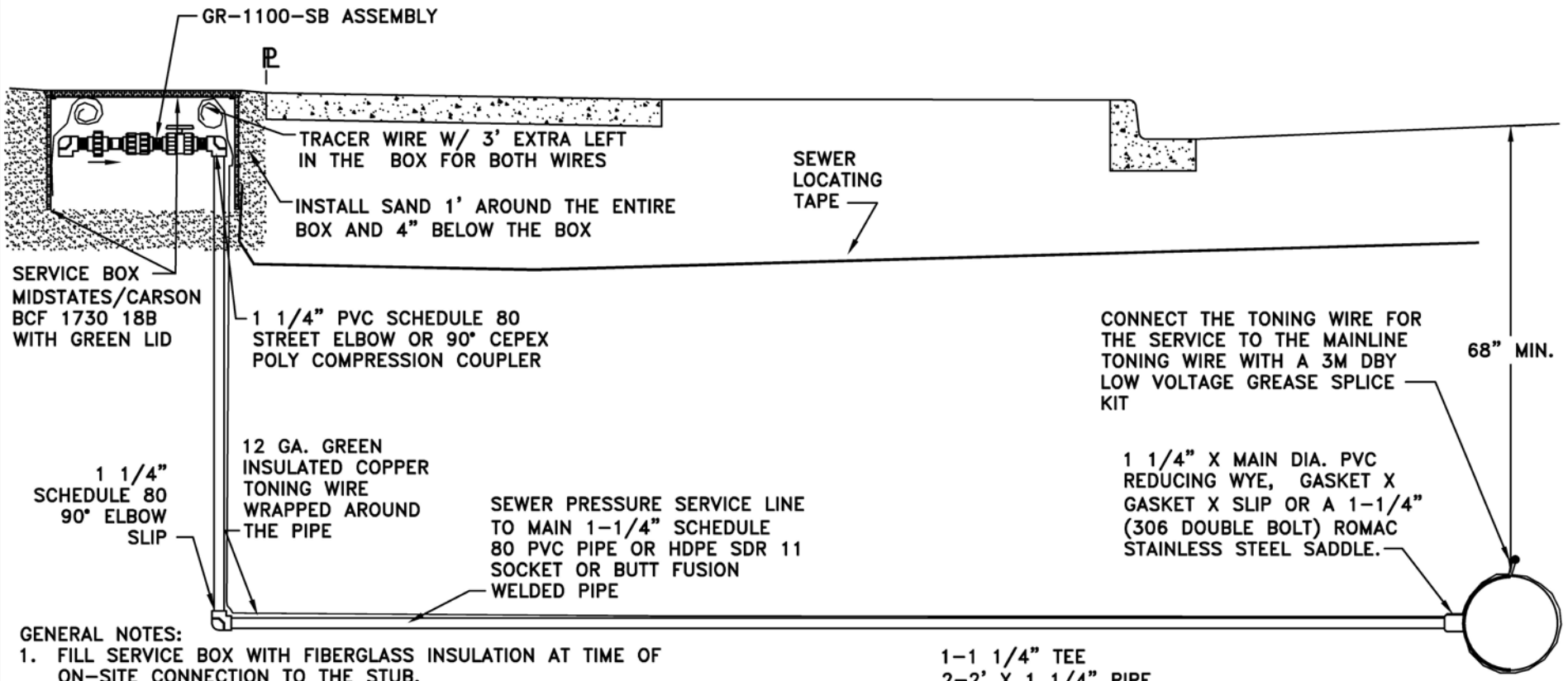
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

S.T.E.P.
CONTROL PANEL

APPROVED
Roger A Schoessel
CITY ENGINEER

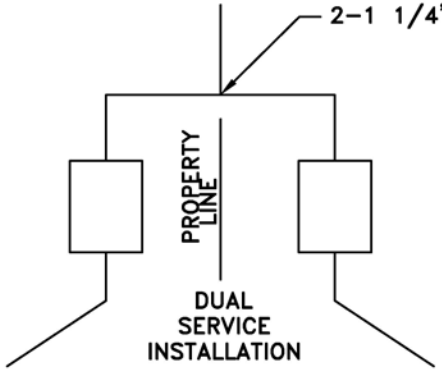
DWG. NO. 7–11

DES.	DWN.	CKD.	DATE
P/W	WHO	RAS	12/15/2014



GENERAL NOTES:

1. FILL SERVICE BOX WITH FIBERGLASS INSULATION AT TIME OF ON-SITE CONNECTION TO THE STUB.
2. AFTER THE HYDRO-STATIC TEST HAS BEEN APPROVED BY THE CITY INSPECTOR THE CHECK VALVE SHALL BE INSTALLED.
3. FOR HDPE REQUIREMENTS SEE CHAPTER 7D.
4. FUTURE LOT CONNECTIONS SHALL BE MADE AT THE 90° ELBOW WITH THE TRACER WIRE INCLUDED IN THE INSTALLATION.
5. ALL SERVICE BOXES SHALL BE INSTALLED IN NON-TRAFFIC AREAS. EARTH BURY LOCATIONS SHALL USE SOLID HDPE GREEN LIDS. IN UNUSUAL CONDITIONS WHEN SERVICE BOXES ARE ALLOWED TO BE INSTALLED IN TRAFFIC AREAS DUCTILE IRON LIDS SHALL BE REQUIRED.
6. TO TRANSITION FROM HDPE TO PVC A 316 STAINLESS STEEL "POLY CAM" CONNECTOR SHALL BE USED.



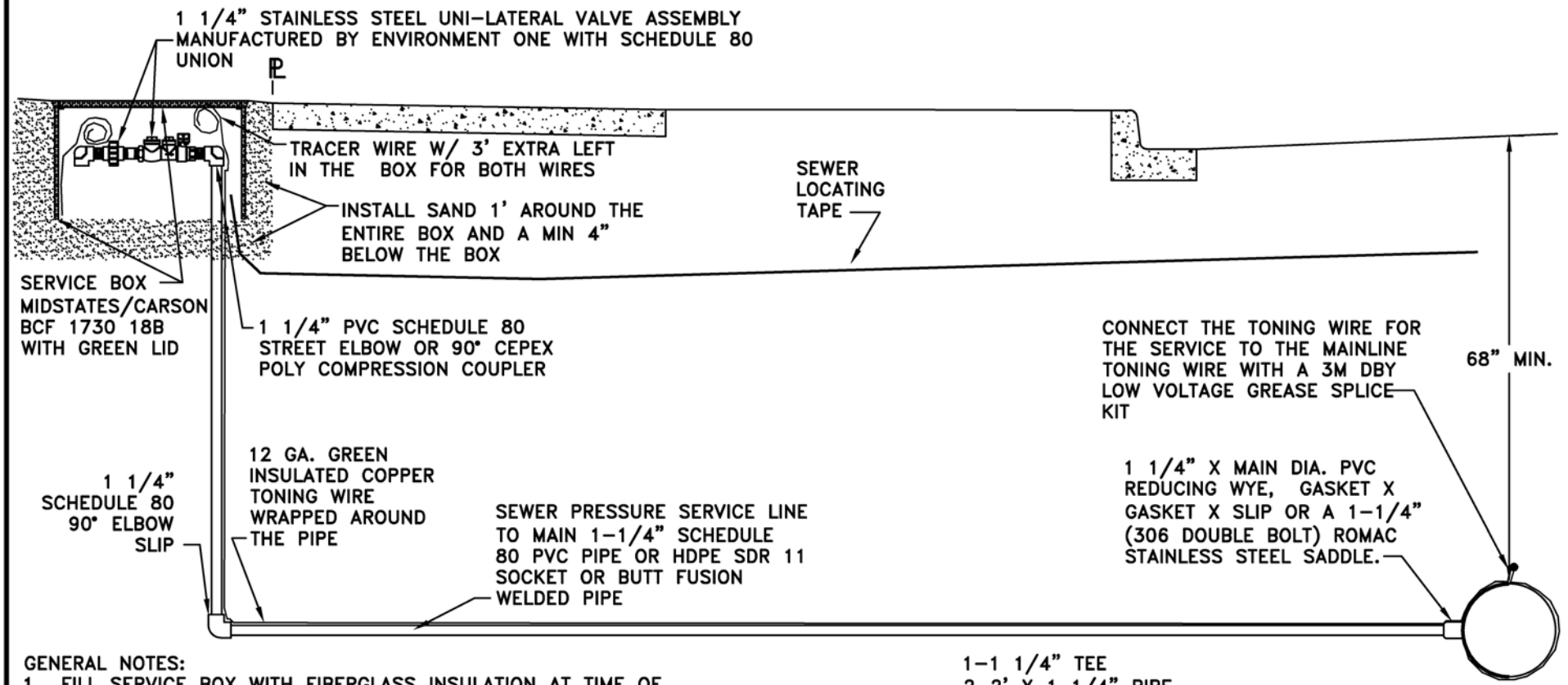
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

SINGLE & DUPLEX FAMILY S.T.E.P. SEWER SERVICE CONNECTION

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-12

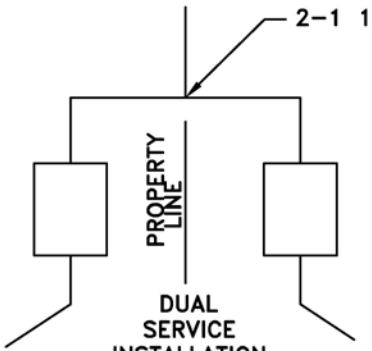
DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7-12.DWG



GENERAL NOTES:

1. FILL SERVICE BOX WITH FIBERGLASS INSULATION AT TIME OF ON-SITE CONNECTION TO THE STUB.
2. AFTER THE HYDRO-STATIC TEST HAS BEEN APPROVED BY THE CITY INSPECTOR THE CHECK VALVE SHALL BE INSTALLED.
3. FOR HDPE REQUIREMENTS SEE CHAPTER 7D.
4. FUTURE LOT CONNECTIONS SHALL BE MADE AT THE 90° ELBOW WITH THE TRACER WIRE INCLUDED IN THE INSTALLATION.
5. ALL SERVICE BOXES SHALL BE INSTALLED IN NON-TRAFFIC AREAS. EARTH BURY LOCATIONS SHALL USE SOLID HDPE GREEN LIDS. IN UNUSUAL CONDITIONS WHEN SERVICE BOXES ARE ALLOWED TO BE INSTALLED IN TRAFFIC AREAS, DUCTILE IRON LIDS SHALL BE REQUIRED.
6. THE VALVE CHECK ASSEMBLY SHALL BE 1 1/4" STAINLESS STEEL UNI-LATERAL MANUFACTURED BY ENVIRONMENT ONE ONLY. NO SUBSTITUTIONS WILL BE ALLOWED.
7. TO TRANSITION FROM HDPE TO PVC A 316 STAINLESS STEEL "POLY CAM" CONNECTOR SHALL BE USED.



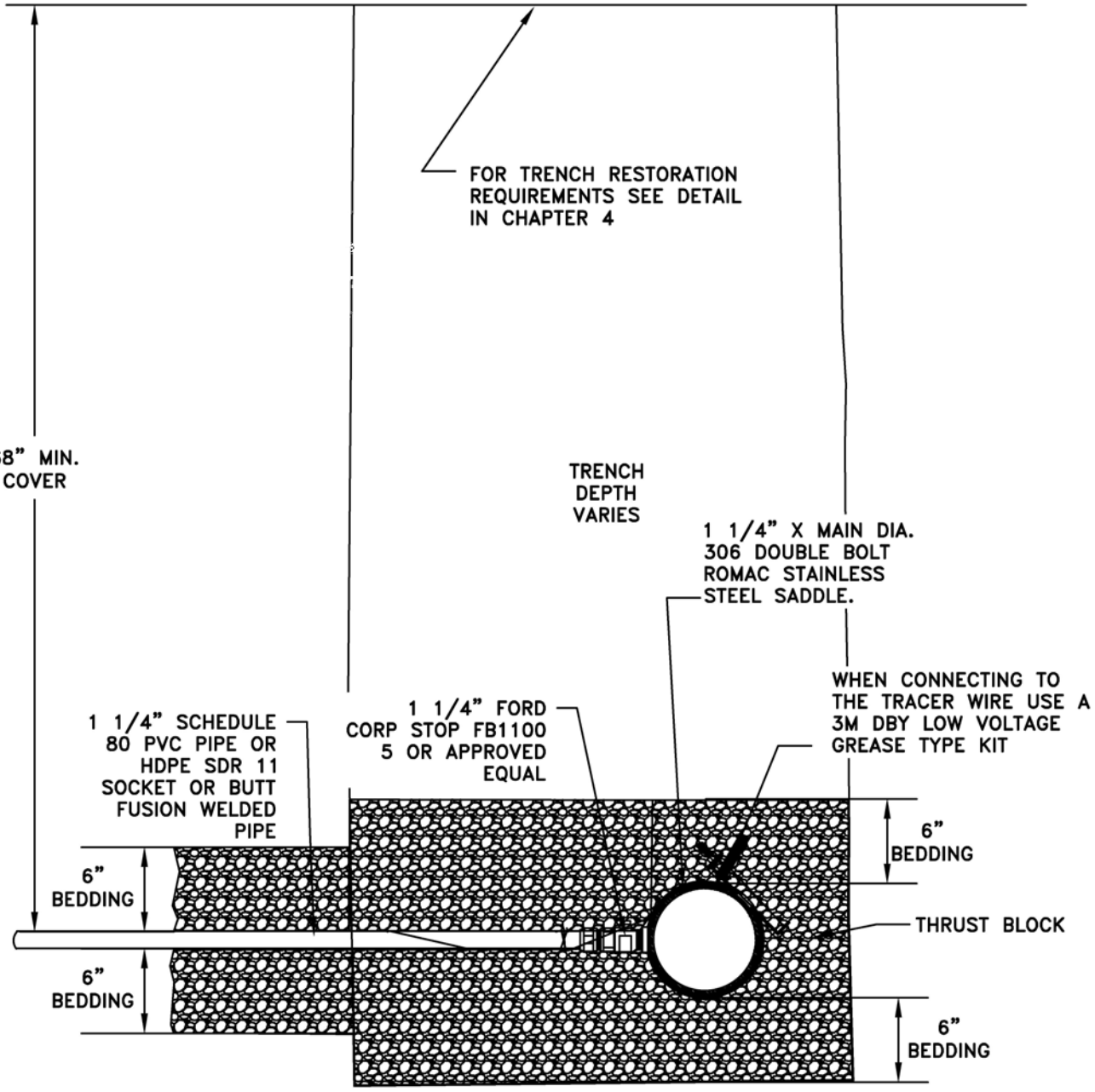
DG7-12.1.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

SINGLE & DUPLEX FAMILY SERVICE GRINDER CONNECTION

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-12.1

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. ALL CONNECTIONS TO A PVC SEWER PRESSURE MAIN SMALLER THAN 3 INCH SHALL USE A GLUED TEE AND SLIP FIX FITTING. POLY MAINS SHALL USE ELECTRO FUSION SADDLE TAP.
2. CONNECTION TO A SEWER PRESSURE MAIN 3 INCHES AND LARGER SHALL BE THROUGH A 306 DOUBLE BOLT STAINLESS STEEL SADDLE.

DG7-12.2.DWG

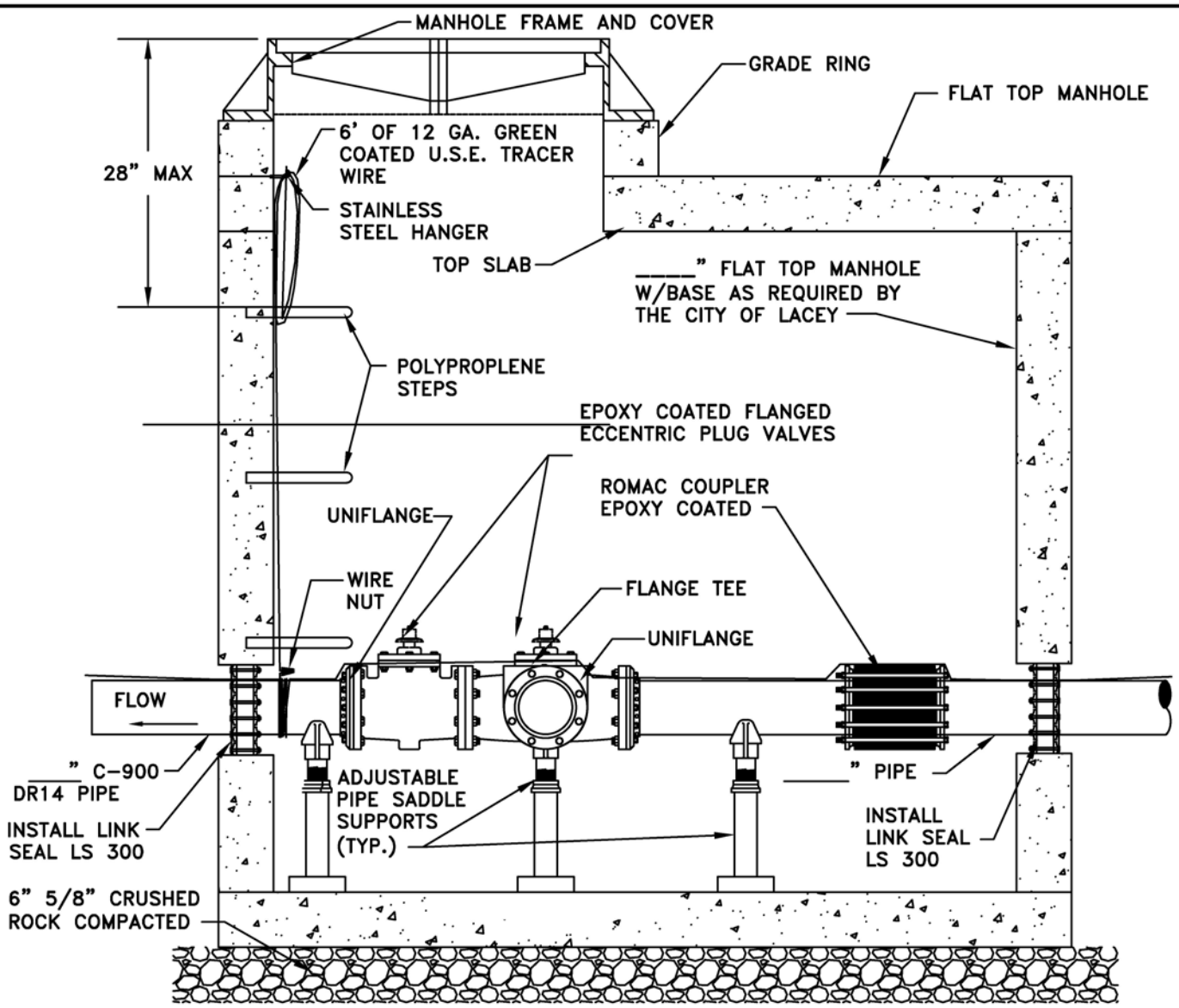
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

S.T.E.P./GRINDER SEWER MAIN SERVICE TAP DETAIL

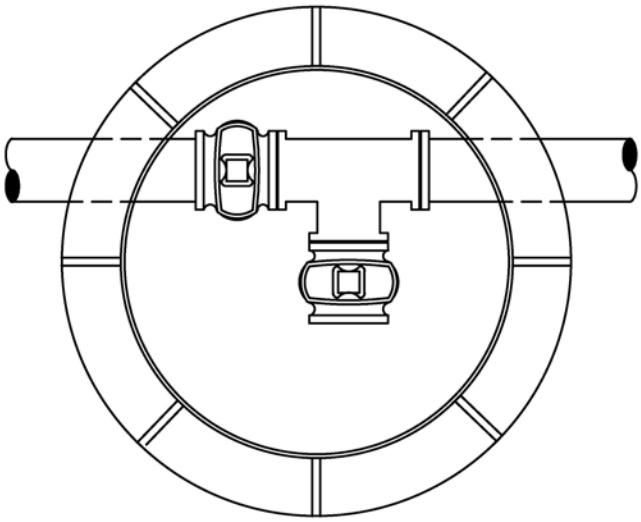
APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-12.2

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



TOP VIEW THROUGH MANHOLE OPENING



VALVE HUBS SHALL BE ACCESSIBLE FROM MANHOLE OPENING AS SHOWN ABOVE

DG7-13.DWG

GENERAL NOTES:

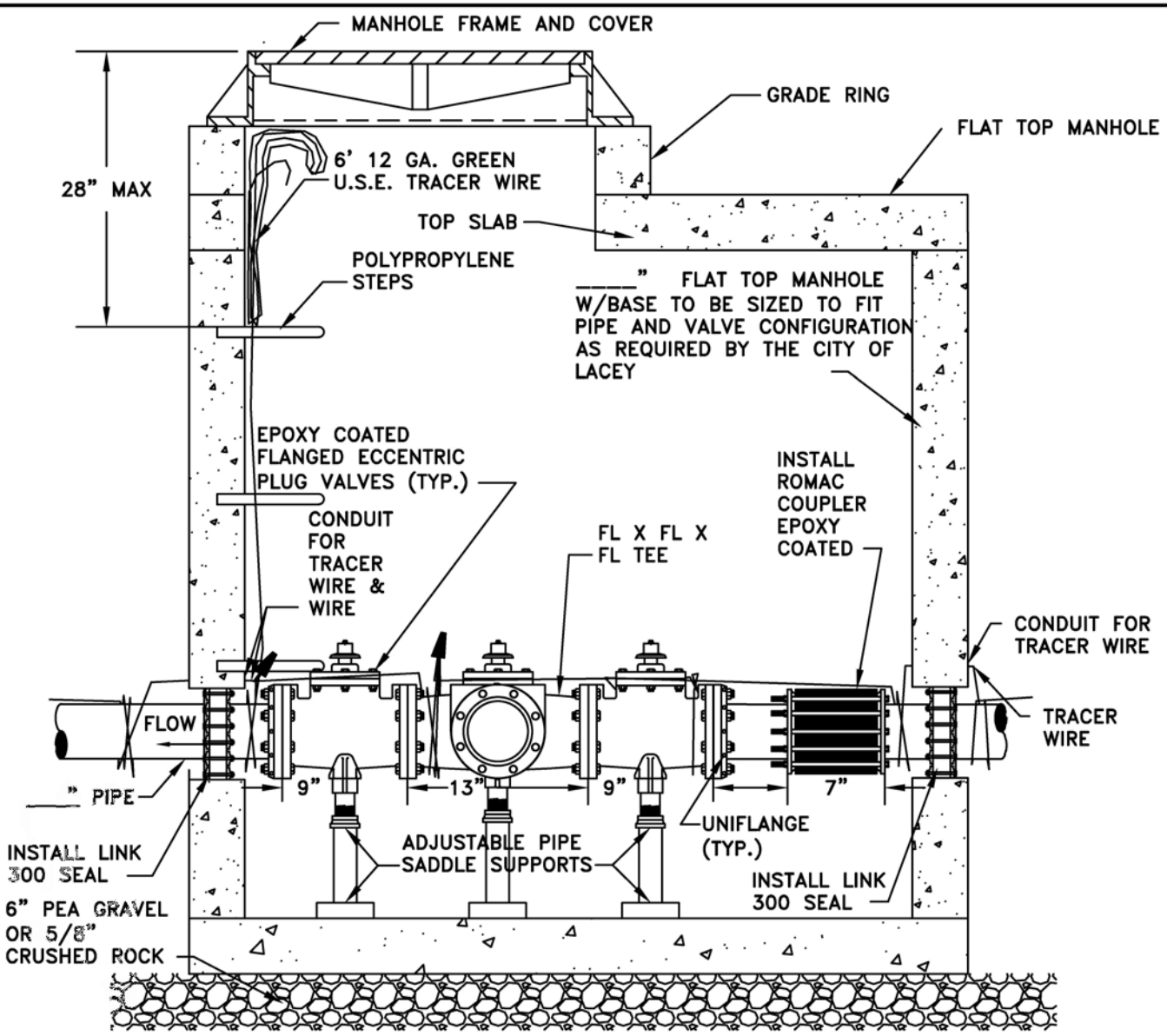
1. THE MANHOLE FRAME AND COVER SHALL BE THE CITY OF LACEY "LOGO" LID SEE DETAIL 7-3.
2. ALL APPURTENANCES INSTALLED SHALL BE THE SAME SIZE AS THE PIPE.
3. THE SIZE OF THE MANHOLE SHALL BE DETERMINED BY THE SIZE OF THE PIPE.
4. RAIN GUARD IS REQUIRED IN AREAS SUBJECT TO FLOODING.
5. BOLT DOWN LID IS NOT ALLOWED.

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

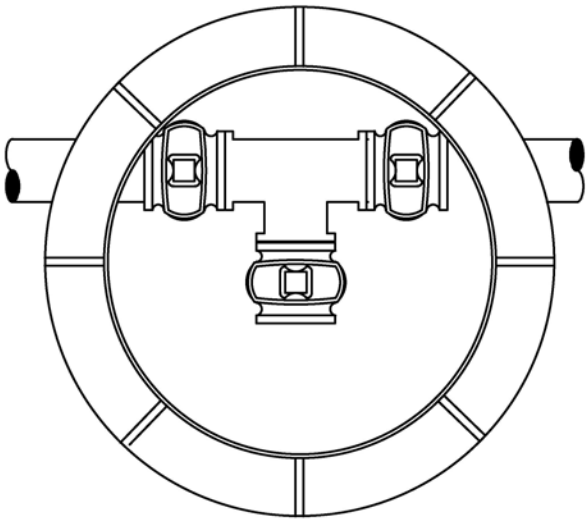
PIG CATCHER PORT 4" AND LARGER

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-13

DES.	DWN.	CKD.	DATE
P/W	WHO	RAS	12/15/2014



TOP VIEW THROUGH MANHOLE OPENING



VALVE HUBS SHALL BE ACCESSIBLE FROM THE MANHOLE OPENING AS SHOWN ABOVE

GENERAL NOTES:

1. THE MANHOLE LID SHALL BE THE CITY OF LACEY "LOGO" LID SEE DETAIL 7-3.
2. ALL APPURTENANCES INSTALLED SHALL BE THE SAME SIZE AS THE PIPE.
3. THE SIZE OF THE MANHOLE SHALL BE DETERMINED BY THE SIZE OF THE PIPE AND THE VALVE ASSEMBLY OR CONFIGURATION.
4. RAIN GUARD IS REQUIRED IN AREAS SUBJECT TO FLOODING.
5. BOLT DOWN LID IS NOT ALLOWED.

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

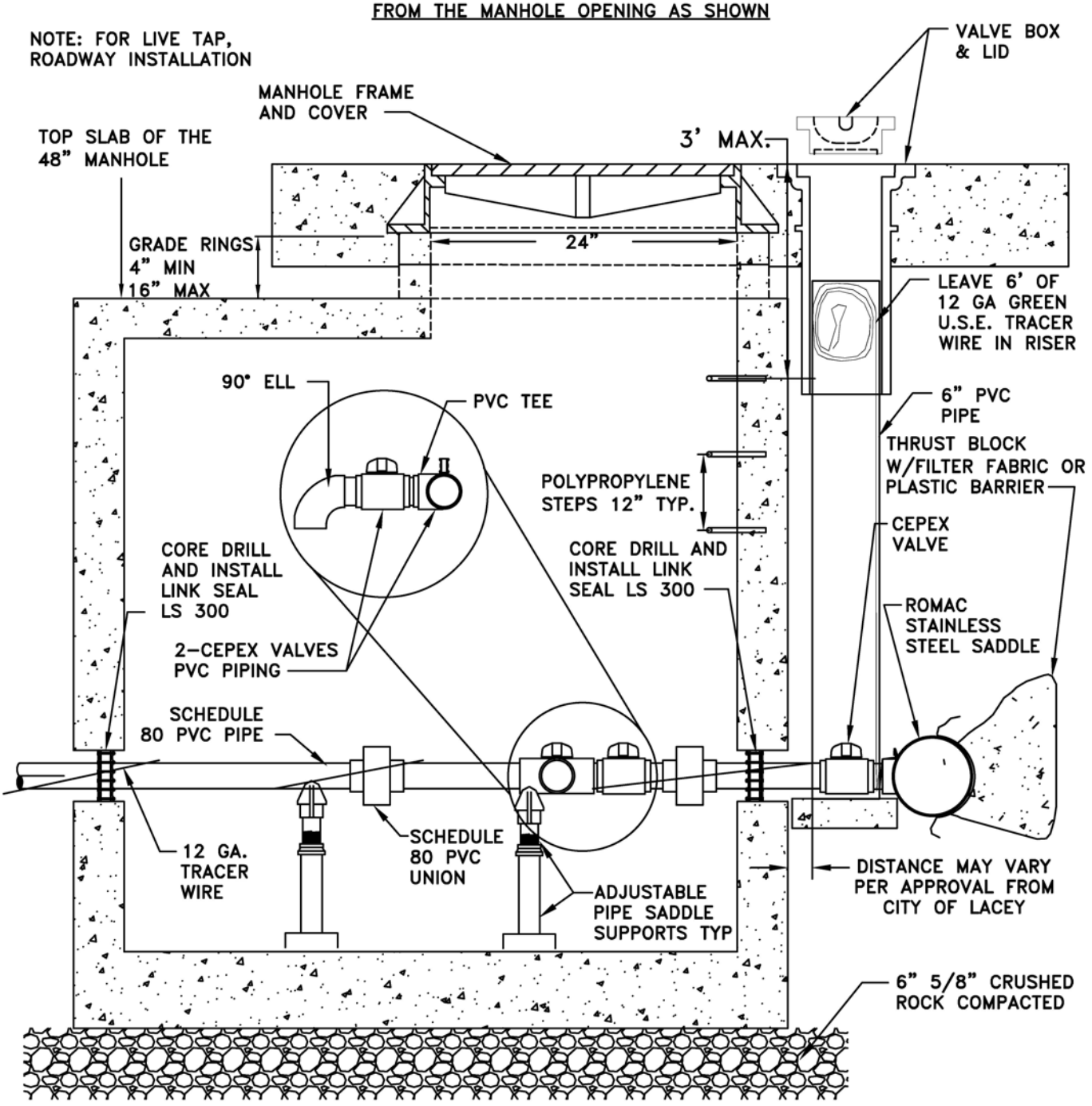
INLINE PIG CATCHER PORT 4" AND LARGER

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-13.1

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014

DG7-13.1.DWG

VALVE HANDLES SHALL BE ACCESSIBLE
FROM THE MANHOLE OPENING AS SHOWN



GENERAL NOTES:

1. THE MANHOLE FRAME AND COVER SHALL BE THE CITY OF LACEY "LOGO" LID SEE DETAIL 7-3.
2. A SEWER GUARD SHALL BE INSTALLED IN ANY MANHOLE SUBJECT TO FLOODING.
3. THE PLACEMENT OF THE VALVE ASSEMBLY SHALL BE DIRECTLY BELOW THE MANHOLE FRAME AND LID.
4. FOR THE VALVE BOX AND VALVE STEM RISER REQUIREMENTS SEE DETAIL 7-9.
5. PIPE, FITTINGS AND VALVES SHALL BE SCHEDULE 80 PVC.

DG7-13.2.DWG

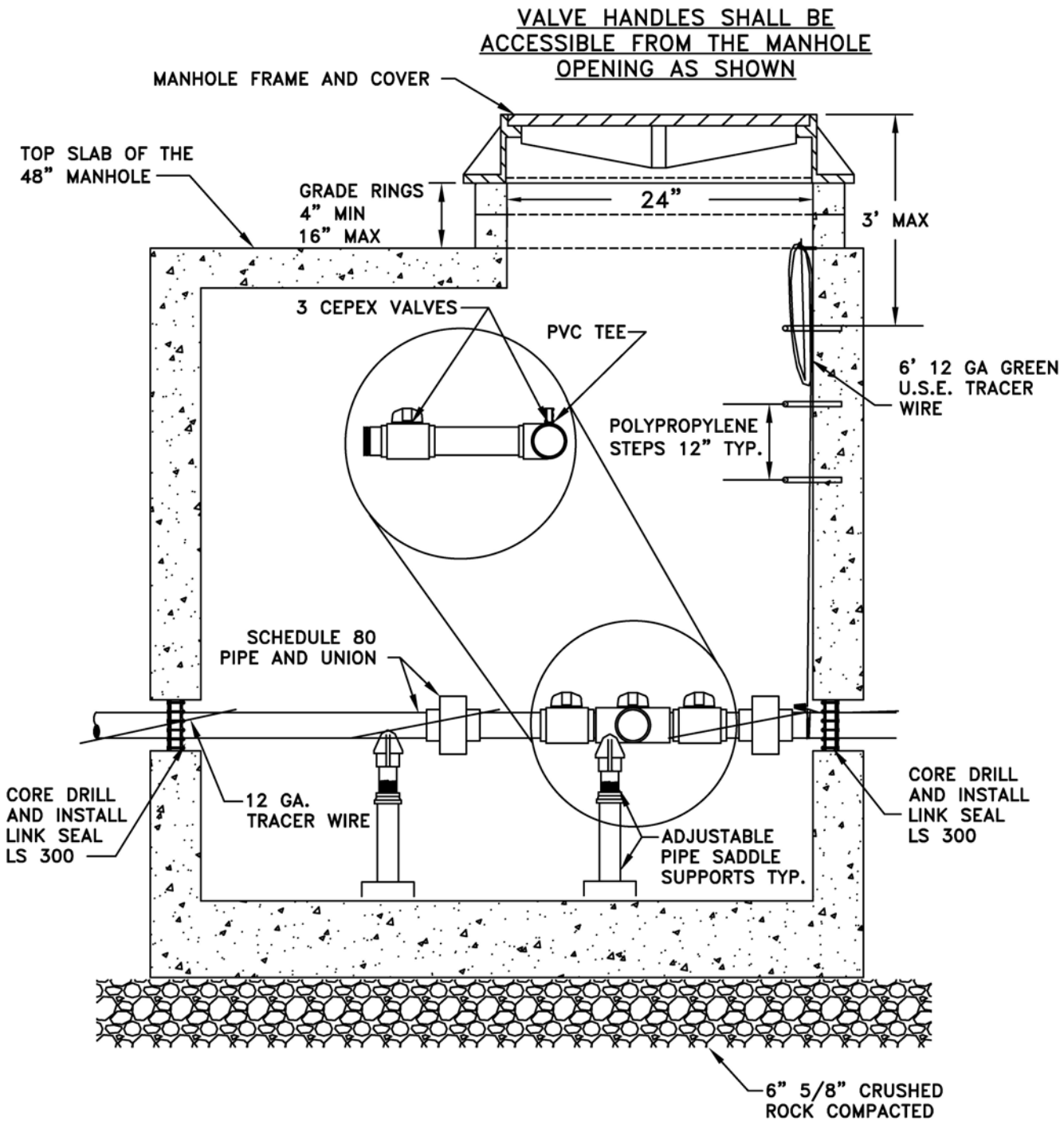
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

2" PIG CATCHER PORT

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-13.2

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. THE MANHOLE FRAME AND COVER SHALL BE THE CITY OF LACEY "LOGO" LID SEE DETAIL 7-3.
2. A SEWER GUARD SHALL BE INSTALLED IN ANY MANHOLE SUBJECT TO FLOODING.
3. THE PLACEMENT OF THE VALVE ASSEMBLY SHALL BE DIRECTLY BELOW THE MANHOLE FRAME AND LID.
4. PIPE, FITTINGS AND VALVES SHALL BE SCHEDULE 80 PVC.

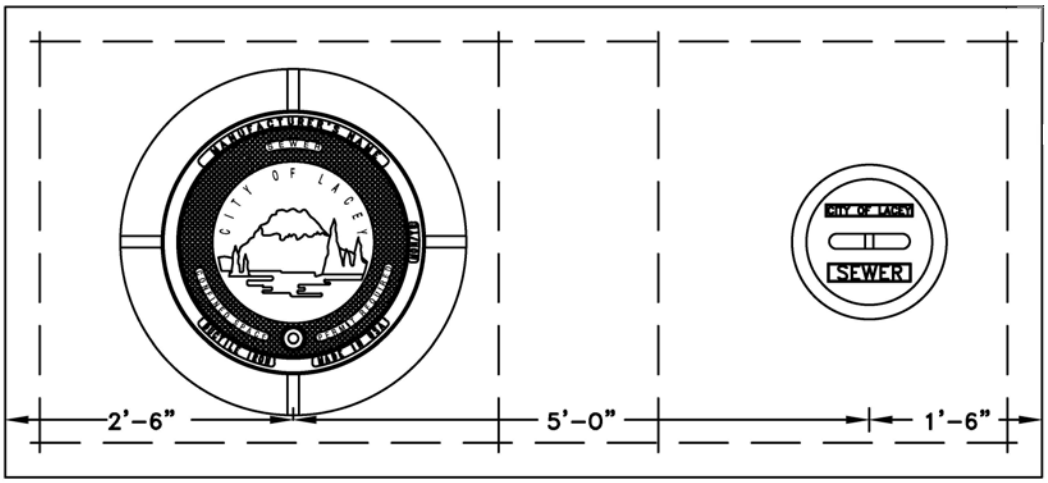
DG7-13.3.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

2" INLINE PIG CATCHER PORT

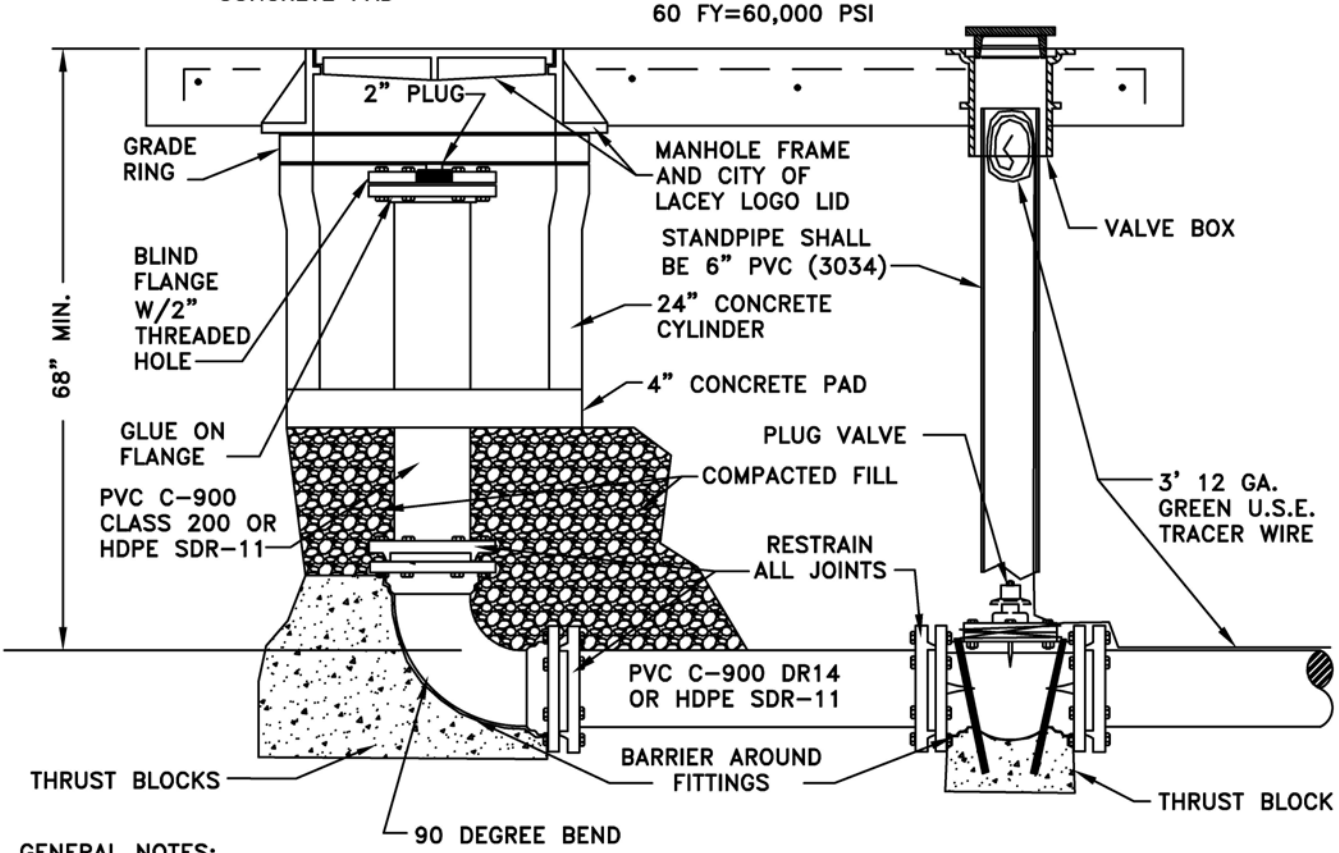
APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-13.3

DES.	DWN.	CKD.	DATE
P/W	WHO	RAS	12/15/2014



9' X 4' X 8"
CONCRETE PAD

#4 REBAR TO MEET
ASTM A615 GRADE
60 FY=60,000 PSI



GENERAL NOTES:

1. FOR VALVE BOX AND VALVE STEM RISER REQUIREMENTS SEE DETAIL 7-9.
2. THE PIG LAUNCH SIZES SHALL BE THE SAME SIZE AS THE MAIN.
3. THE MANHOLE FRAME AND COVER SHALL BE THE CITY OF LACEY "LOGO" LID SEE DETAIL 7-3.
4. PIG LAUNCH 10" OR LARGER SHALL REQUIRE SPECIAL DESIGN AND APPROVAL BY THE CITY AND MAY REQUIRE A LARGER MANHOLE LID OPENING OR A SPECIAL VAULT.
5. IN A CUL-DE-SAC SCENARIO THE LAUNCH PORT SHALL END AT THE MIDDLE OF THE SAC.

DG7-14.DWG

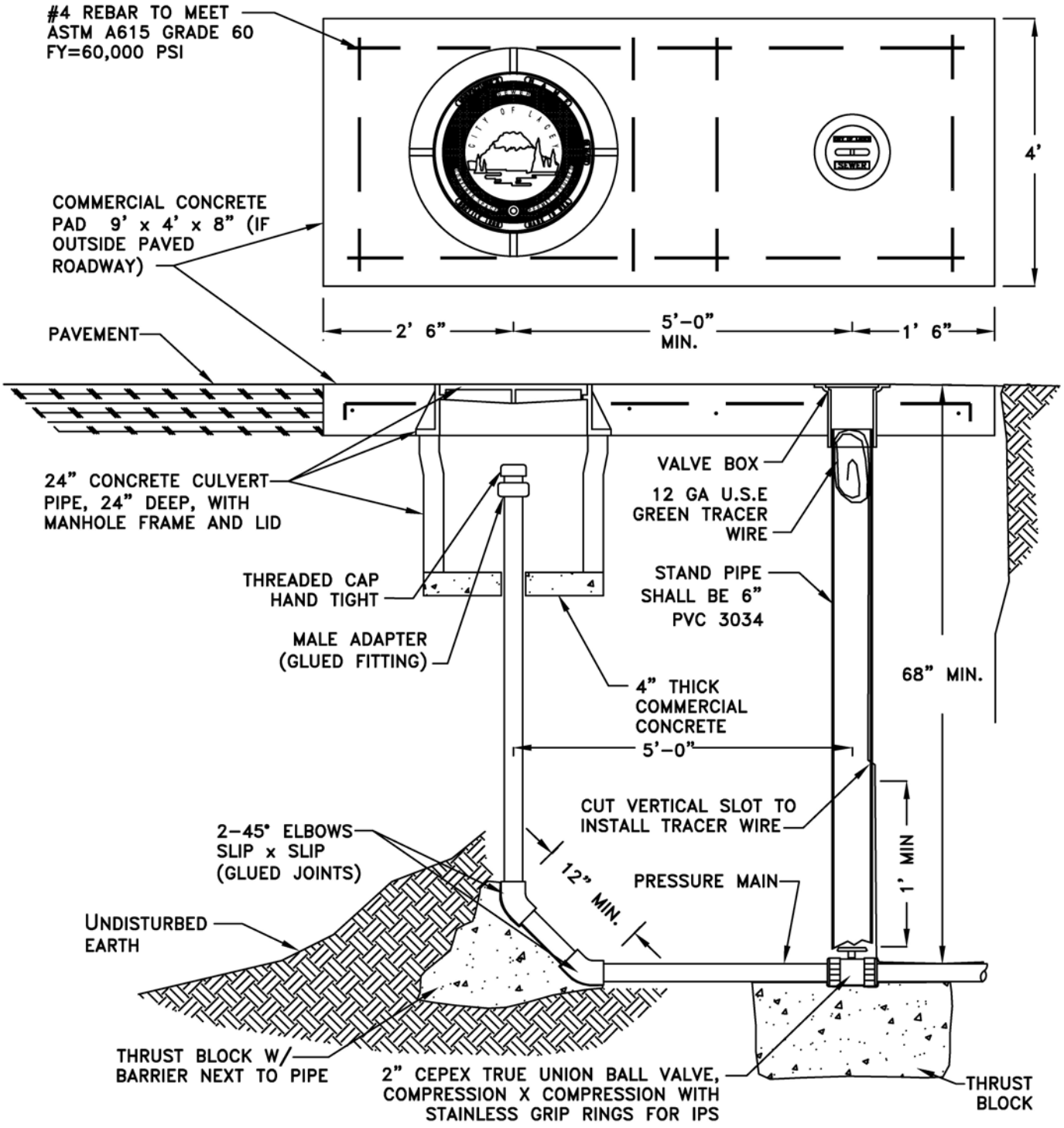
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

LAUNCH PORT
4" THRU 8"

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO.
7-14

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. CEPEX OR OTHER APPROVED PLASTIC BALL VALVES SHALL NOT HAVE EXTENSIONS ADDED TO IT.
2. FOR VALVE BOX AND VALVE STEM RISER REQUIREMENTS SEE DETAIL 7-9.
3. THE MANHOLE FRAME AND COVER SHALL BE THE CITY OF LACEY "LOGO" LID. SEE DETAIL 7-3.
4. HDPE MAINS SHALL USE BUTT OR SOCKET FUSED FITTINGS AND ADAPTERS.
5. TO TRANSITION FROM HDPE TO THREAD OR PVC A 316 STAINLESS STEEL "POLY CAM" CONNECTOR SHALL BE USED.
3. IN A CUL-DE-SAC SCENARIO THE LAUNCH PORT SHALL END AT THE MIDDLE OF THE SAC.

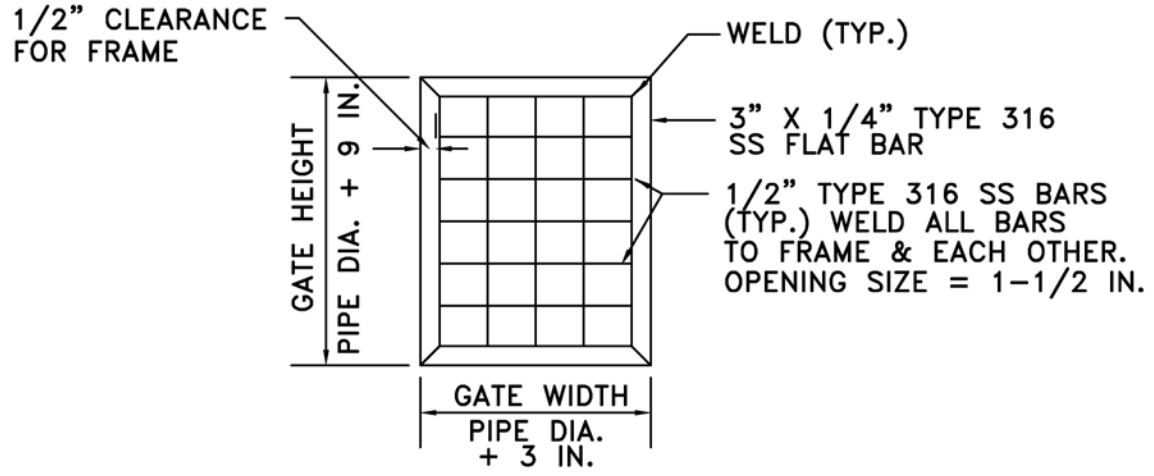
DG7-14.1.DWG

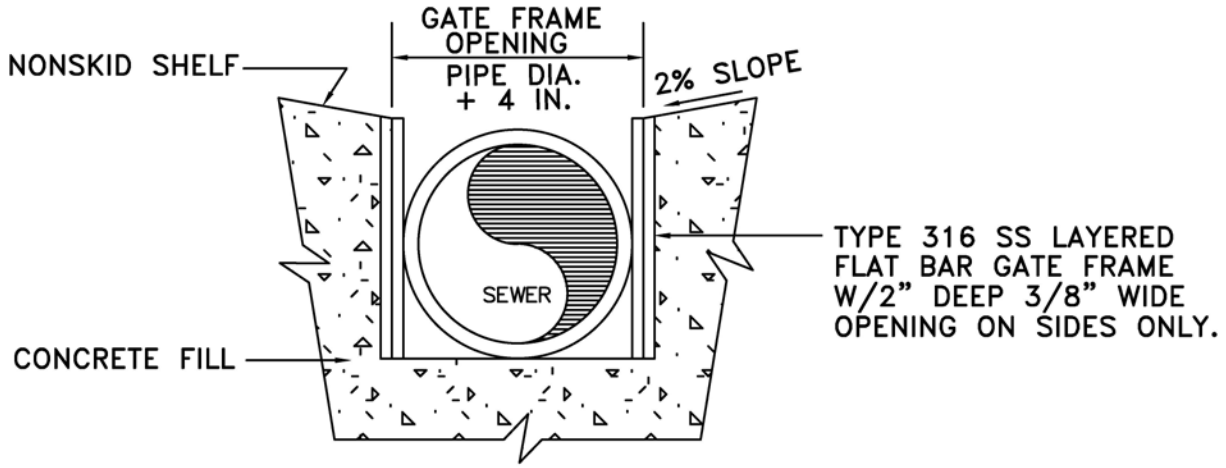
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

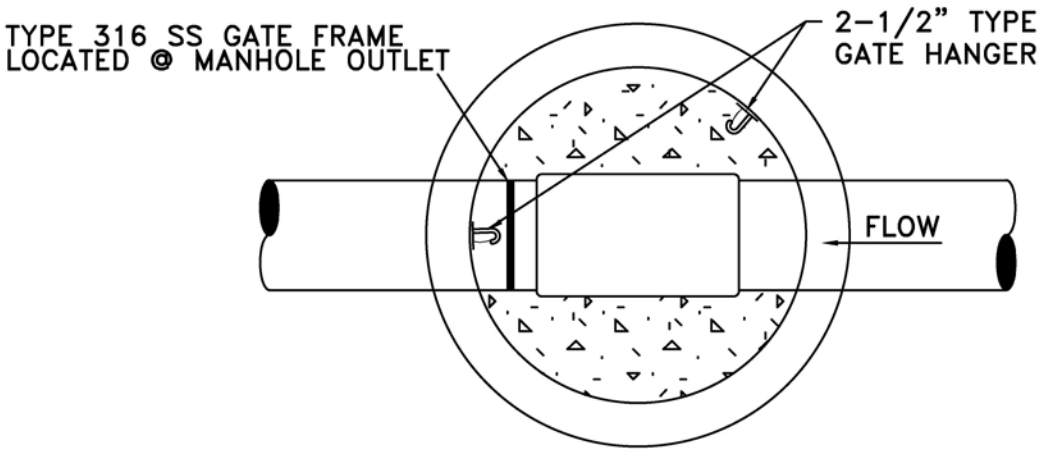
2" LAUNCH PORT

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-14.1

DES.	DWN.	CKD.	DATE
P/W	WHO	RAS	12/15/2014







GENERAL NOTES:

1. THE DOWNSTREAM AREA BEHIND GATE MUST NOT ALLOW PIG TO CONTINUE TRAVEL DOWN PIPE.
2. USE DETAIL ONLY AS DIRECTED BY THE CITY.
3. THE OUTFALL MANHOLE SHALL BE COATED PER 7D.080.

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

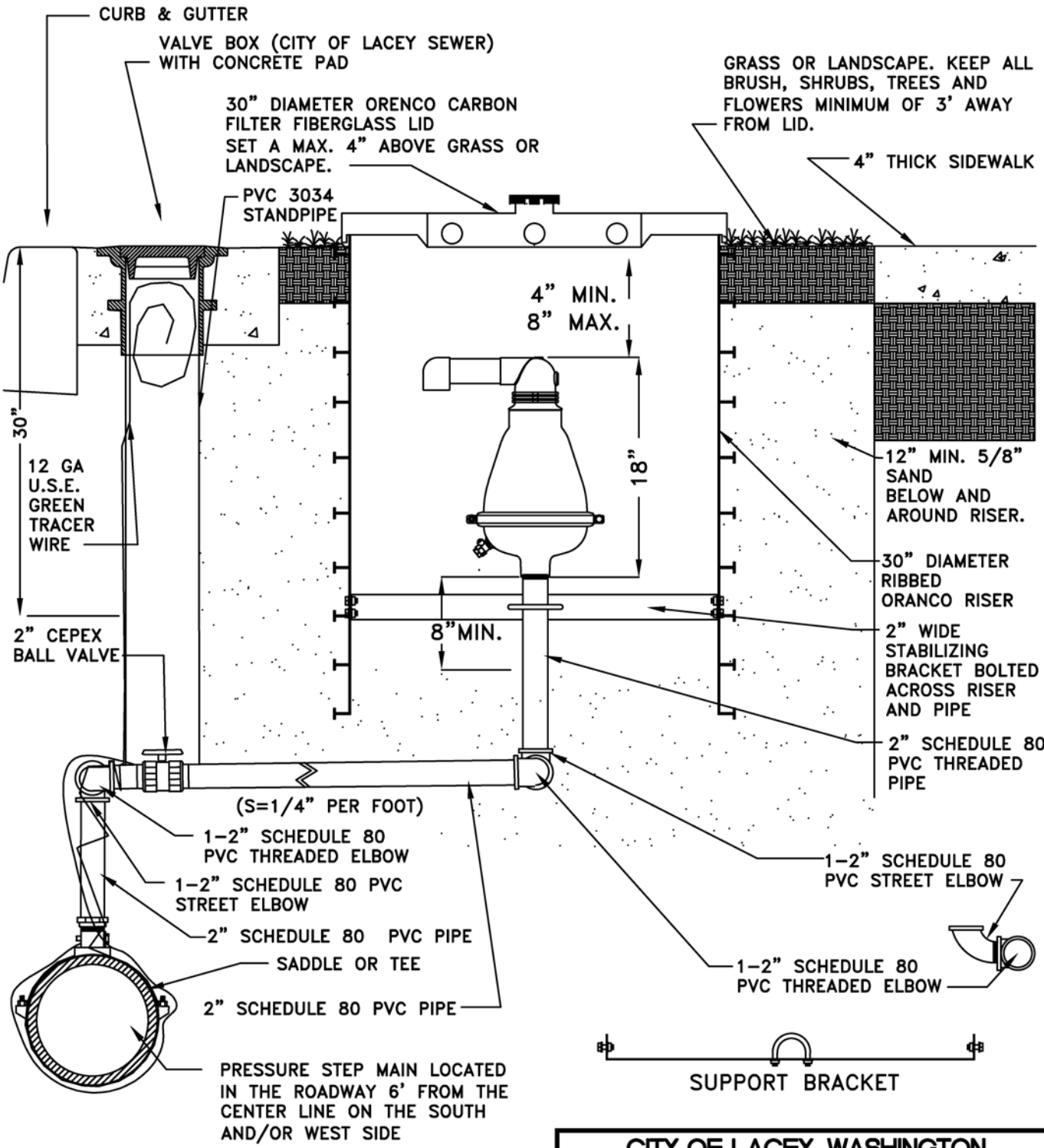
OUTFALL MANHOLE PIG CATCHER

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-15

DES.	DWN.	CKD.	DATE
P/W	WHO	RAS	12/15/2014

DG7-15.DWG



GENERAL NOTES:

1. THE STANDARD AIR RELEASE VALVE SHALL BE D-025 AUTOMATIC AIR RELEASE VALVE MANUFACTURED BY ARI. OTHER MODELS MAY BE REQUIRED AS DETERMINED BY THE CITY OF LACEY DURING THE REVIEW OR CONSTRUCTION PHASE.
2. IN AREAS OF LOW SYSTEM PRESSURE (BELOW 10 PSI) AN S-21 MODEL AIR RELEASE MAY BE REQUIRED IF LEAKAGE IS OCCURRING.

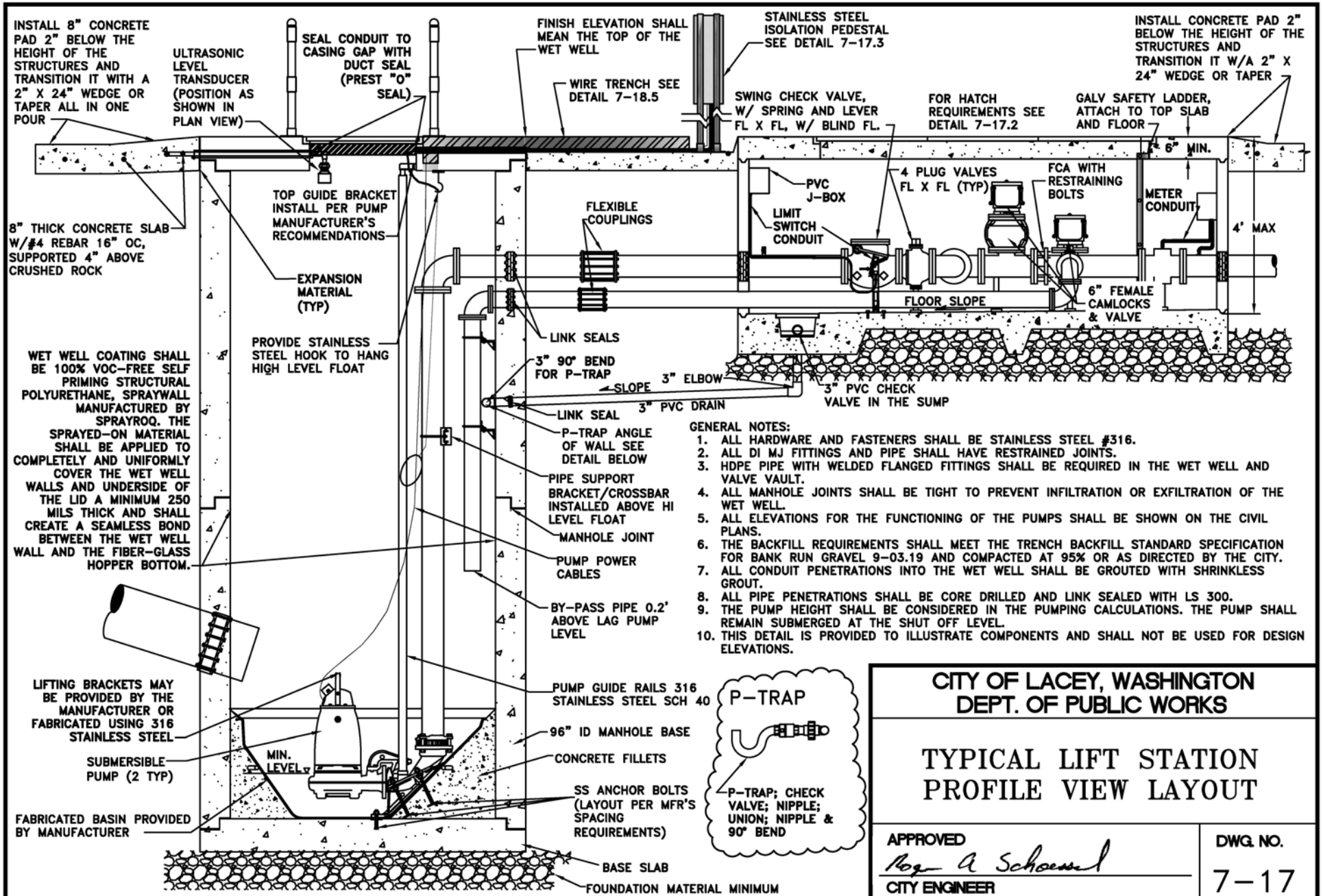
DG7-16.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

AIR RELEASE VALVE

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-16

DES	DWN	CKD	DATE
RD	WHO	RAS	12/15/2014



GENERAL NOTES:

1. ALL HARDWARE AND FASTENERS SHALL BE STAINLESS STEEL #316.
2. ALL DI MJ FITTINGS AND PIPE SHALL HAVE RESTRAINED JOINTS.
3. HDPE PIPE WITH WELDED FLANGED FITTINGS SHALL BE REQUIRED IN THE WET WELL AND VALVE VAULT.
4. ALL MANHOLE JOINTS SHALL BE TIGHT TO PREVENT INFILTRATION OR EXFILTRATION OF THE WET WELL.
5. ALL ELEVATIONS FOR THE FUNCTIONING OF THE PUMPS SHALL BE SHOWN ON THE CIVIL PLANS.
6. THE BACKFILL REQUIREMENTS SHALL MEET THE TRENCH BACKFILL STANDARD SPECIFICATION FOR BANK RUN GRAVEL 9-03.19 AND COMPACTED AT 95% OR AS DIRECTED BY THE CITY.
7. ALL CONDUIT PENETRATIONS INTO THE WET WELL SHALL BE GROUTED WITH SHRINKLESS GROUT.
8. ALL PIPE PENETRATIONS SHALL BE CORE DRILLED AND LINK SEALED WITH LS 300.
9. THE PUMP HEIGHT SHALL BE CONSIDERED IN THE PUMPING CALCULATIONS. THE PUMP SHALL REMAIN SUBMERGED AT THE SHUT OFF LEVEL.
10. THIS DETAIL IS PROVIDED TO ILLUSTRATE COMPONENTS AND SHALL NOT BE USED FOR DESIGN ELEVATIONS.

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

TYPICAL LIFT STATION PROFILE VIEW LAYOUT

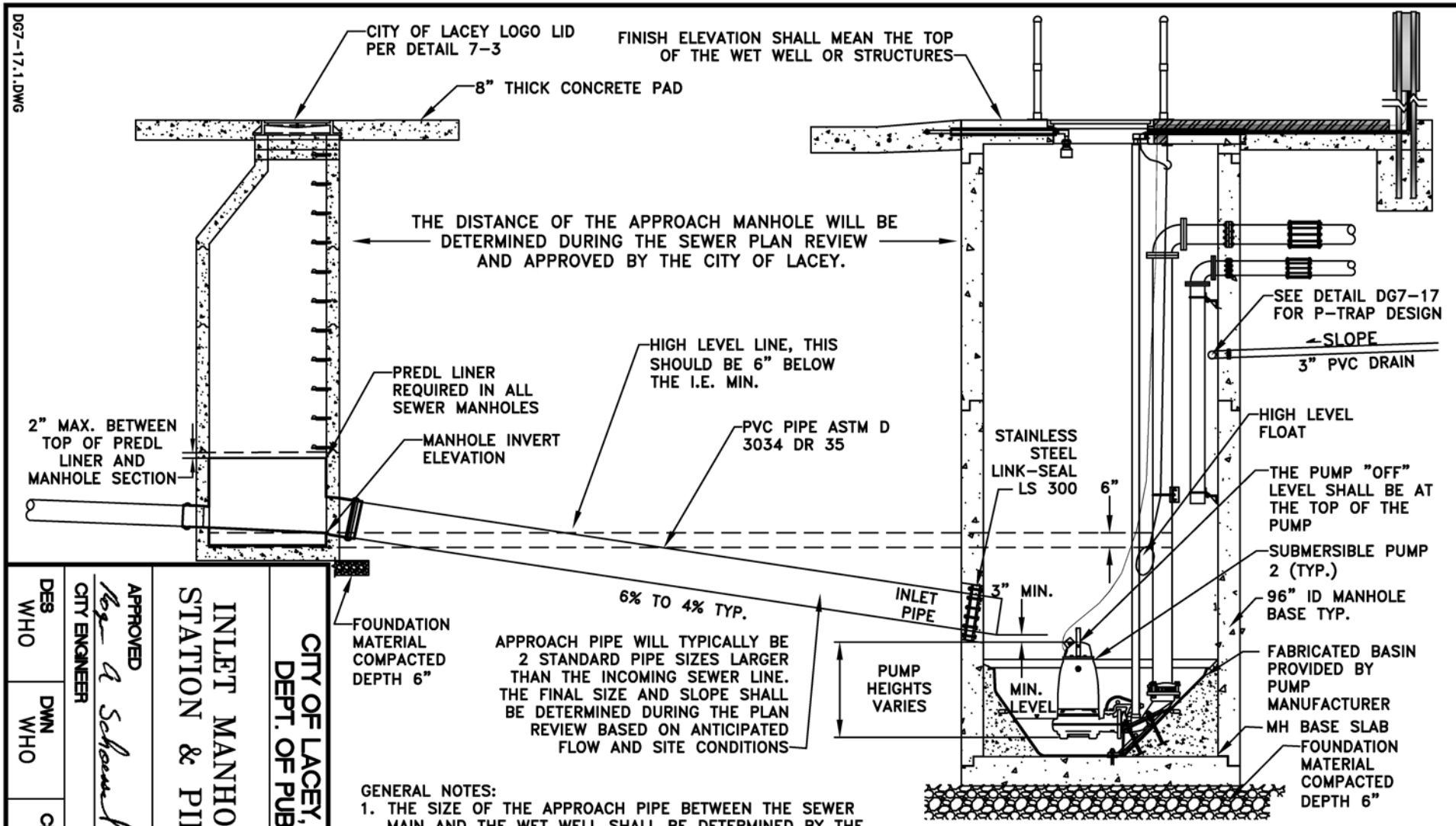
APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-17

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7-17.DWG

DG7-17.1.DWG



GENERAL NOTES:

1. THE SIZE OF THE APPROACH PIPE BETWEEN THE SEWER MAIN AND THE WET WELL SHALL BE DETERMINED BY THE CITY.
2. THE MINIMUM SLOPE FOR THE APPROACH PIPE SHALL BE 2%. THE DIFFERENCE BETWEEN THE UPSTREAM AND DOWNSTREAM IE SHOULD BE 4' MINIMUM.
3. THE AMOUNT OF SURCHARGE ALLOWED IN THE APPROACH PIPE SHALL BE UP TO 1/2 THE VOLUME OF THE SEWAGE IN THE WET WELL BETWEEN THE PUMP ON AND PUMP OFF LEVEL.
4. CONNECTION OF THE APPROACH PIPE SHALL BE THROUGH A CORE DRILLED HOLE, DRILLED AT THE CORRECT ANGLE AND CONNECTED WITH LINK SEAL AROUND THE PIPE.
6. THE HEIGHT OF THE PUMP ON SHALL BE DETERMINED BY THE DESIGNING ENGINEER'S CALCULATION FOR VOLUME AND PUMP STARTS.
7. THE HIGH HIGH LEVEL FLOAT SHALL BE PLACED A MINIMUM 6" BELOW THE OUT INVERT OF THE APPROACH MANHOLE.

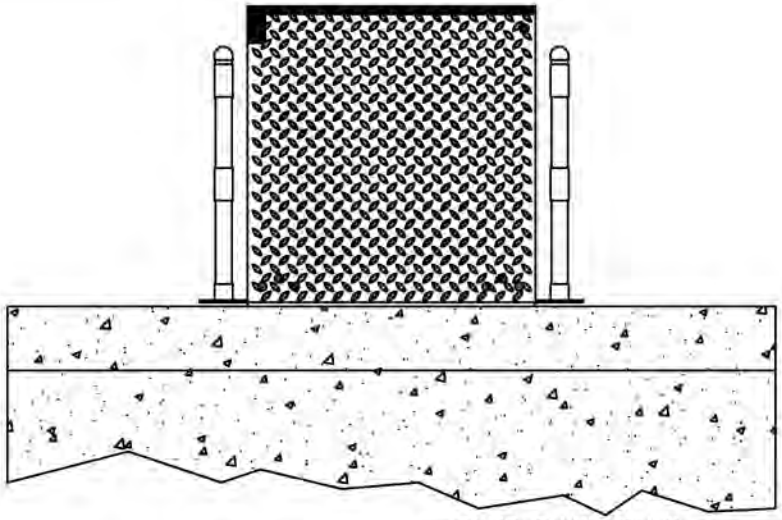
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

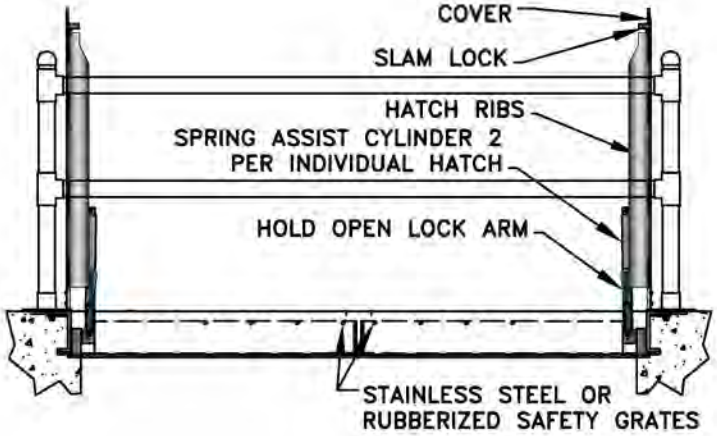
INLET MANHOLE TO LIFT STATION & PIPING DETAIL

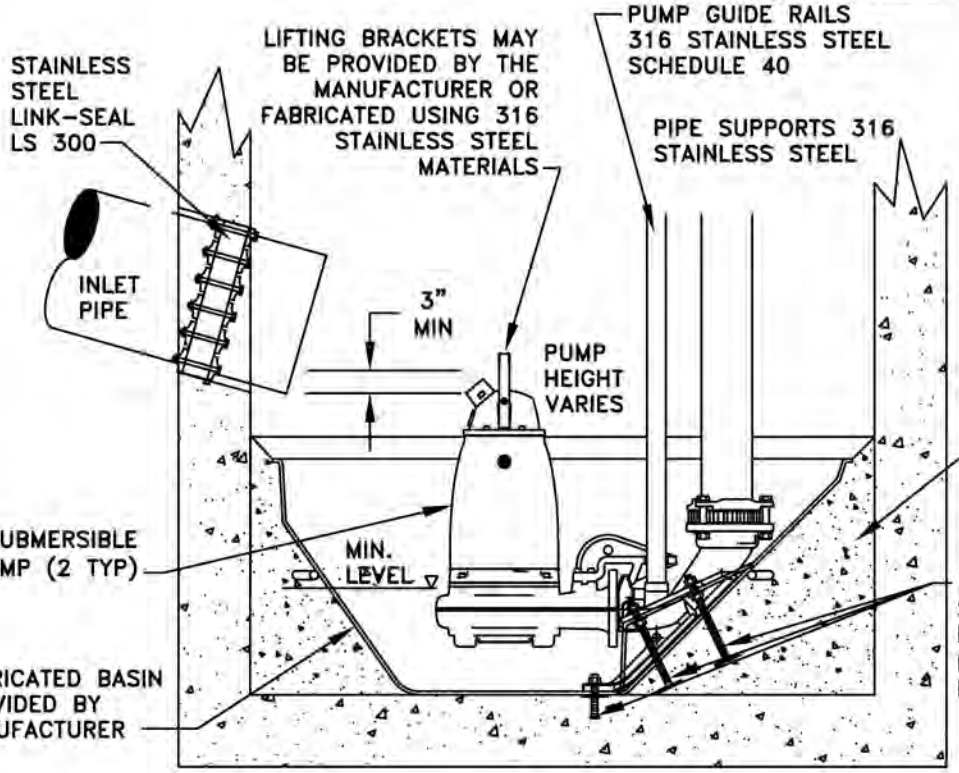
DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

APPROVED
CITY ENGINEER

DWG. NO. 7-17.1







GENERAL NOTES:

1. ALL HARDWARE AND FASTENERS SHALL BE STAINLESS STEEL #316.
2. ALL MANHOLE JOINTS SHALL BE TIGHT TO PREVENT INFILTRATION OR EXFILTRATION OF THE WET WELL.
3. ALL CONDUIT PENETRATIONS INTO THE WET WELL SHALL BE GROUTED WITH SPRAY-ROC TO PREVENT INFILTRATION OR EXFILTRATION.
4. ALL PIPE PENETRATIONS SHALL BE CORE DRILLED AND LINK SEALED.
5. THE PUMP HEIGHT SHALL BE CONSIDERED IN THE PUMPING CALCULATIONS. THE PUMP SHALL REMAIN SUBMERGED AT THE SHUT OFF LEVEL.
6. THIS DETAIL IS PROVIDED TO ILLUSTRATE COMPONENTS AND SHALL NOT BE USED FOR DESIGN ELEVATIONS.

DG7-17.2.DWG

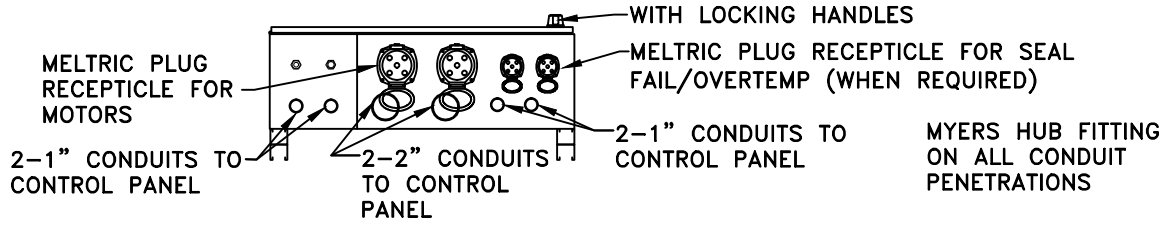
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

WET WELL BOTTOM PROFILE VIEW AND SAFETY RAILS DETAIL

APPROVED
Roger A Schoenl
CITY ENGINEER

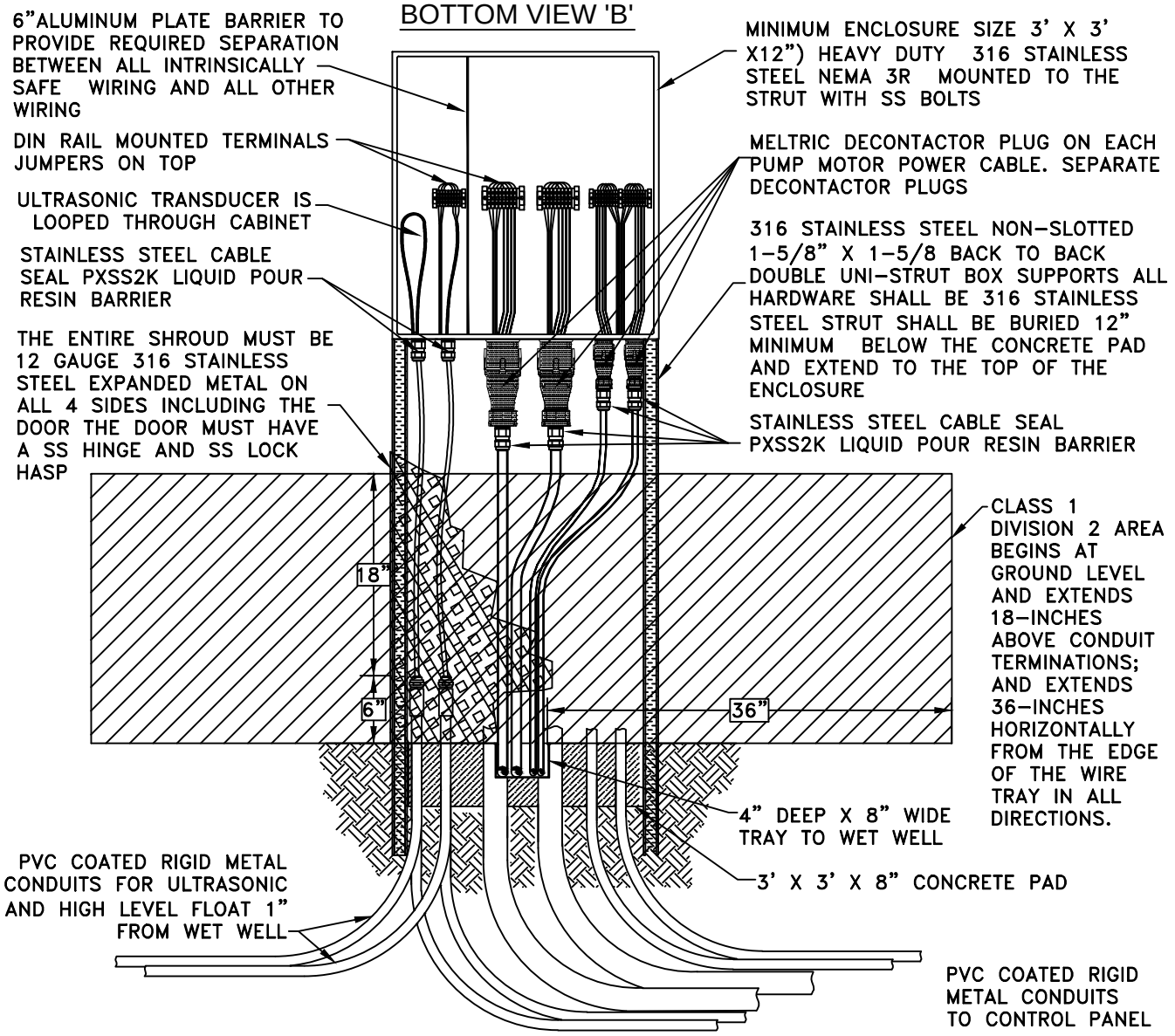
DWG. NO.
7-17.2

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



JUNCTION BOX CONDUIT AND WIRE ENTRY DETAIL

BOTTOM VIEW 'B'



WETWELL ISOLATION CONFIGURATION

ELEVATION VIEW 'A'

HAZARDOUS AREAS:
WET WELL INTERIOR – CLASS 1, DIVISION 1
WET WELL HATCH – CLASS 1, DIVISION 2 (3' HORIZONTAL X 1.5' VERTICAL)
WIRE TRAY INTERIOR – CLASS 1, DIVISION 1
WIRE TRAY EXTERIOR – CLASS 1, DIVISION 2 (3' HORIZONTAL X 1.5' VERTICAL)
SUBSURFACE AREAS ARE CONSIDERED UNCLASSIFIED UNLESS OTHERWISE NOTED

DG7-17.3.DWG

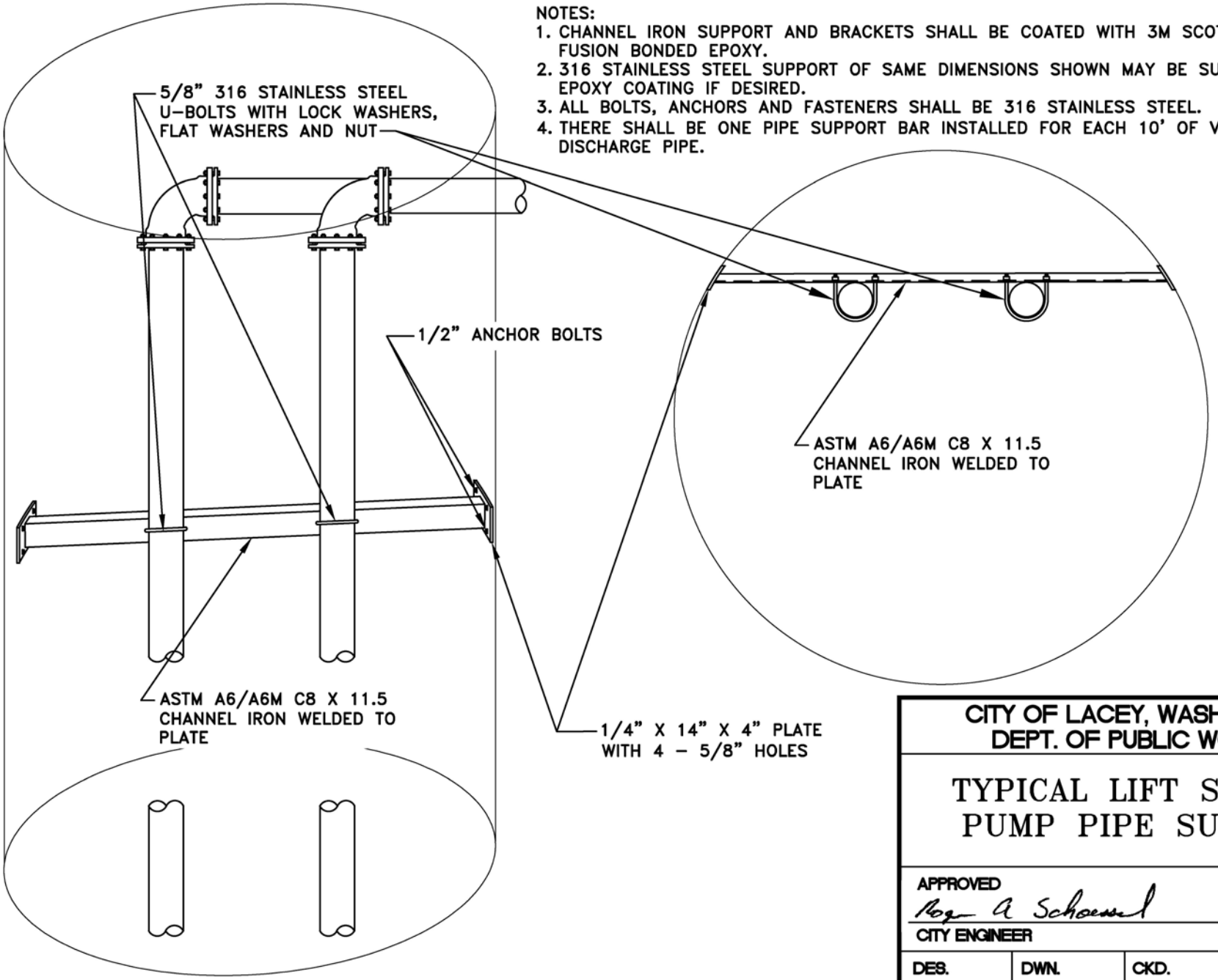
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

WET WELL ELECTRICAL ISOLATION PEDESTAL

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-17.3

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

NOTES:
1. CHANNEL IRON SUPPORT AND BRACKETS SHALL BE COATED WITH 3M SCOTCH COAT 134 FUSION BONDED EPOXY.
2. 316 STAINLESS STEEL SUPPORT OF SAME DIMENSIONS SHOWN MAY BE SUBSTITUTED FOR EPOXY COATING IF DESIRED.
3. ALL BOLTS, ANCHORS AND FASTENERS SHALL BE 316 STAINLESS STEEL.
4. THERE SHALL BE ONE PIPE SUPPORT BAR INSTALLED FOR EACH 10' OF VERTICAL DISCHARGE PIPE.



DG7-17.4.DWG

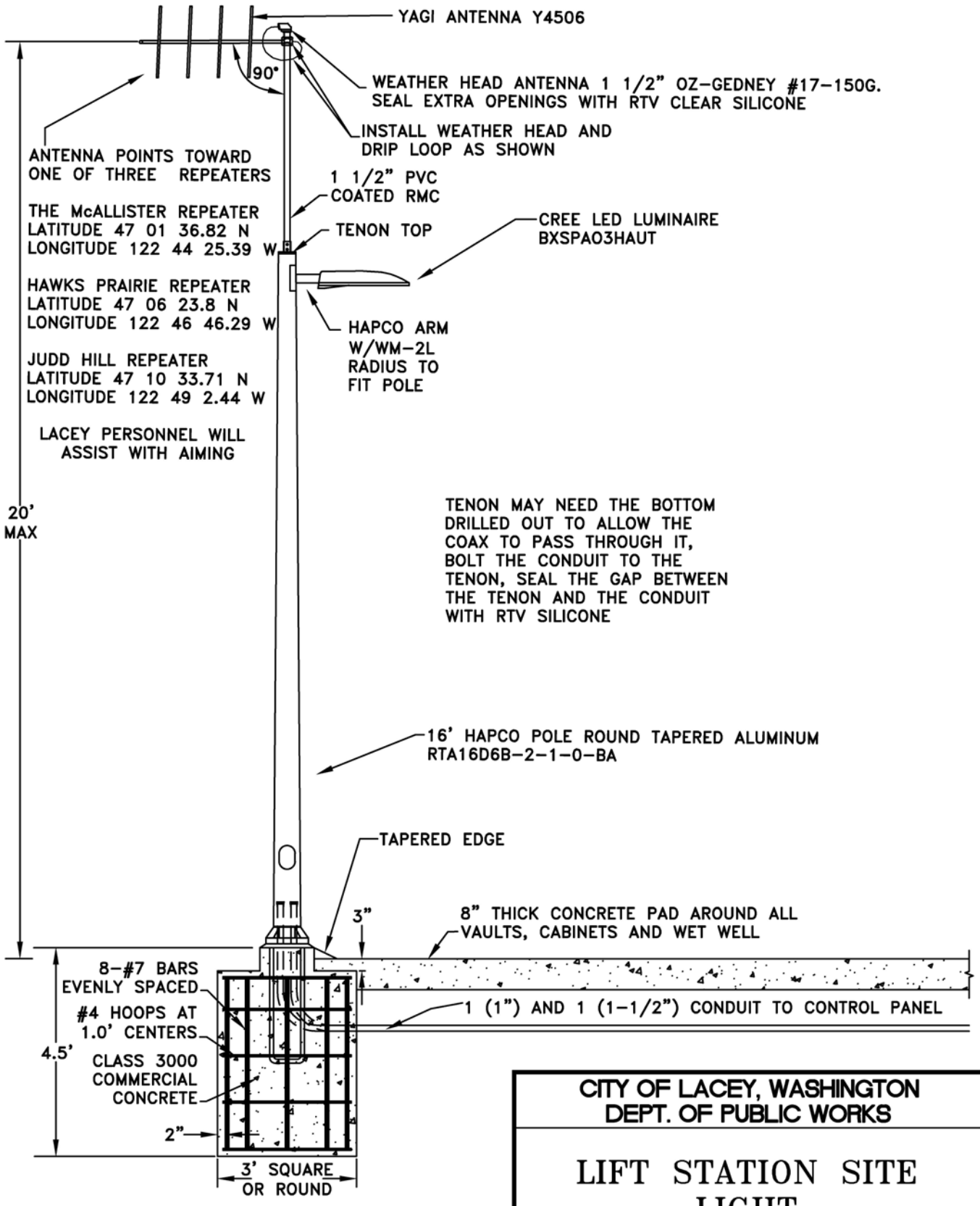
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

TYPICAL LIFT STATION PUMP PIPE SUPPORT

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-17.4

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. THE FOUNDATION IS DESIGNED FOR 2000 PSF AVERAGE SOIL LATERAL BEARING PRESSURE.
2. BOLT PATTERN PER MANUFACTURER'S SPECIFICATIONS.
3. FOR DETAILS NOT SHOWN USE MANUFACTURER'S SPECIFICATIONS AND DETAILS.

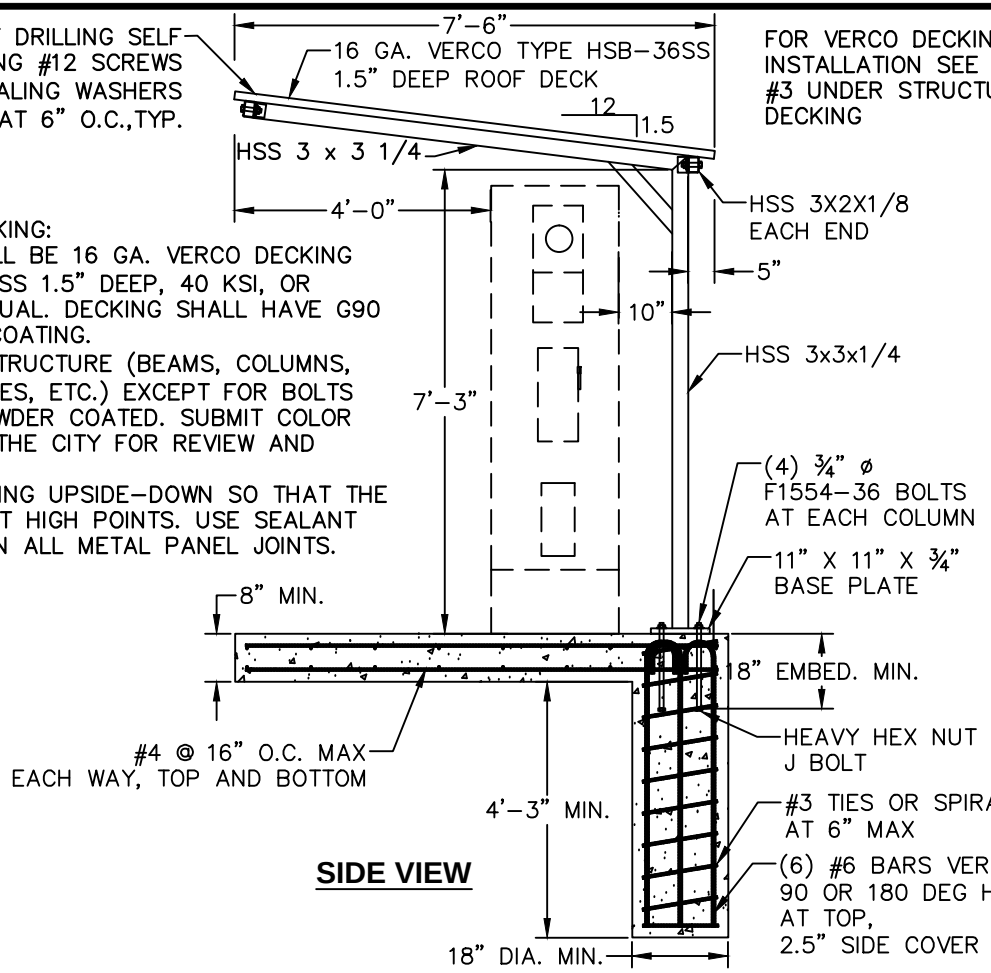
DG7-17.5.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

LIFT STATION SITE LIGHT

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-17.5

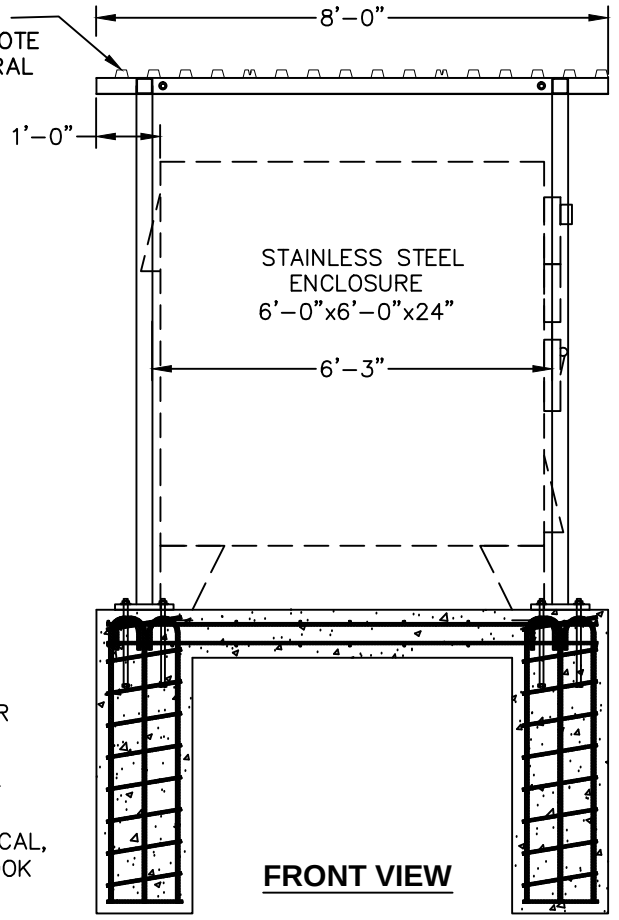
DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



SIDE VIEW

STRUCTURAL DECKING:

1. DECKING SHALL BE 16 GA. VERCO DECKING TYPE HSB-36SS 1.5" DEEP, 40 KSI, OR APPROVED EQUAL. DECKING SHALL HAVE G90 GALVANIZED COATING.
2. THE FRAME STRUCTURE (BEAMS, COLUMNS, ANGLES, PLATES, ETC.) EXCEPT FOR BOLTS SHALL BE POWDER COATED. SUBMIT COLOR SAMPLES TO THE CITY FOR REVIEW AND APPROVAL.
3. INSTALL DECKING UPSIDE-DOWN SO THAT THE SEAMS ARE AT HIGH POINTS. USE SEALANT TAPE BETWEEN ALL METAL PANEL JOINTS.



FRONT VIEW

GENERAL NOTES:

1. VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING WORK. PROVIDE SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION.
2. CONCRETE SHALL BE COMMERCIAL CONCRETE CLASS 3000 OR BETTER. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615 GRADE 60.
3. FABRICATION AND ERECTION OF STEEL SHALL BE IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION. WELDING SHALL BE PER AWS D1.1.

MATERIALS:

STEEL ANGLES AND PLATE:	A36
STEEL TUBE:	A500 GRADE B
STRUCTURAL BOLTS:	A307
ANCHOR BOLTS:	F1554-36 GALVANIZED OR APPROVAL EQUAL
WELDING ELECTRODES:	E70XX

DG7-17.8.1.DWG

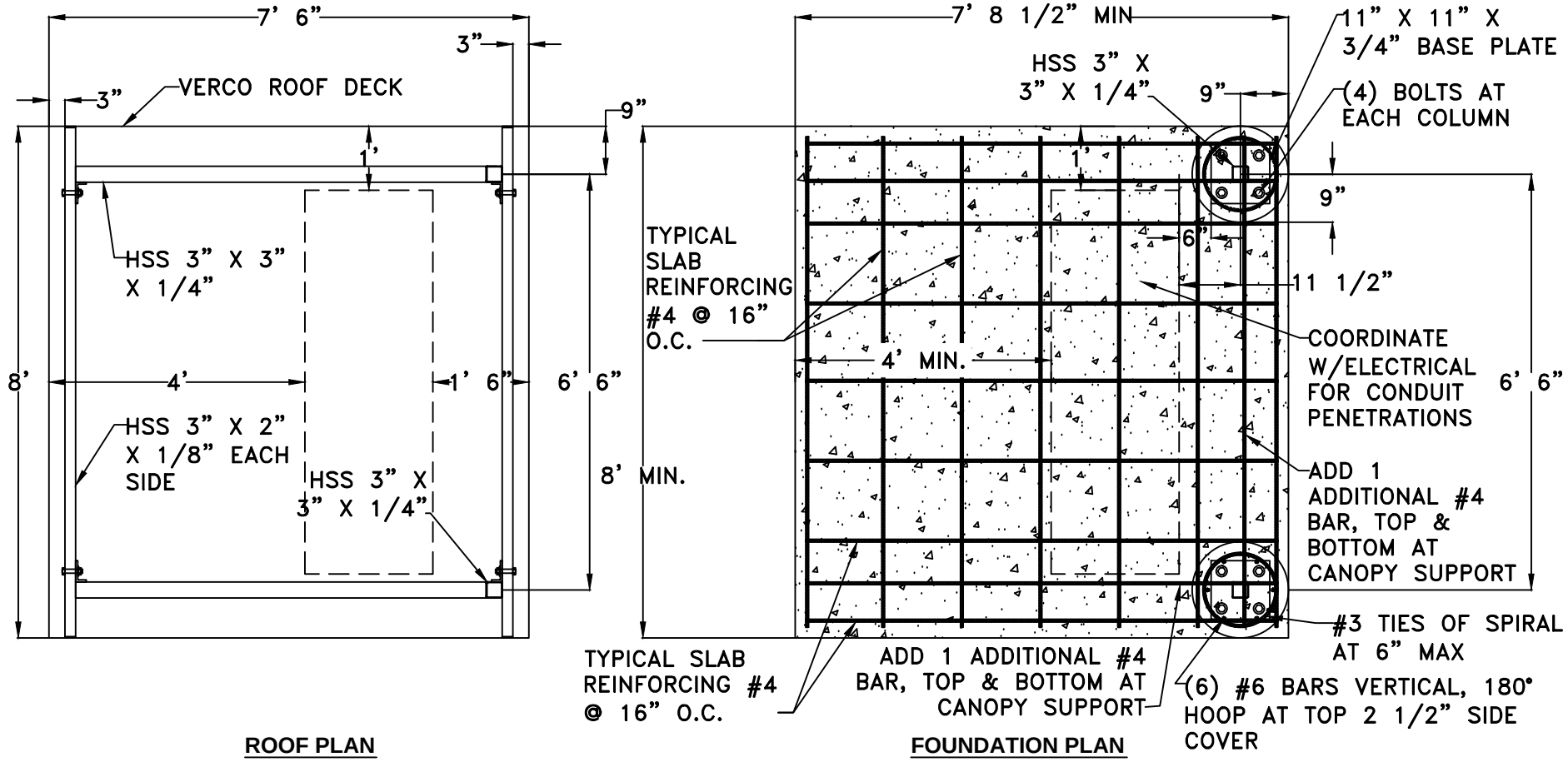
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

WASTEWATER LIFT STATION CABINET & AWNING: FRONT & SIDES PROFILES

APPROVED
Roger A Schoenl
CITY ENGINEER

DWG. NO. 7-17.8.1

DES	DWN	CKD	DATE
ASA	ASA	RAS	12/15/2014



ROOF PLAN

FOUNDATION PLAN

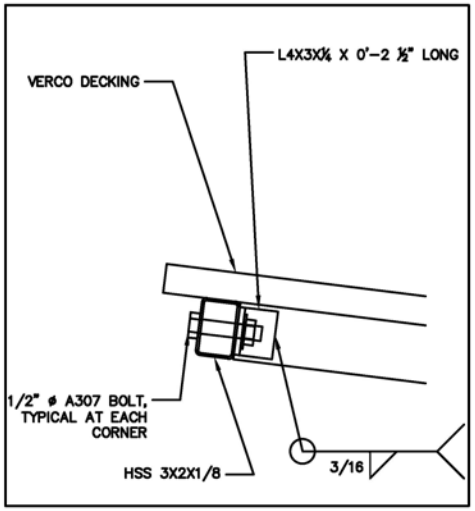
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

WASTEWATER LIFT STATION CABINET AWNING: ROOF & FOUNDATION DETAIL

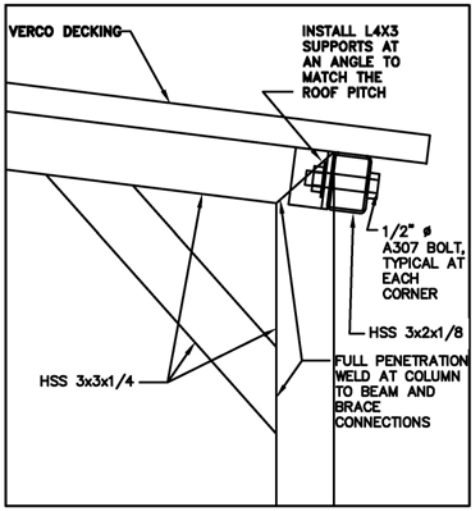
APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-17.8.2

DES	DWN	CKD	DATE
ASA	ASA	RAS	12/15/2014

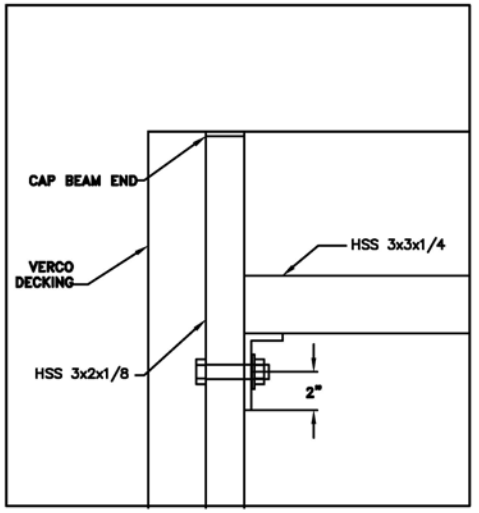
DG7-17.8.2.DWG



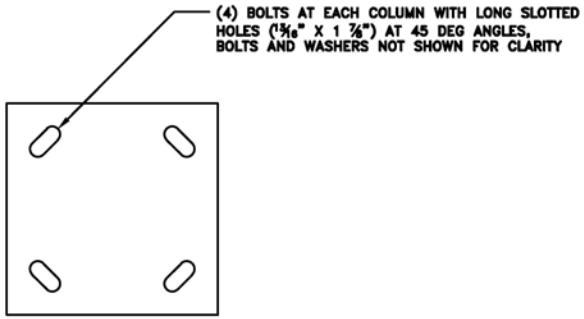
FRONT BEAM CONNECTION (ELEVATION)

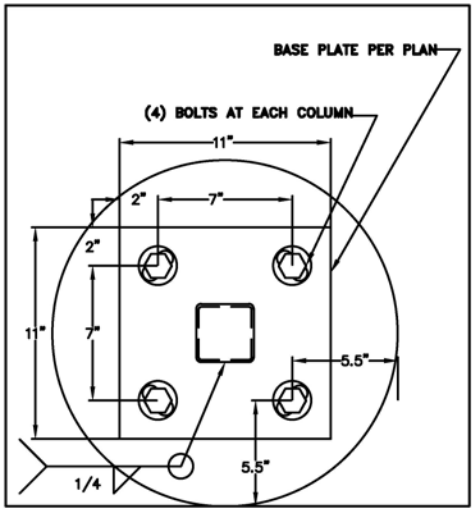


BACK BEAM CONNECTION (ELEVATION)



BEAM CONNECTION (PLAN VIEW)





BASE PLATE DETAIL

DG7-17.8.3.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

WASTEWATER LIFT STATION CABINET AWNING DETAILS

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO.
7-17.8.3

DES	DWN	CKD	DATE
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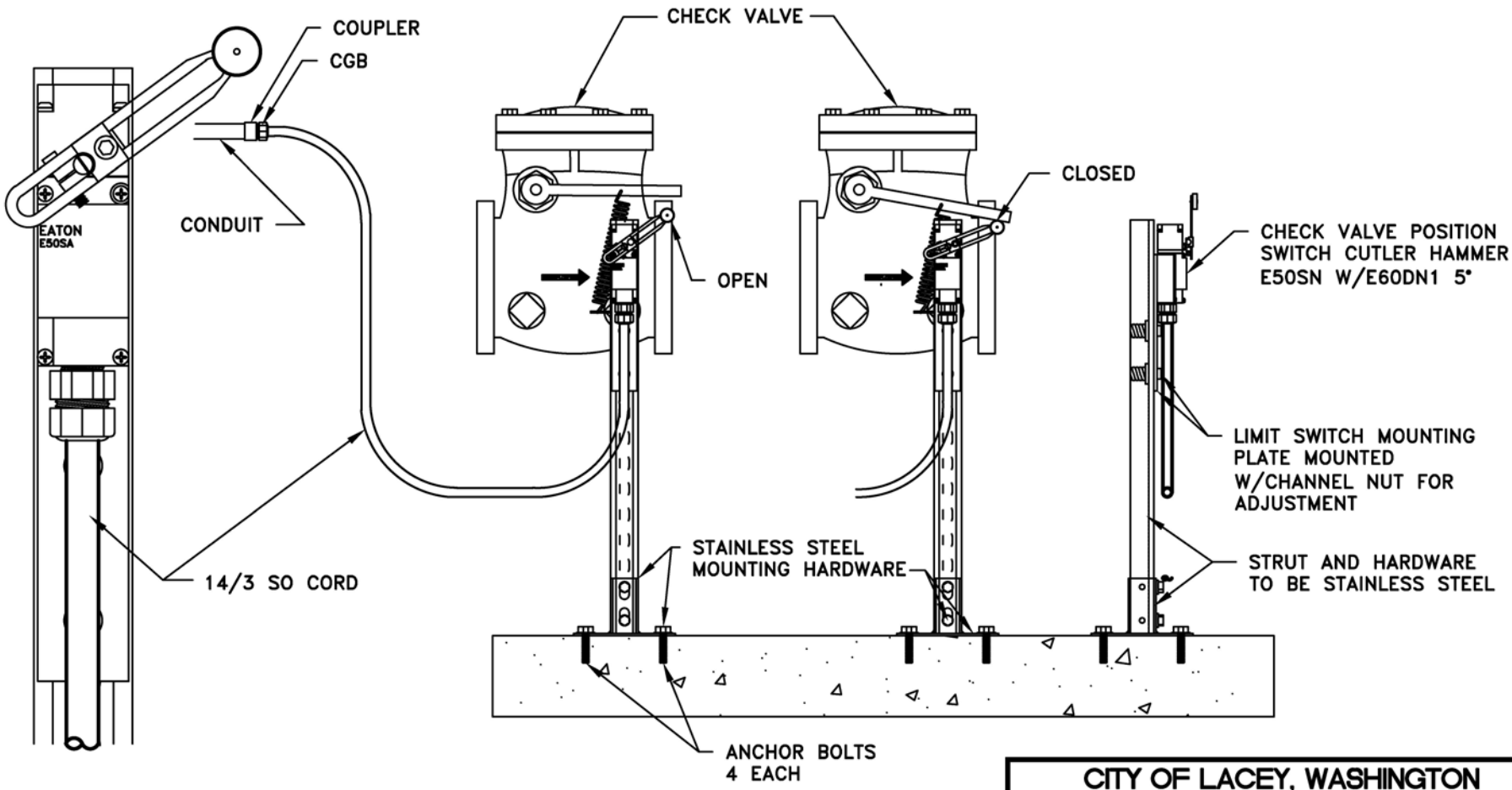


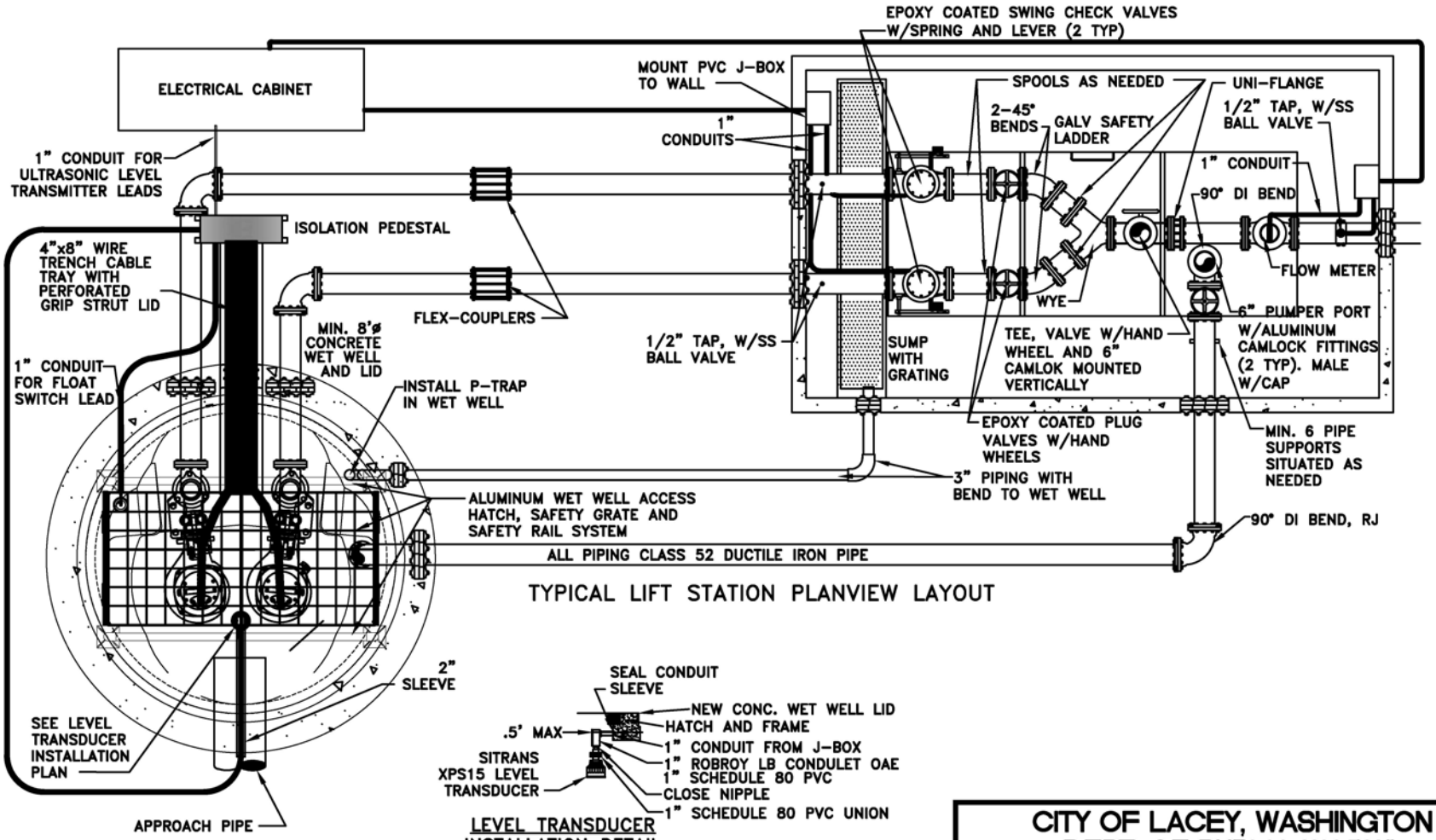
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

CHECK VALVE LIMIT SWITCH & BRACKET

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-17.9

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014

DG7-17.9.DWG



TYPICAL LIFT STATION PLANVIEW LAYOUT

LEVEL TRANSDUCER INSTALLATION DETAIL

GENERAL NOTES:

1. WET WELL SHALL BE COATED WITH SPRAY ROQ.
2. THE WET WELL LID SHALL BE BUILT TO FIT THE COMPONENTS IT SERVICES SUCH AS PUMPS AND PUMP RAILS TO MAKE ACCESS AND MAINTENANCE EASILY ACCESSIBLE.
3. ALL DUCTILE IRON PIPES AND FITTINGS IN THE WET WELL SHALL BE EPOXY COATED OR PE LINED A MINIMUM OF 10 MILS THICKNESS ON BOTH SIDES. ALL BOLTS AND HARDWARE SHALL BE 316 STAINLESS STEEL.
4. ALL DUCTILE IRON PIPES AND FITTINGS IN THE VALVE VAULT SHALL BE EPOXY COATED ON THE INSIDE. THE OUTSIDE OF THE PIPE, VALVES AND FITTINGS SHALL BE PAINTED WITH TWO (2) COATS OF HIGH GRADE ENAMEL GREEN.
5. ALL MECHANICAL JOINT FITTINGS SHALL BE RESTRAINED.
6. ALL APPURTENANCES (FITTINGS) SHALL BE FLANGED UNLESS OTHERWISE REQUIRED BY THE CITY.
7. ALL PIPING THROUGH WALLS OF STRUCTURES SHALL BE LINK SEALED.
8. UTILITY VAULT 14' X 8' ID 4' MAX DEPTH W/ALUMINUM THREAD PLATE ACCESS HATCH LW PRODUCTS (TD-3B) SLAM LOCK, SPRING ASSISTED CYLINDER, HOLD OPEN ARM, BEARING SHELF AND DRAIN GUTTER DESIGNED FOR H-20 LOADING. SEE DETAIL 7-18.6.

DG7-18.DWG

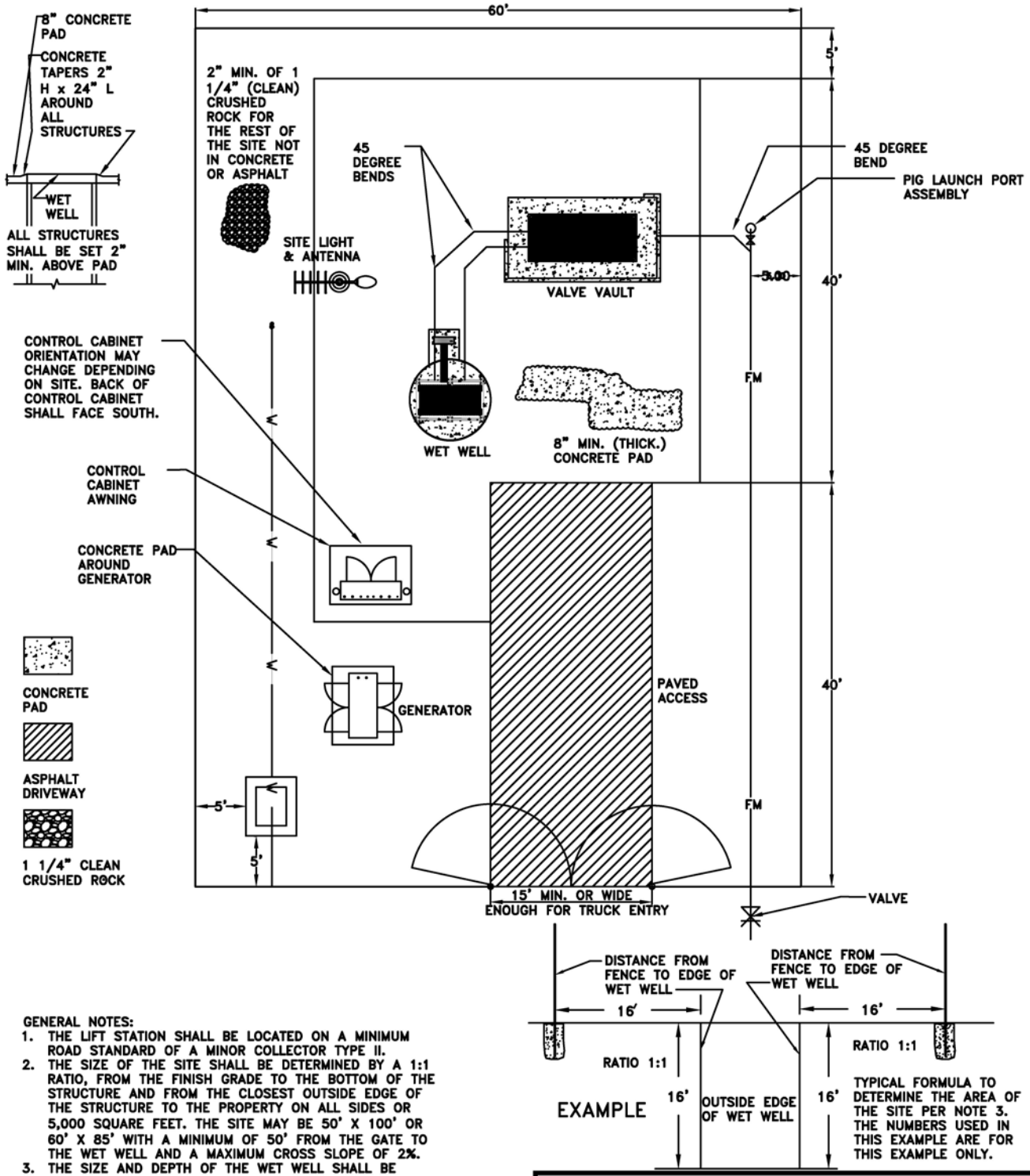
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

TYPICAL LIFT STATION PLAN VIEW LAYOUT

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-18

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. THE LIFT STATION SHALL BE LOCATED ON A MINIMUM ROAD STANDARD OF A MINOR COLLECTOR TYPE II.
2. THE SIZE OF THE SITE SHALL BE DETERMINED BY A 1:1 RATIO, FROM THE FINISH GRADE TO THE BOTTOM OF THE STRUCTURE AND FROM THE CLOSEST OUTSIDE EDGE OF THE STRUCTURE TO THE PROPERTY ON ALL SIDES OR 5,000 SQUARE FEET. THE SITE MAY BE 50' X 100' OR 60' X 85' WITH A MINIMUM OF 50' FROM THE GATE TO THE WET WELL AND A MAXIMUM CROSS SLOPE OF 2%.
3. THE SIZE AND DEPTH OF THE WET WELL SHALL BE DETERMINED DURING THE REVIEW PROCESS.
4. THE SITE SHALL BE ENCLOSED BY A 6' HIGH BLACK CHAIN LINK FENCE WITH A TOP RAIL, BOTTOM WIRE AND A 15' WIDE LOCKABLE GATE.
5. THE GENERATOR FUEL TANK SHALL BE FULL OF FUEL AND CHEMICAL TANKS SHALL BE FULL OF CHEMICAL WHEN TURNED OVER TO THE CITY.
6. GENERATOR ALARMS SUCH AS LOW OIL LEVEL AND PRESSURE, LOW FUEL, HI WATER TEMPERATURE, OVERSPEED AND OVER CRANK, ETC. SHALL CONNECT TO A COMMON ALARM RELAY TO THE GENERATOR FAIL ALARM AND TO THE TELEMETRY SYSTEM THAT PROVIDES THE GENERATOR RUN SIGNAL.
7. THE CONCRETE PAD FOR THE GENERATOR SHALL BE PER THE MANUFACTURER'S REQUIREMENTS.

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

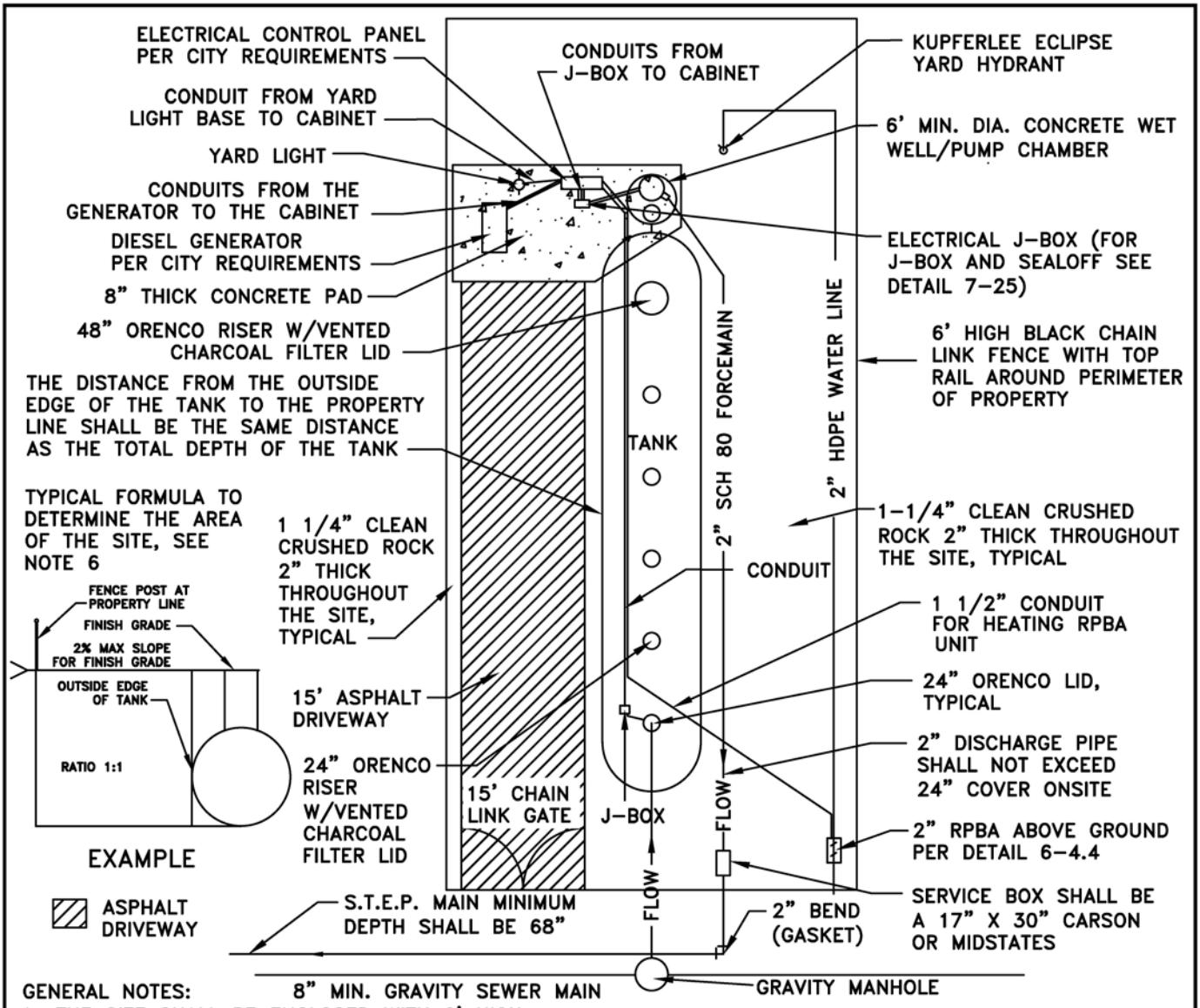
LIFT STATION LAYOUT

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-18.1

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7-18.1.DWG



GENERAL NOTES:

1. THE SITE SHALL BE ENCLOSED WITH 6' HIGH BLACK CHAIN LINK FENCE WITH TOP RAIL AND 15' WIDE LOCKABLE ACCESS GATE.
2. THE 8" PVC PIPE AT THE INLET AND OUTLET END OF THE FIBERGALSS TANK SHALL BE CONNECTED WITH EPOXY COATED ROMAC 501 SYTLE OR FORD ULTRAFLEX FLEXIBLE COUPLERS.
3. SINGLE WALL FIBERGLASS TANK SHALL MEET UL 1316 AND ASTM D4021 SPECIFICATIONS.
4. ALL MANUFACTURED TANK ANCHORING AND BACK FILL REQUIREMENTS SHALL BE MET.
5. THE FINISH GRADE OF THE ENTIRE SITE SHALL NOT EXCEED 2%.
6. THE SIZE OF THE SITE SHALL BE DETERMINED BY A 1:1 RATIO FROM THE FINISH GRADE TO THE BOTTOM OF THE TANK AND FROM THE CLOSEST OUTSIDE EDGE OF THE TANK TO THE PROPERTY LINE. SEE ABOVE EXAMPLE.
7. THE SITE LIGHT SHALL BE GE MDCL2053M12FMC32-031MULTI-TAP BALLAST ON A 25' (21-295 HAPCO) ALUMINUM POLE WITH A 3' WIDE X 4.5' DEEP BASE AND A MANUAL ON/OFF SWITCH.
8. THE GENERATOR FUEL AND CHEMICAL TANKS SHALL BE FULL WHEN TURNED OVER TO THE CITY.
9. THE 48" AND A 24" TANK LIDS SHALL BE VENTED WITH CHARCOAL FILTERS.
10. THE PUMPING SYSTEM FOR 51 HOMES AND MORE SHALL MEET THE SCHEDULE IN THE S.T.E.P. SYSTEM REQUIREMENT CHART IN THE SECTION 7 DETAILS.
11. GENERATOR ALARMS SUCH AS LOW OIL LEVEL & PRESS., LOW FUEL, HI WATER TEMP., OVER SPEED & OVER CRANK, ETC. SHALL CONNECT TO A COMMON ALARM RELAY TO THE GENERATOR FAIL ALARM AND TO THE TELEMETRY SYSTEM THAT PROVIDES THE GENERATOR RUN SIGNAL.
12. THIS DESIGN SHALL BE A MINIMUM STANDARD WHEN DESIGNING A COMMUNITY S.T.E.P. STATION.

DG7-18.2.DWG

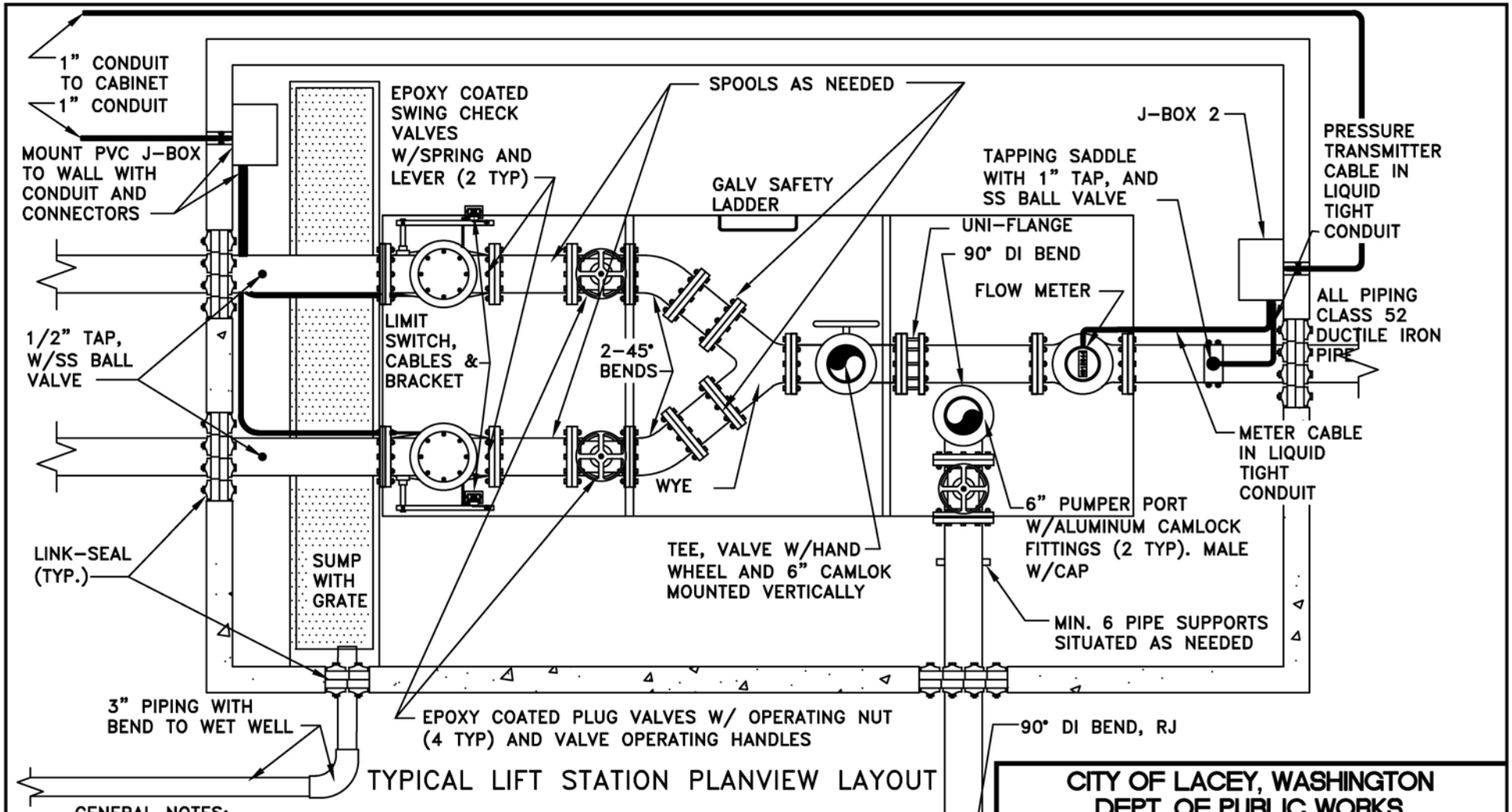
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

COMMUNITY S.T.E.P. STATION (TYPICAL)

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-18.2

DES.	DWN.	CKD	DATE
WHO	WHO	RAS	12/15/2014



TYPICAL LIFT STATION PLANVIEW LAYOUT

GENERAL NOTES:

1. ALL DUCTILE IRON PIPES AND FITTINGS IN THE VALVE VAULT SHALL BE EPOXY COATED ON THE INSIDE. THE OUTSIDE OF THE PIPE, VALVES AND FITTINGS SHALL BE PAINTED WITH TWO (2) COATS OF HIGH GRADE ENAMEL GREEN.
2. ALL MECHANICAL JOINT FITTINGS SHALL BE RESTRAINED.
3. ALL APPURTENANCES (FITTINGS) SHALL BE FLANGED UNLESS OTHERWISE REQUIRED BY THE CITY.
4. ALL PIPING THROUGH WALLS OF STRUCTURES SHALL BE LINK SEALED.
5. UTILITY VAULT 14' X 8' ID 4' MAX DEPTH W/ALUMINUM THREAD PLATE ACCESS HATCH LW PRODUCTS (TD-3B) SLAM LOCK, SPRING ASSISTED CYLINDER, HOLD OPEN ARM, BEARING SHELF AND DRAIN GUTTER DESIGNED FOR H-20 LOADING. SEE DETAIL 7-18.6

DG7-18.3.DWG

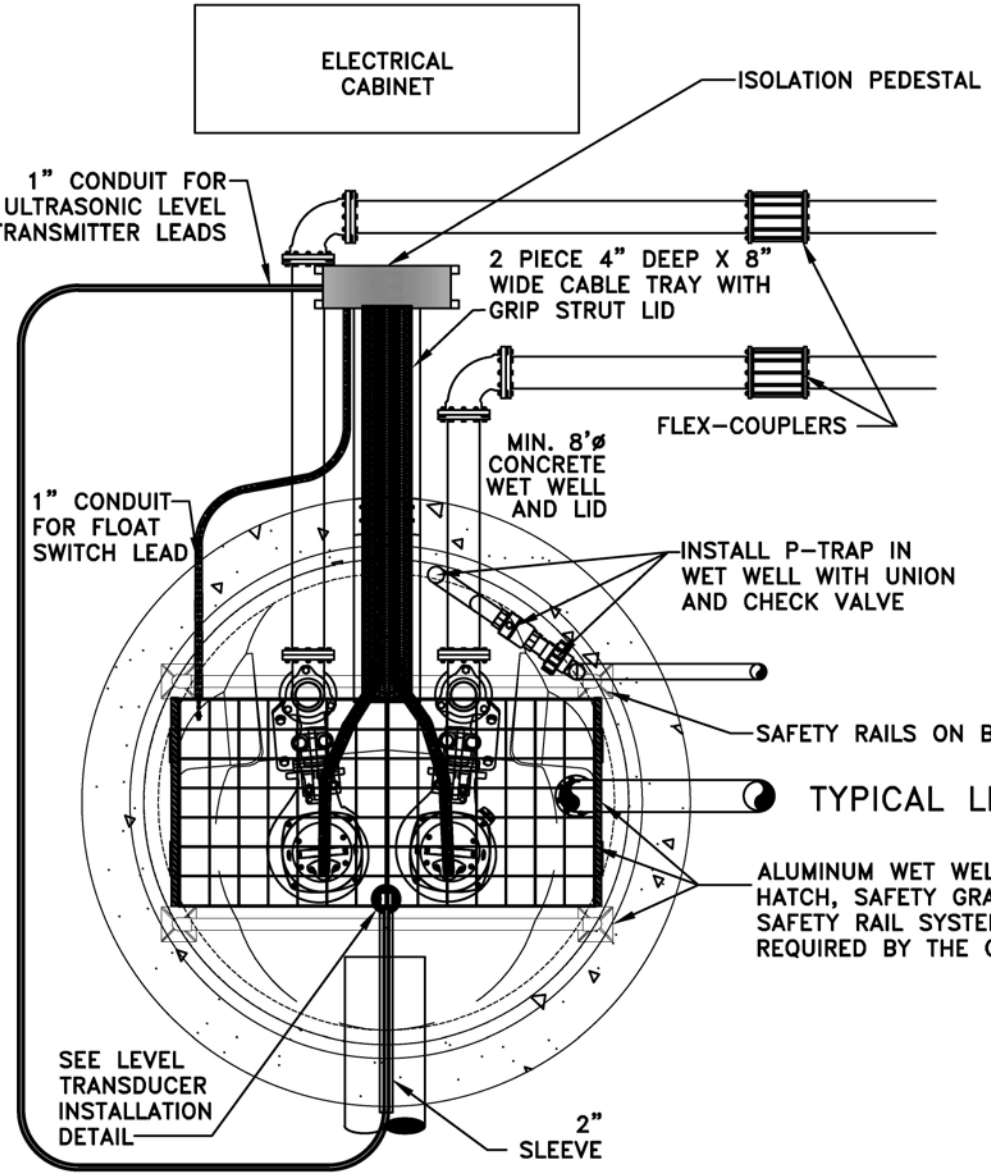
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

TYPICAL LIFT STATION VALVE VAULT CONFIGURATION

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-18.3

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014



TYPICAL LIFT STATION PLAN VIEW LAYOUT

GENERAL NOTES:

1. THE WET WELL LID SHALL BE BUILT TO FIT THE COMPONENTS IT SERVICES SUCH AS PUMPS AND PUMP RAILS TO MAKE ACCESS AND MAINTENANCE EASILY ACCESSIBLE.

DG7-18.4.DWG

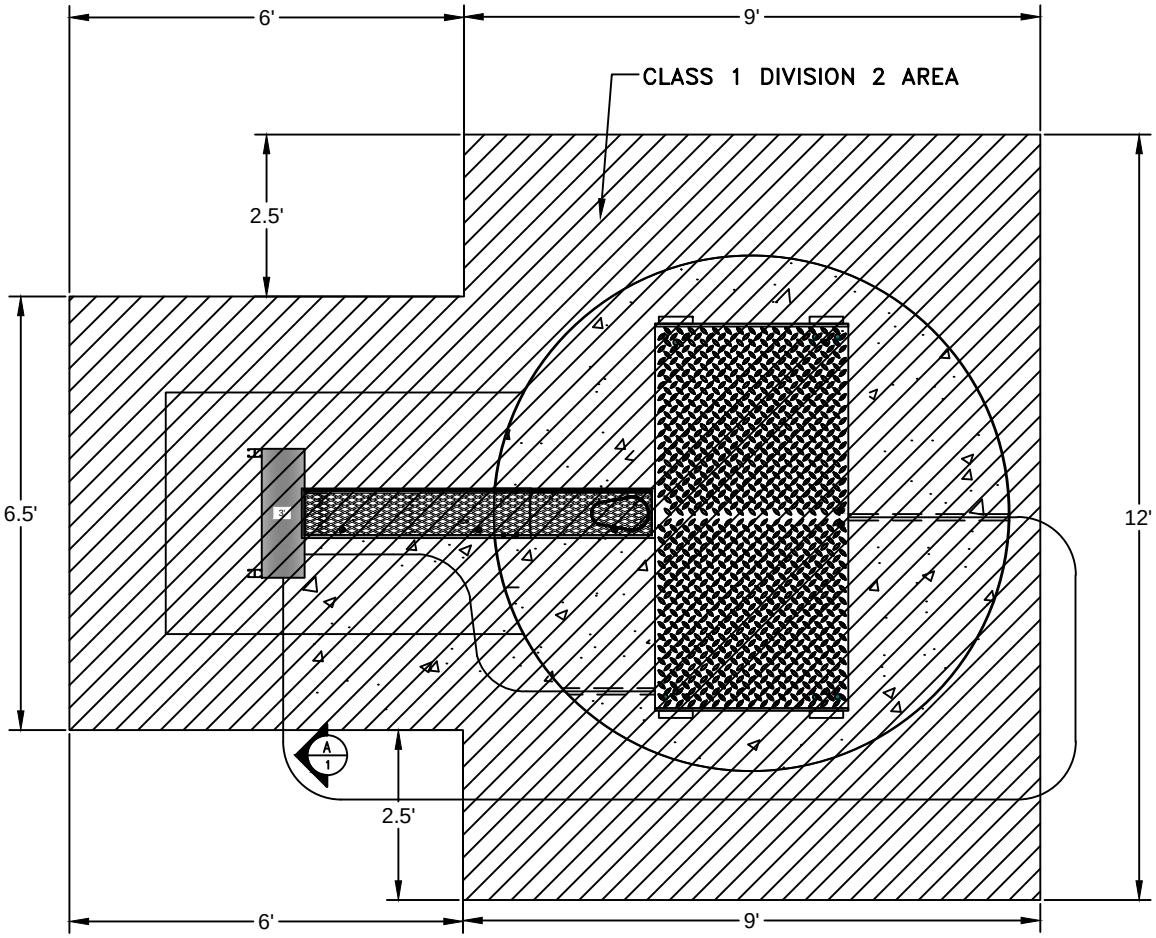
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

TYPICAL LIFT STATION WET WELL CONFIGURATION

APPROVED
Roy A Schoessel
CITY ENGINEER

DWG. NO. 7-18.4

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014



HAZARDOUS AREAS:
WET WELL INTERIOR – CLASS 1, DIVISION 1
WET WELL HATCH – CLASS 1, DIVISION 2 (3' HORIZONTAL X 1.5' VERTICAL)
WIRE TRAY INTERIOR – CLASS 1, DIVISION 1
WIRE TRAY EXTERIOR – CLASS 1, DIVISION 2 (3' HORIZONTAL X 1.5' VERTICAL)
SUBSURFACE AREAS ARE CONSIDERED UNCLASSIFIED UNLESS OTHERWISE NOTED

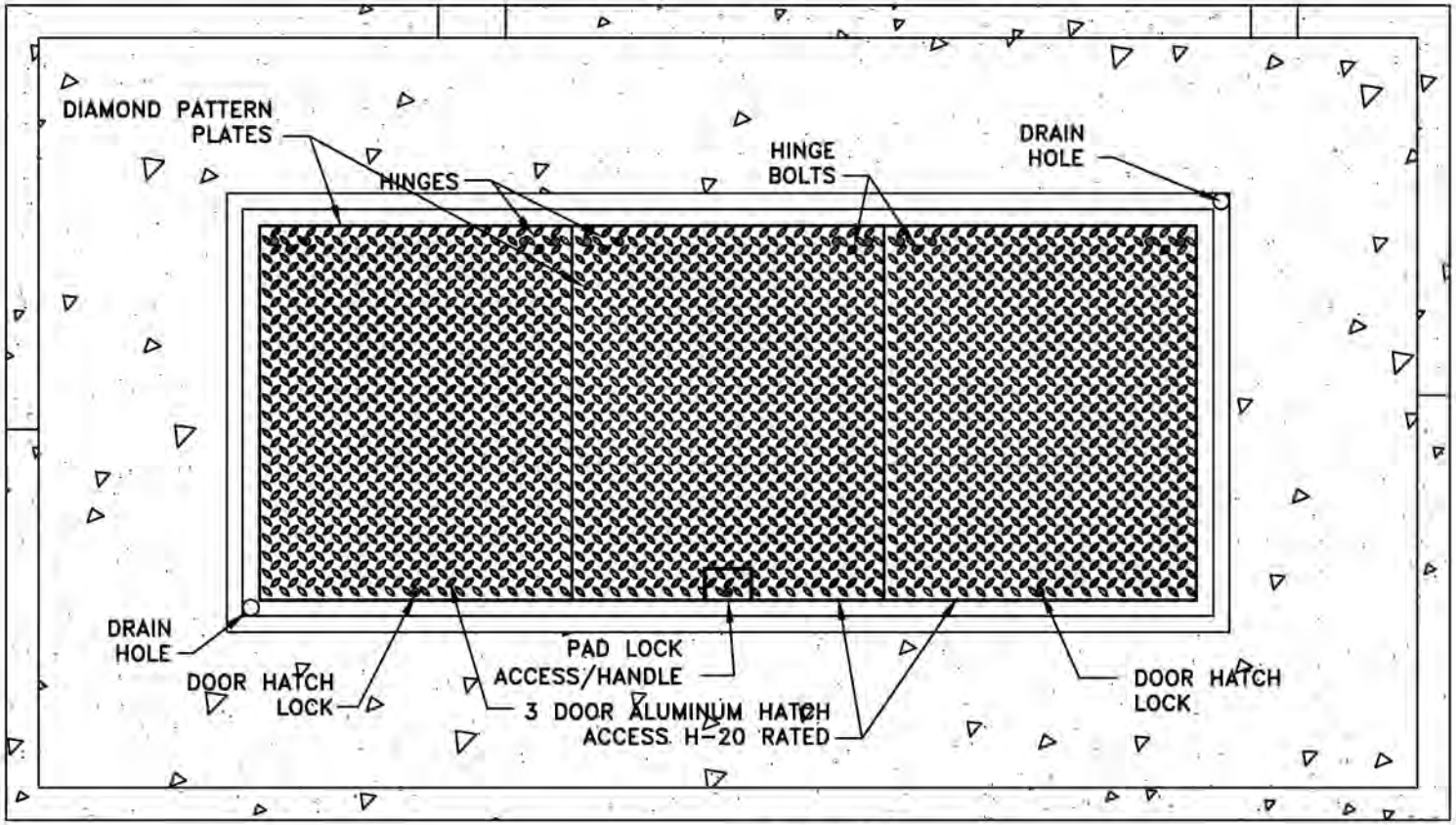
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

CLASS 1 DIVISION 1 & 2 AREA FOR THE WET WELL

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7–18.5

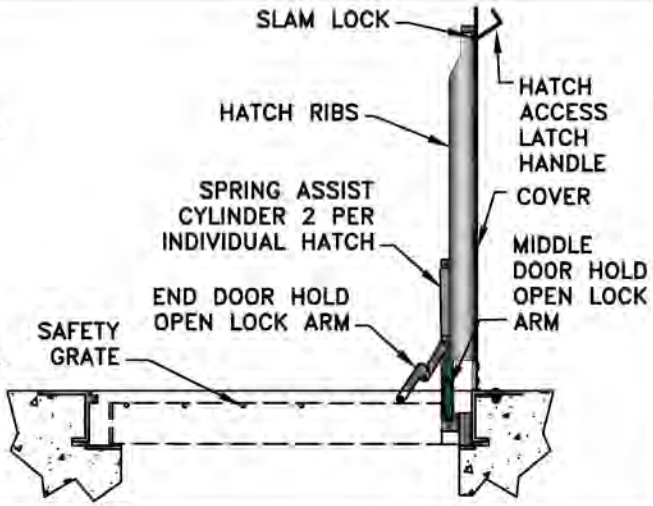
DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7–18.5.DWG



GENERAL NOTES:

1. UTILITY VAULT SHALL BE 14'(L)X8'(W)X4'(ID). THE ACCESS SHALL BE LW PRODUCTS HATCH (TD-3B), WITH SLAM LOCK, SPRING ASSISTED CYLINDER, HOLD OPEN ARM, BEARING SHELF AND DRAIN GUTTER DESIGNED FOR H-20 LOADING.
2. THE ACCESS HATCH SHALL OPEN AS DETERMINED DURING THE REVIEW.
3. VAULT SHALL HAVE BILCO LU1 LADDER UP SAFETY POST WITH YELLOW EPOXY COATING AND MOUNTED TO THE LADDER.
4. ALL PENETRATIONS INTO THE VAULT SHALL BE CORE DRILLED AND SECURED/SEALED WITH LINK SEAL.



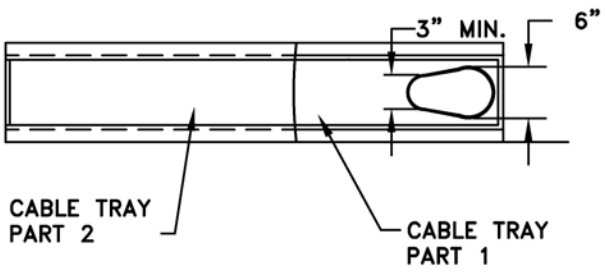
DG7-18.6.DWG

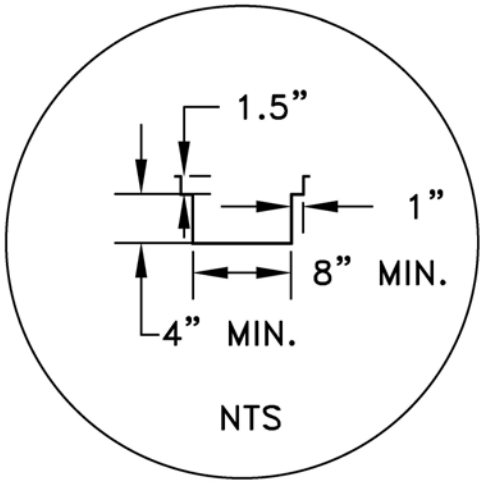
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

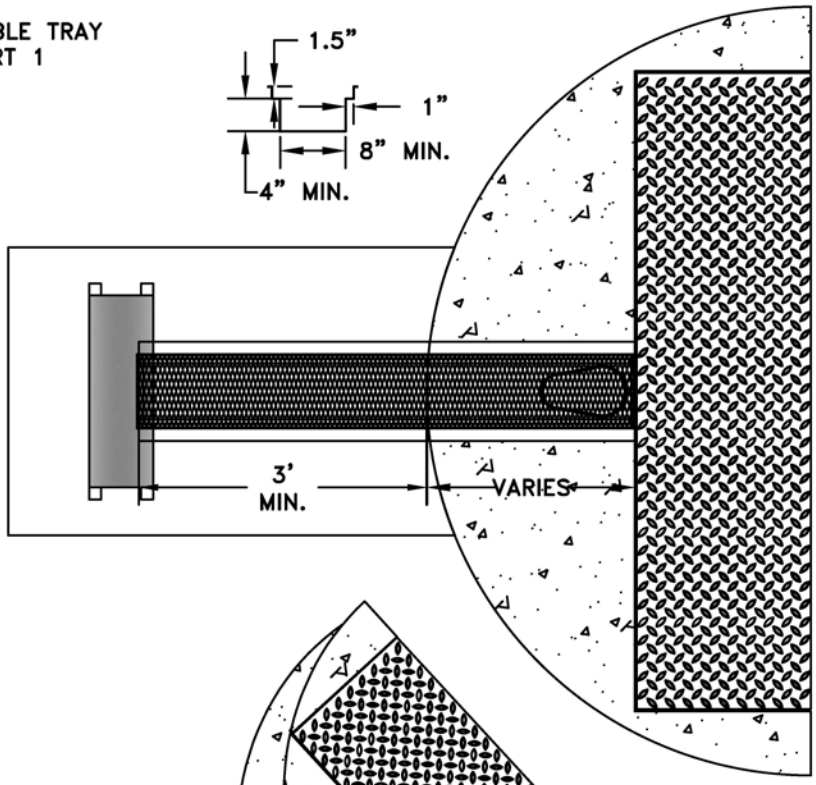
ACCESS HATCH DETAIL

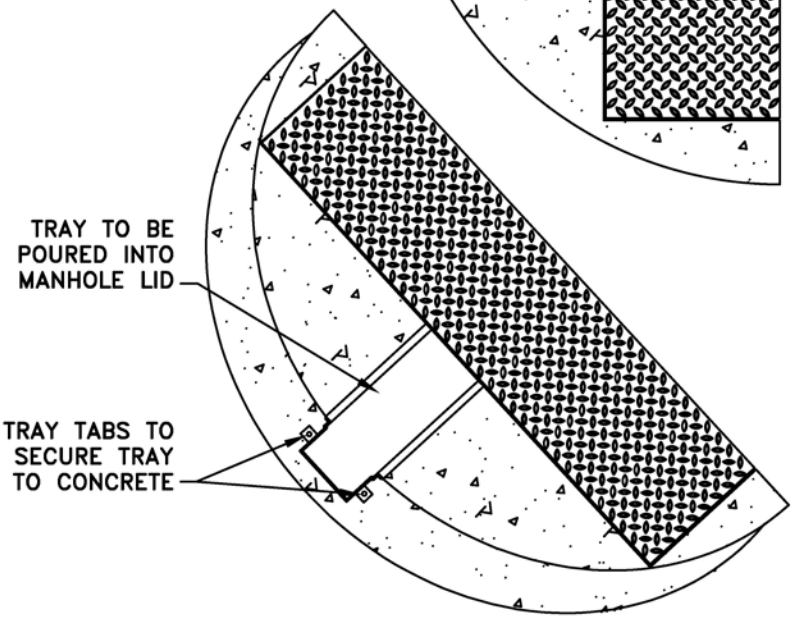
APPROVED	DWG. NO.
Roger A Schoenl CITY ENGINEER	7-18.6

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014









NOTES:

1. CABLE TRAY PART 1 SHALL BE POURED INTO THE MANHOLE LID AT THE TIME OF THE LID POUR. THE LENGTH OF THE TRAY SHALL BE DETERMINED BY THE SIZE OF THE WET WELL.
2. CABLE TRAY SHALL BE CONSTRUCTED OF ALUMINUM OR STAINLESS STEEL.
3. CABLE TRAY PART 2 SHALL BE INSTALLED DURING THE INSTALLATION OF THE ISOLATION PEDESTAL AND SHALL ALSO BE POURED IN CONCRETE.
4. TRAY COVER SHALL BE ALUMINUM OR STAINLESS GRIP STRUT OR HEAVY DUTY PERFORATED SAFETY GRATING SIZED TO FIT INTO CHANNEL AS SHOWN. APPROXIMATE DIMENSION 1.5" TALL X 10" WIDE AND CUT TO LENGTH AS REQUIRED.

DG7-18.7.DWG

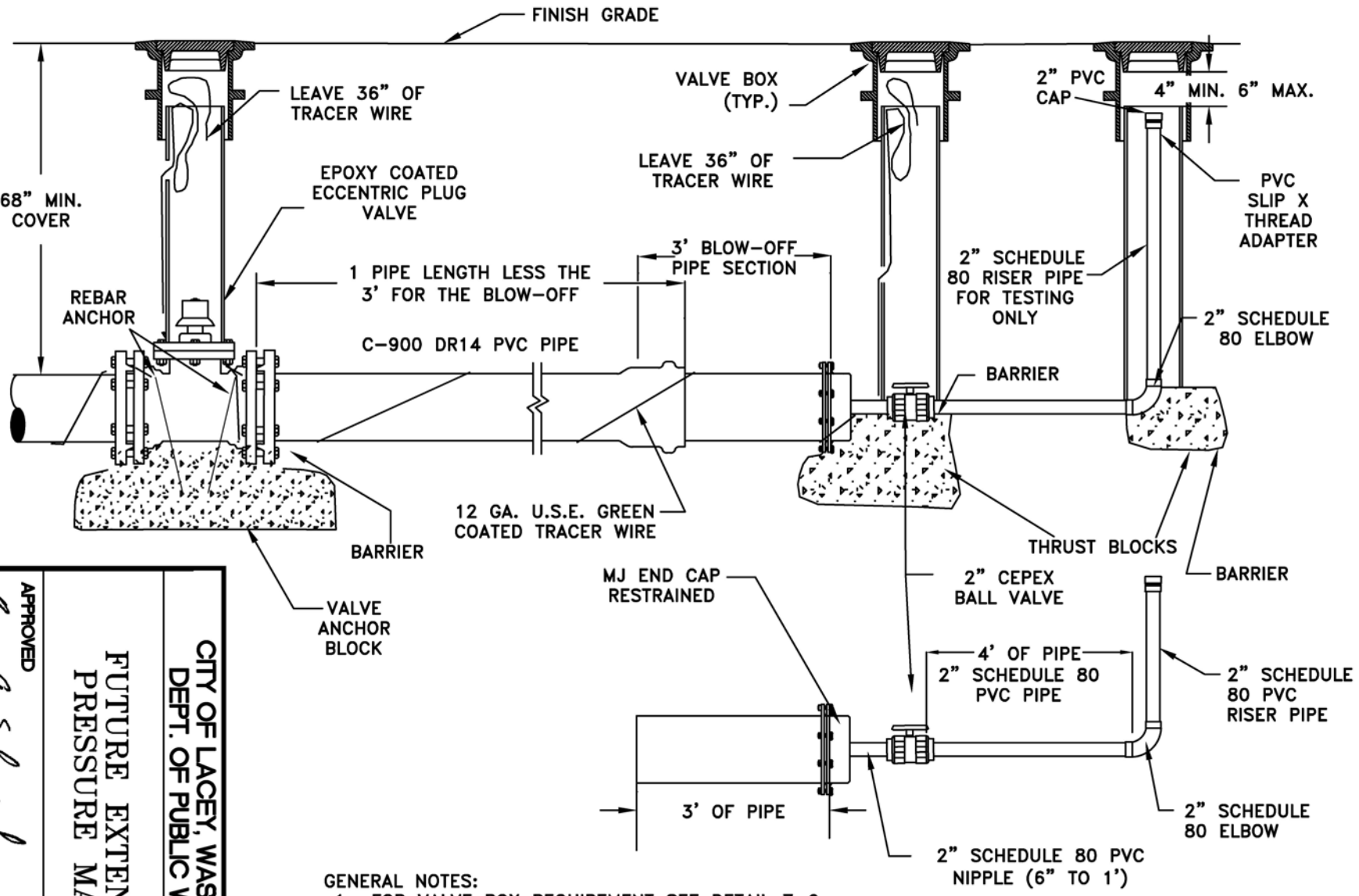
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

2 PIECE CABLE TRAY, PART 1 SHOWN POURED IN MANHOLE LID

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-18.7

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7-19.DWG



GENERAL NOTES:

1. FOR VALVE BOX REQUIREMENT SEE DETAIL 7-9.
2. THIS IS A FUTURE SEWER PRESSURE/FORCE MAIN EXTENSION DETAIL AND THE TEST REQUIREMENTS SHALL BE PER SECTION 7A.070 TESTING UNDER FORCE MAINS.
3. SEE SECTION 7D.030 FORCE MAIN FOR PIPING REQUIREMENTS.
4. IN UNUSUAL CIRCUMSTANCES THE PIPE WITH THE BELL END (MIN. LENGTH 17') MAY BE REDUCED TO A SHORTER LENGTH BUT NOT LESS THAN 10'. ALL OTHER CHANGES SHALL BE UNDER THE DIRECTION OF THE CITY ENGINEER.

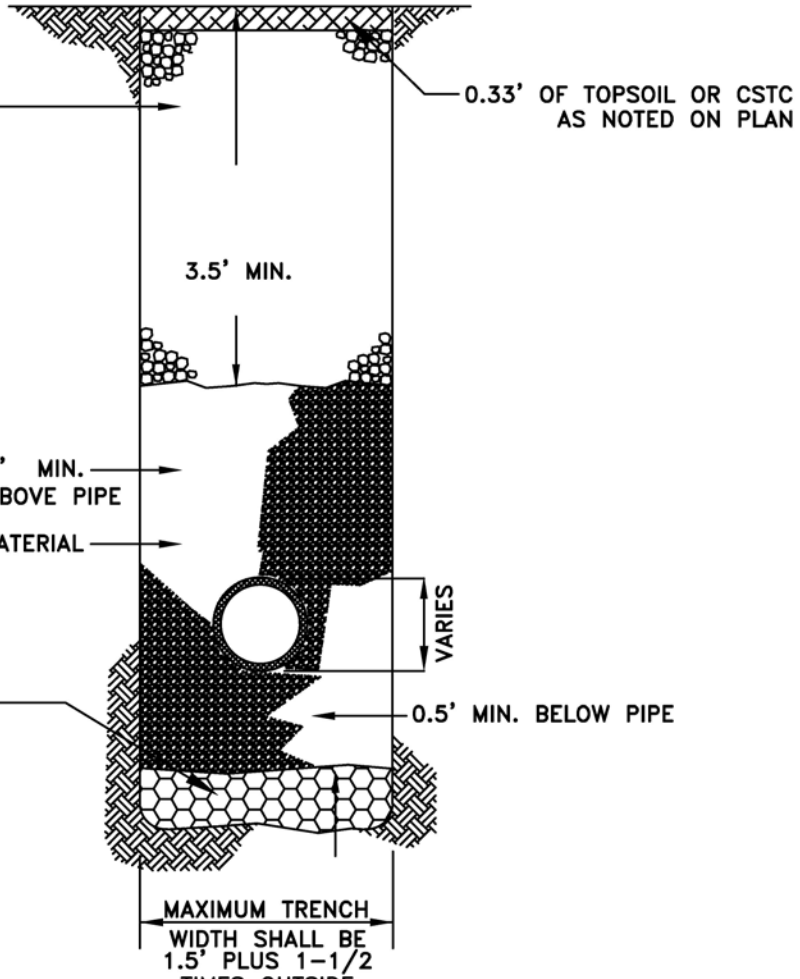
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

FUTURE EXTENSION PRESSURE MAINS

DWG. NO. 7-19

APPROVED
Roy A Schoenrock
CITY ENGINEER

DES.	DWN.	CHK.	DATE
P/W	WHO	RAS	12/15/2014



PEA GRAVEL SPECIFICATION

SIEVE NUMBER	PERCENT PASSING
3/8"	85–100
1/4"	
#4	10–30
#8	0–10
#10	
#16	0–5

GENERAL NOTES:

1. BEDDING OF THE SEWER MAIN SHALL BE A MINIMUM 6" OF 3/8" – PEA GRAVEL UNDER THE PIPE AND 12" ABOVE THE PIPE. WHEN WORKING IN SENSITIVE SOILS A BARRIER MAYBE REQUIRED TO PREVENT THE FINE SOILS FROM MIGRATING INTO THE PEA GRAVEL. SEE CHART ABOVE.
2. COMPACTION: THE TESTING REQUIREMENTS SHALL BE PER THE CITY OF LACEY DEVELOPMENT GUIDELINES AND PUBLIC WORKS STANDARDS SECTION 4B.200 TESTING.
3. ALL MATERIALS, WORKMANSHIP, AND INSTALL-ATION SHALL BE IN CONFORMANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION AS AMENDED BY CITY OF LACEY STANDARDS.
4. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. A BELL JOINT SHALL BE REQUIRED AT EACH JOINT FOR PROPER SUPPORT. NO TEMPORARY SUPPORTS, I.E. BLOCKS, WILL BE ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.

DG7-20.DWG

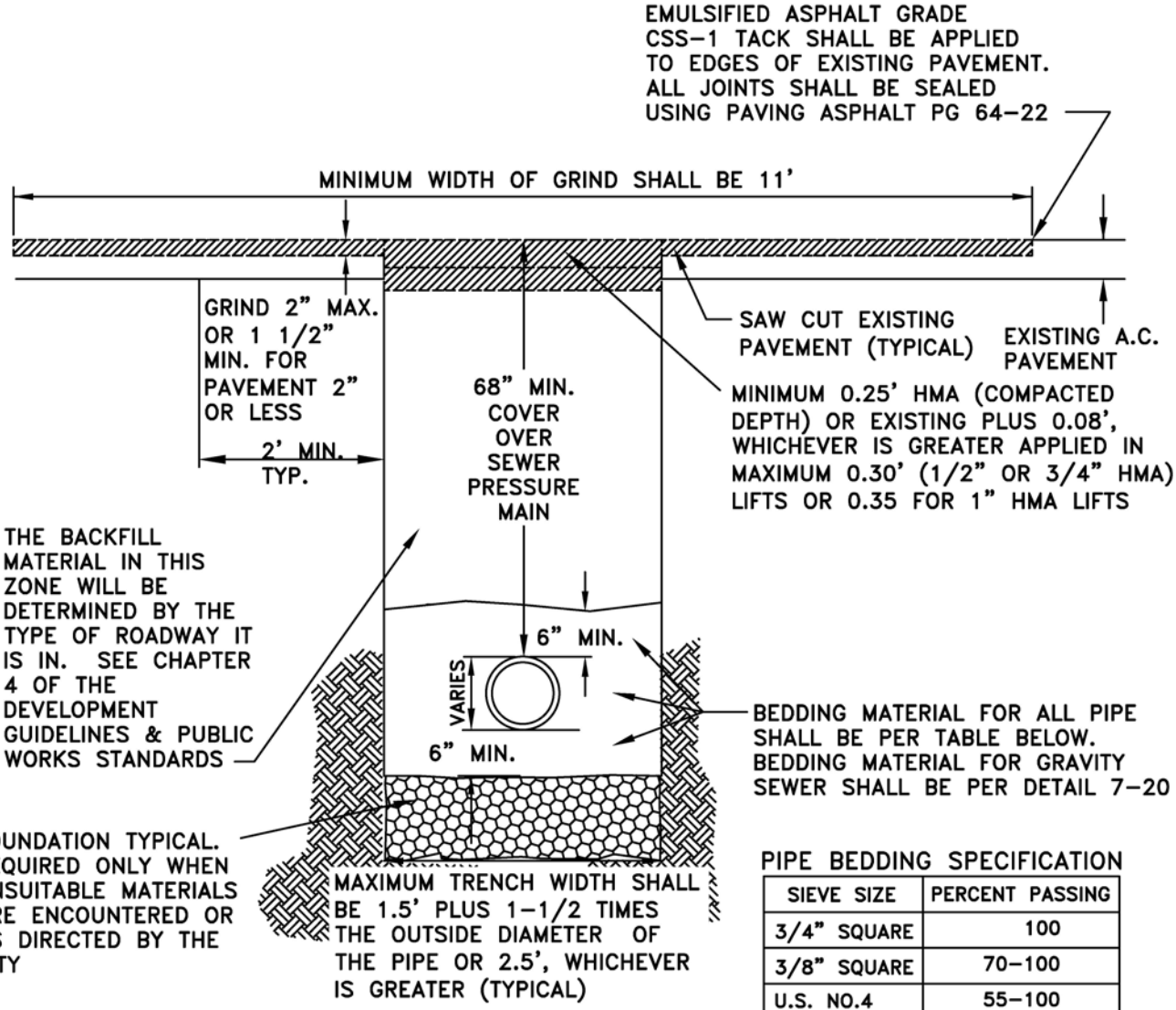
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

GRAVITY SEWER PIPE BEDDING REQUIREMENT

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-20

DES.	DWN.	CKD.	DATE
W.H.O.	W.H.O.	R.A.S.	12/15/2014



PIPE BEDDING SPECIFICATION

SIEVE SIZE	PERCENT PASSING
3/4" SQUARE	100
3/8" SQUARE	70-100
U.S. NO.4	55-100
U.S. NO. 10	35-95
U.S. NO. 20	20-80
U.S. NO. 40	10-55
U.S. NO. 100	0-10
U.S. NO. 200	0-03

GENERAL NOTES:

1. ALL MATERIALS EXCEPT H.M.A. SHALL BE COMPACTED IN 6-INCH MAXIMUM LIFTS TO 95% DENSITY AS DETERMINED BY ASTM D1557.
2. ALL MATERIALS, WORKMANSHIP, AND INSTALLATION SHALL BE IN CONFORMANCE WITH THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION AS AMENDED BY CITY OF LACEY STANDARDS.
3. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. NO TEMPORARY SUPPORTS, I.E. BLOCKS, WILL BE ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.
4. WHENEVER GROUND WATER IS PRESENT A BARRIER SHALL BE INSTALLED ABOVE THE BEDDING.

DG7-20.1.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

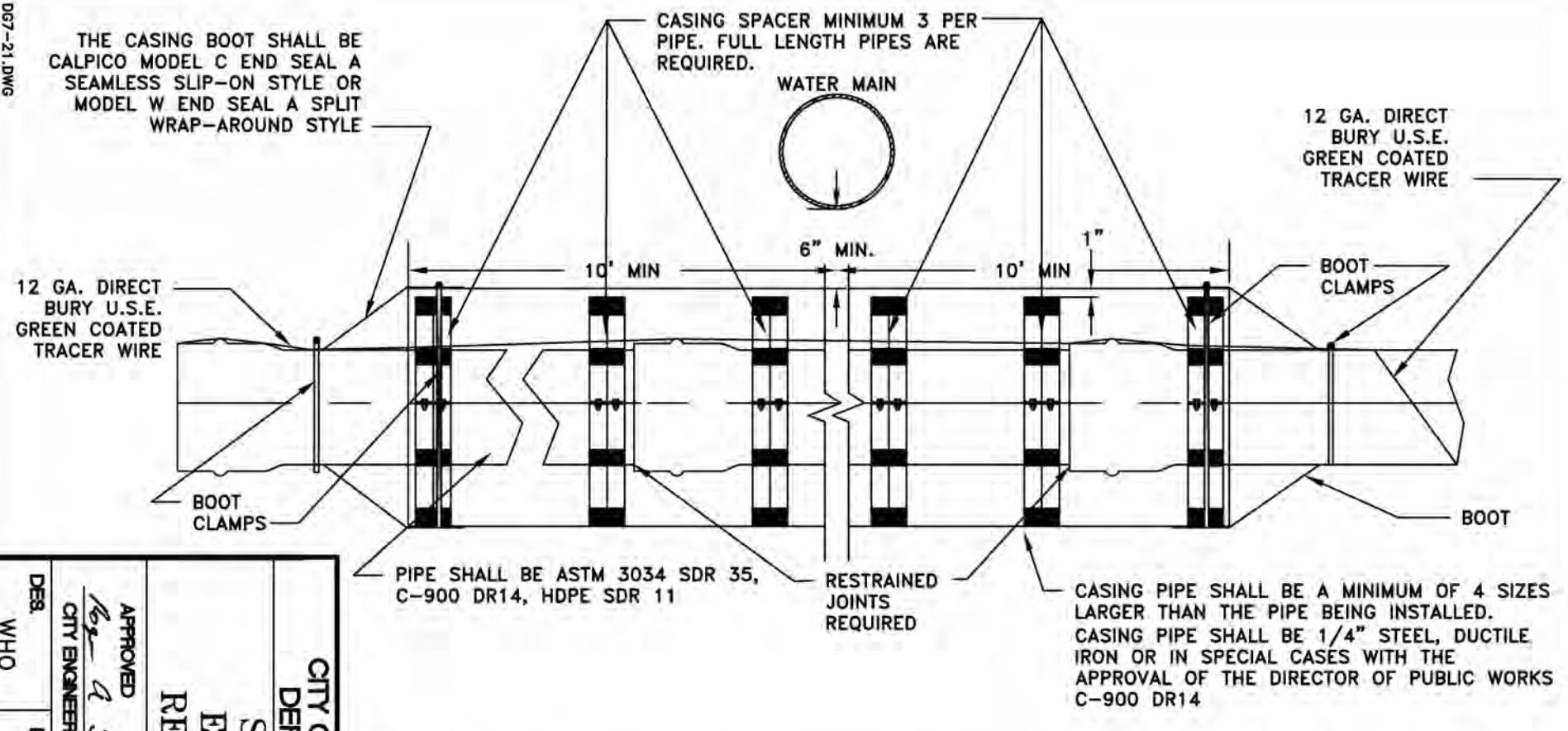
PIPE ZONE BEDDING FOR SEWER PRESSURE MAINS & SERVICES

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-20.1

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

DG7-21.DWG



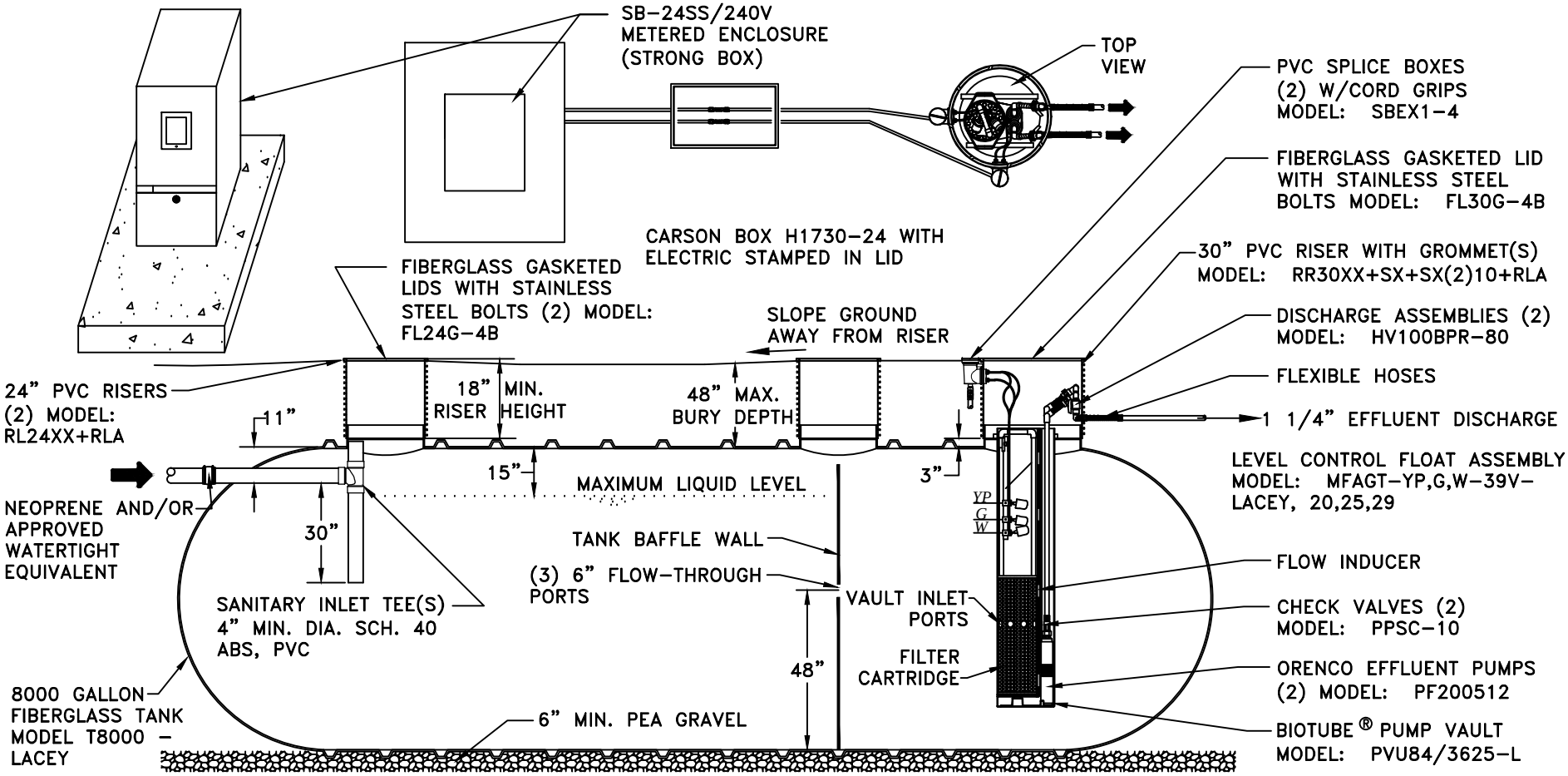
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

SEWER PIPE ENCASEMENT REQUIREMENTS

DES.	DWN.	CKD	DATE	APPROVED	DWG. NO.
WHO	WHO	RAS	12/15/2014	CITY ENGINEER	7-21

GENERAL NOTES:

1. MANUFACTURED CASING SPACERS ARE REQUIRED AND SHALL BE UNI-FLANGE OR CALPICO INC. PRODUCTS OR AS APPROVED BY THE CITY OF LACEY.
2. THE PIPE LENGTHS SHALL BE 20' WITH A MINIMUM OF 3 CASING SPACERS PER PIPE.
3. THERE SHALL BE NO MORE THAN 1" OF CLEARANCE BETWEEN THE TOP OF THE SPACER TO THE TOP OF THE CASING.
4. ALL JOINTS FOR THE PIPE BEING INSTALLED SHALL BE RESTRAINED.
5. IF PLASTIC PIPE IS ALLOWED BY THE CITY THE RESTRAINTS SHALL BE APPROVED BEFORE IT CAN BE ORDERED.
6. WHEN INSTALLING PVC C-900 DR14 OR HDPE SDR 11 PIPE IN A CASING, APPROVAL FOR THE SIZE AND TYPE OF PIPE SHALL BE OBTAINED FROM THE CITY ENGINEER.
7. SINCE MOST CASING SPACERS ARE MANUFACTURED WHEN ORDERED ALL OF THE ABOVE INFORMATION SHOULD BE OBTAINED AS EARLY AS POSSIBLE SO THERE IS NO DELAY IN THE PROJECT.
8. ENCASEMENT PER THIS DETAIL SHALL BE THE ONLY METHOD OF INSTALLATION FOR GRAVITY SEWER, DIRECTIONAL BORING OR BORING AND DRAGGING OF A GRAVITY SEWER MAIN IS NOT ALLOWED.



8000 GALLON FIBERGLASS TANK WITH PSA20-DAX2RODS-LACEY-8000-WA PUMPING SYSTEM - DUPLEX

FLOAT SETTINGS

FUNCTION	CODE	DIM FROM TOP OF TANK	DIM FROM PVU FLANGE
HWA/LAG ON	YP	17"	20"
LEAD PUMP ON	G	19"	25"
LEAD PUMP OFF		23"	
REDUNDANT OFF	W	26"	29"

DG7-22.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

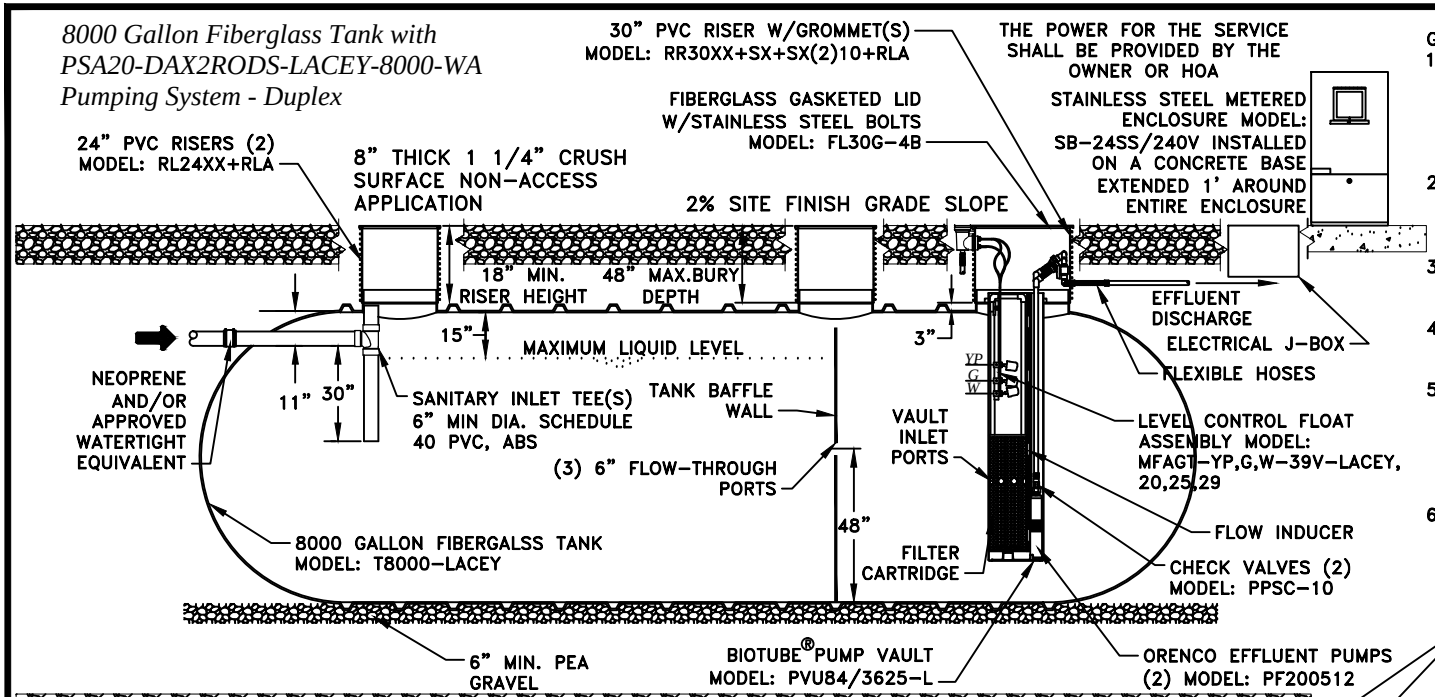
ORENCO T-8000 FIBER-GLASS TANK

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-22

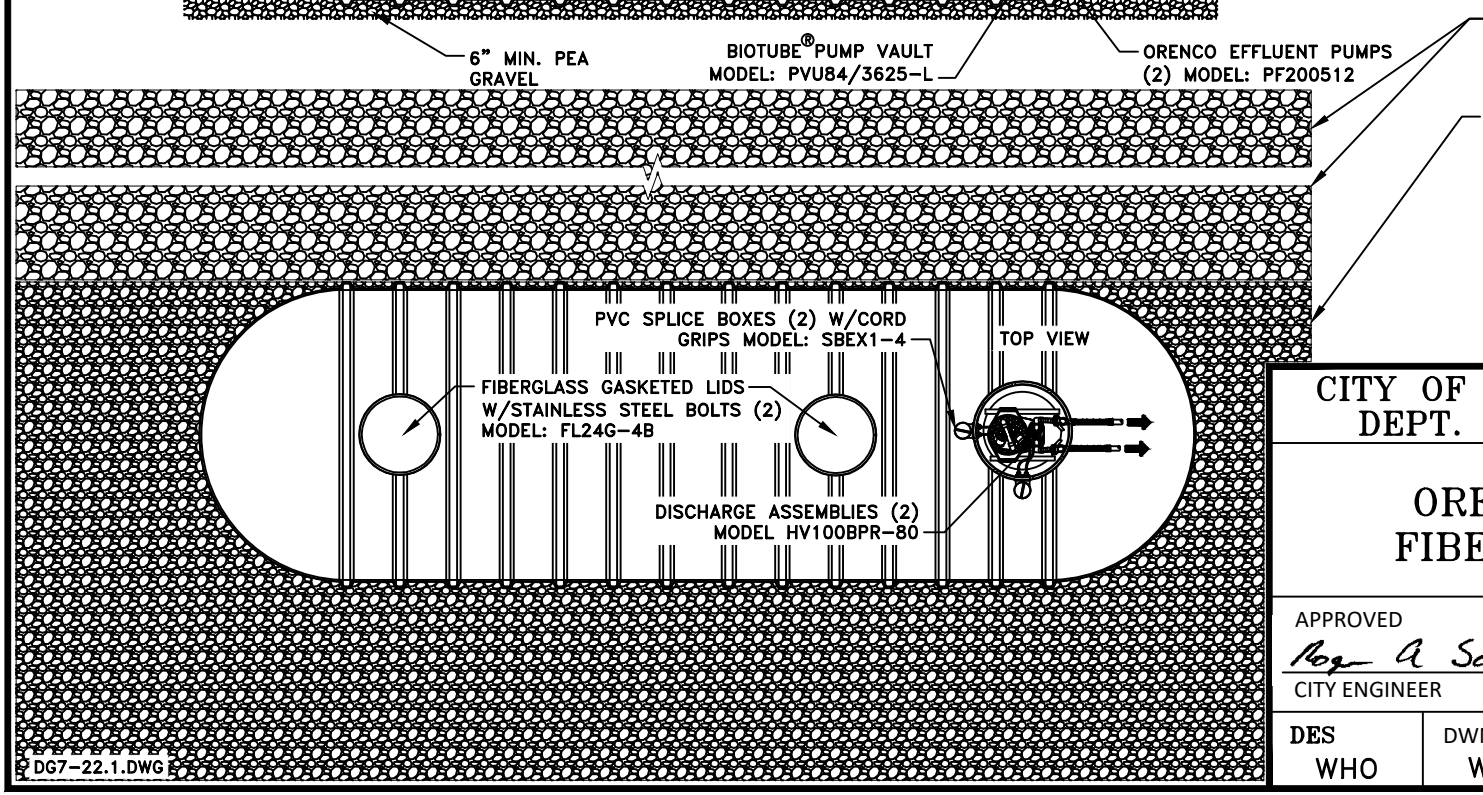
DES	DWN	CKD	DATE
ORENCO	ORENCO	RAS	12/15/2014

8000 Gallon Fiberglass Tank with
PSA20-DAX2RODS-LACEY-8000-WA
Pumping System - Duplex



GENERAL NOTES:

1. THE FORMULA FOR DETERMINING THE SITE WIDTH SHALL BE AT A 1:1 RATIO OF VERTICAL DEPTH OF THE TANK AND THE HORIZONTAL DISTANCE TO THE PROPOSED PROPERTY OR EASEMENT LINE ON ALL SIDES OF THE TANK.
2. IF THE SITE IS IN THE CITY LIMITS AND IS ATTACHED TO THE RIGHT-OF-WAY BEHIND A SIDEWALK A 10' LONG X 15' WIDE ASPHALT APRON SHALL BE REQUIRED.
3. THE ENTIRE SITE SHALL BE GRADED AT 2% TOWARDS THE RIGHT-OF-WAY OR STORM FACILITY IF AVAILABLE.
4. SINGLE WALL FIBERGLASS TANK SHALL MEET UL 1316 AND ASTM D4021 SPECIFICATIONS.
5. WHEN THE SOIL CLASSIFICATION INDICATES THE PRESENCE OF GROUND WATER AN ANCHORING SYSTEM MAY BE REQUIRED BY THE ENGINEER. ALL ANCHORS AND BEDDING SHALL MEET THE MANUFACTURER'S REQUIREMENTS.
6. WHEN A FENCE IS REQUIRED IT SHALL BE BLACK CHAINLINK WITH TOP RAIL AND BOTTOM WIRE. A 15' WIDE ACCESS GATE SHALL ALSO BE REQUIRED.



Float Settings

Function	*Code*	*Dim from Top of Tank*	*Dim from PVU Flange*
HWA / Lag ON	*YP*	*17"*	*20"*
Lead Pump ON	*G*	*19"*	*25"*
Lead Pump OFF		*23"*	
Redundant OFF	*W*	*26"*	*29"*

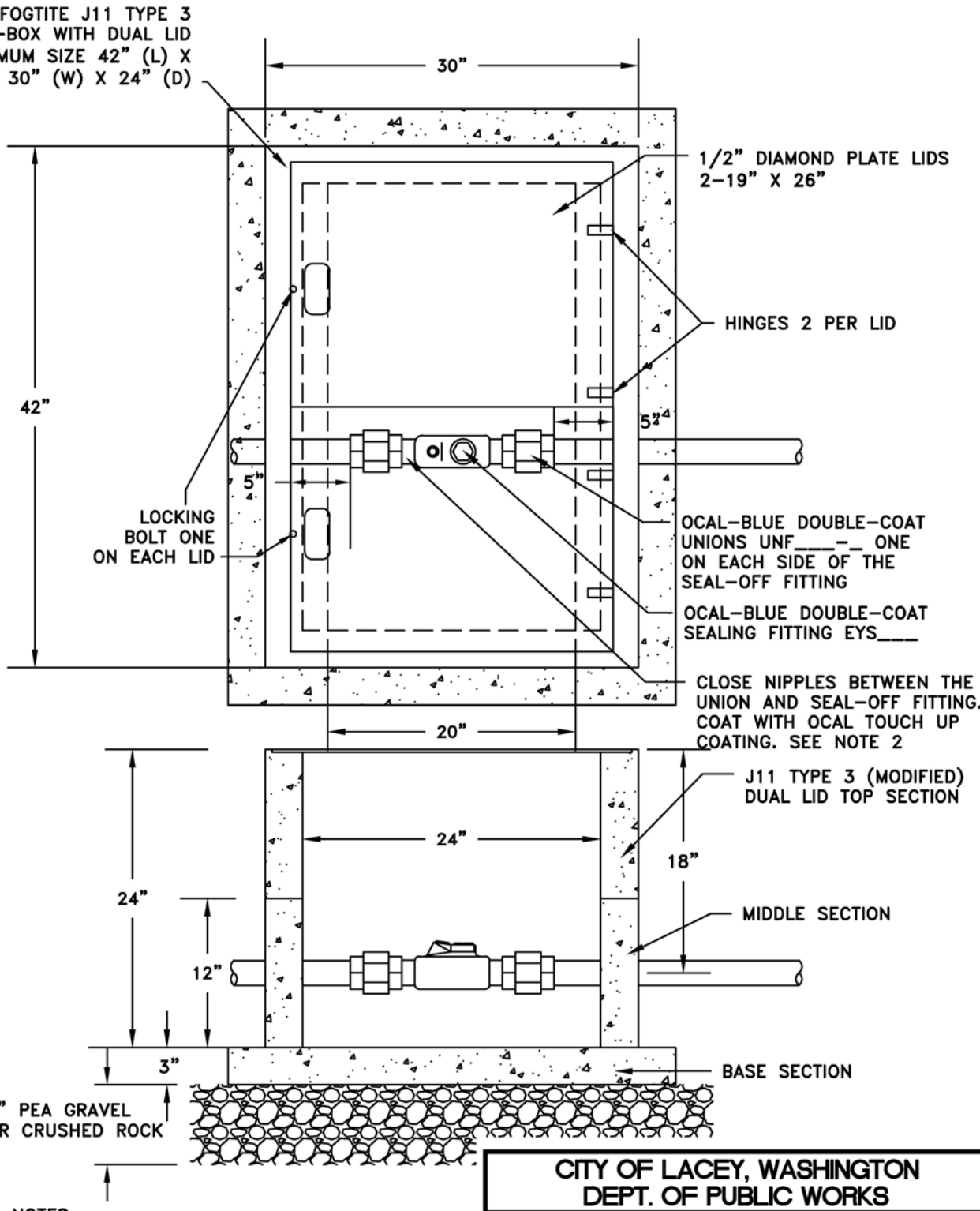
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

ORENCO T-8000 FIBERGLASS TANK

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-22.1

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. ALL MATERIALS SHALL HAVE A MINIMUM OF 40 MIL PVC COATING BONDED TO THE EXTERIOR.
2. ALL EXPOSED METAL SHALL BE COATED WITH OCAL TOUCH UP COATING.
3. A DRAIN SHALL BE INSTALLED IN THE J-BOX TO KEEP THE J-BOX FROM FILLING WITH WATER.
4. THE SIZES AND AMOUNT OF CONDUITS TO BE INSTALLED SHALL BE DETERMINED BY THE APPURTENANCES USED.
5. THE J-BOX SHALL BE INSTALLED IN THE CONCRETE SLAB WHICH IS PART OF THE STATION PLATFORM.

DG7-25.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

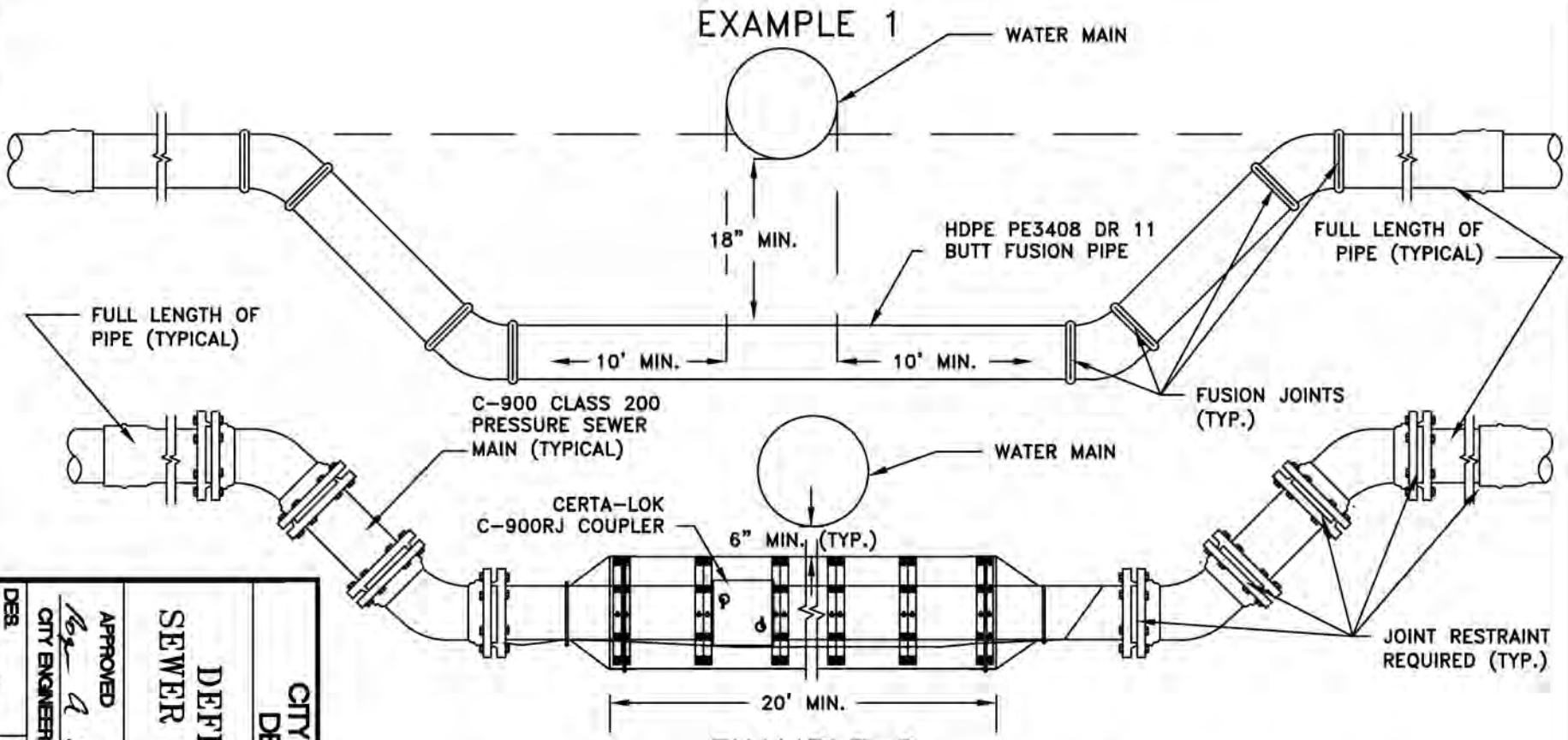
SEAL-OFF & UNION INSTALLATION

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO.
7-25

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014

DG6-27.DWG



GENERAL NOTES:

1. THE PIPING FOR THE DEFLECTED PRESSURE SEWER MAIN SHALL BE HDPE SDR 11 OR CERTAIN-TEED CERTA-LOK RJ C-900 CLASS 200.
2. FOR CASING REQUIREMENTS SEE DETAIL 7-21.
3. A FULL LENGTH OF PIPE SHALL BE INSTALLED AT BOTH BEGINNING AND END OF THE DEFLECTED RUNS UNLESS HDPE SDR 11 PIPE IS USED.
4. THE FIRST BELL END JOINT AFTER THE DEFLECTED RUNS SHALL BE RESTRAINED.
5. WHEN THE PRESSURE SEWER MAIN IS REQUIRED TO BE INSTALLED UNDER THE WATER MAIN (DEFLECTED) AND DOES NOT MEET THE 18" SEPARATION A CASING SHALL BE INSTALLED USING EXAMPLE 2 OR DETAIL 7-21 AS A GUIDE.
6. AT NO TIME SHALL A PRESSURE SEWER MAIN BE INSTALLED ABOVE A WATER MAIN OR SERVICE LINE.
7. USE EXAMPLE 1 WHEN THE DEFLECTION OF THE PRESSURE SEWER MAIN MEETS THE 18" MINIMUM SEPARATION.
8. WHEN CHANGING THE SIZE OF THE PRESSURE SEWER PIPE DUE TO MATERIAL CHANGES THE PIPE TYPE AND SIZE SHALL BE APPROVED BY THE CITY. FOR HDPE PIPE SEE CHART (TYPICAL SIZES & DIMENSIONS FOR IPS PE3408 HDPE DR 11.

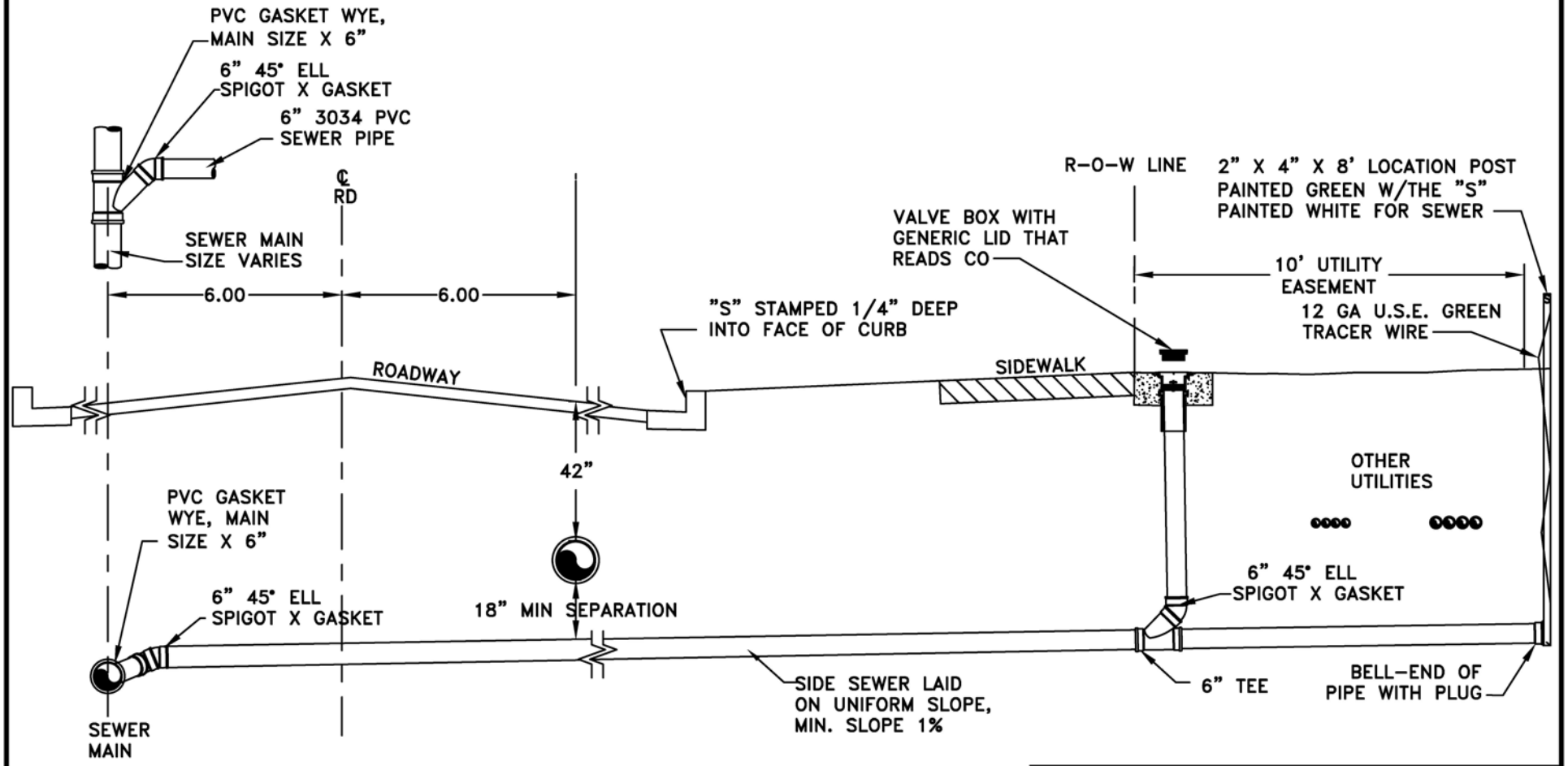
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

DEFLECTED PRESSURE SEWER MAINS INSTALLATION

DES.	DWN.	CHK.	DATE
WHO	WHO	RAS	12/15/2014

APPROVED
CITY ENGINEER

DWG. NO. 7-27



GENERAL NOTES:

1. A SIDE SEWER CLEANOUT SHALL BE INSTALLED AT THE RIGHT-OF-WAY OR 1' INSIDE THE UTILITY EASEMENT FOR EACH SEWER SERVICE. SEE DETAIL 7-5.1.
2. FOR BEDDING REQUIREMENTS SEE DETAIL 7-20.

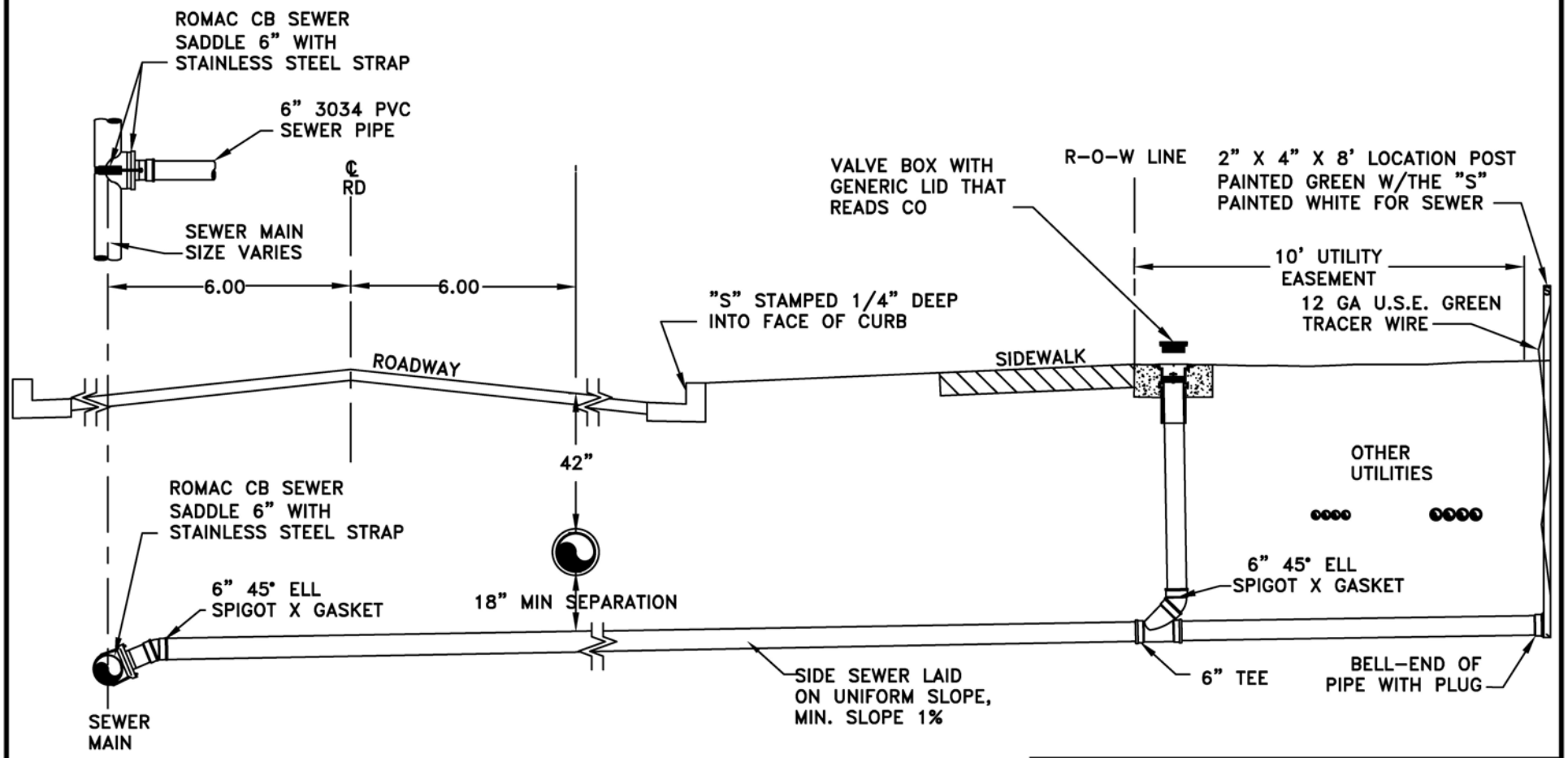
DG7-31.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

GRAVITY SEWER SERVICE WITH CLEAN OUT

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-31

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. A SIDE SEWER CLEANOUT SHALL BE INSTALLED AT THE RIGHT-OF-WAY OR 1' INSIDE THE UTILITY EASEMENT FOR EACH SEWER SERVICE. SEE DETAIL 7-5.1.
2. FOR BEDDING REQUIREMENTS SEE DETAIL 7-20.

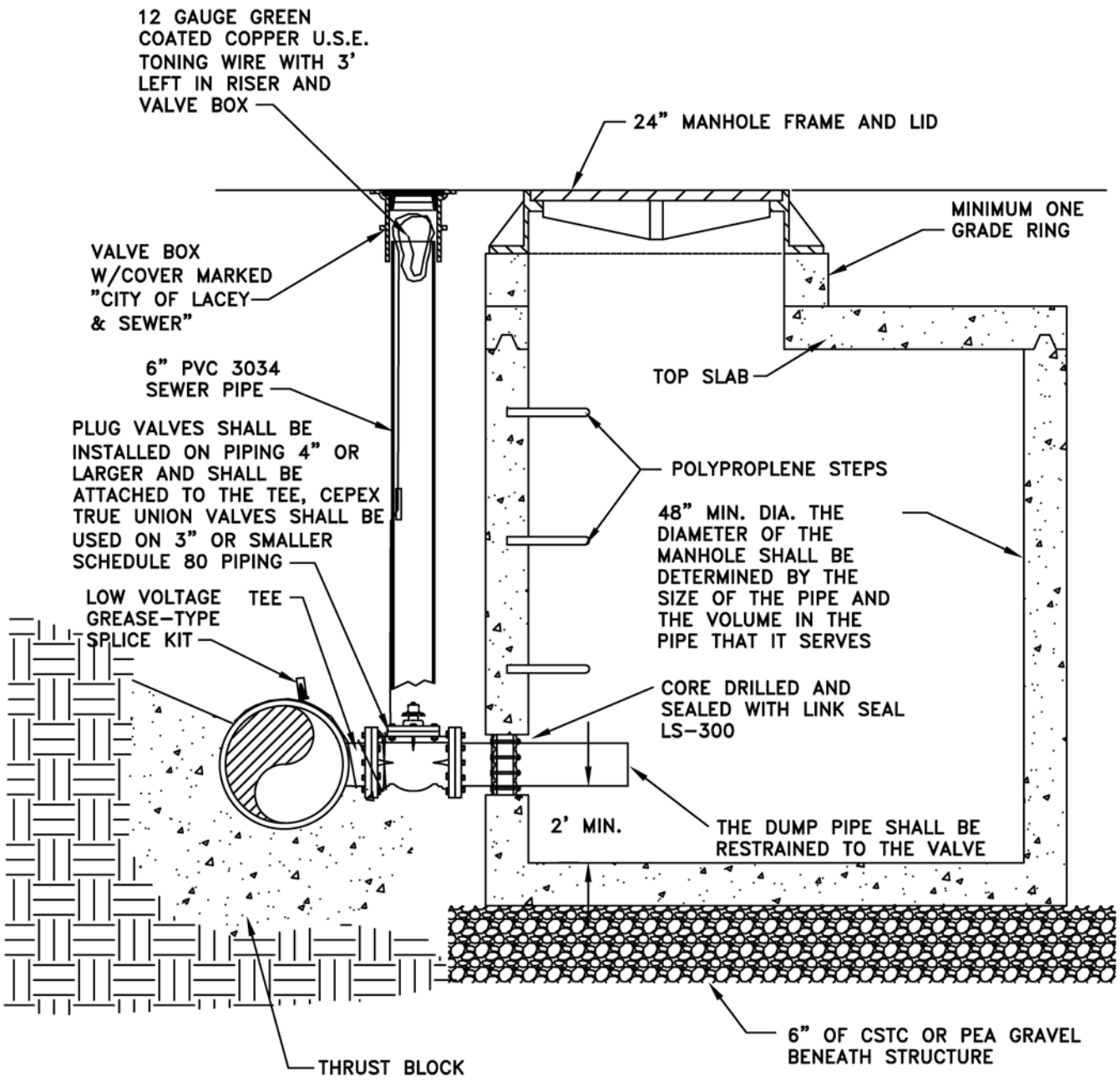
DG7-31.1.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

GRAVITY SEWER TAP CONNECTION

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-31.1

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. INSTALL A CONCRETE PAD WHEN LOW POINT DRAIN MANHOLE IS INSTALLED OUTSIDE OF PAVED AREA.
2. THE MANHOLE LID SHALL BE THE CITY OF LACEY "LOGO" LID SEE DETAIL 7-3.
3. THE SIZE OF THE LOW POINT DRAIN SHALL BE APPROVED BY THE CITY.
4. FOR VALVE BOX REQUIREMENTS SEE DETAIL 7-9.

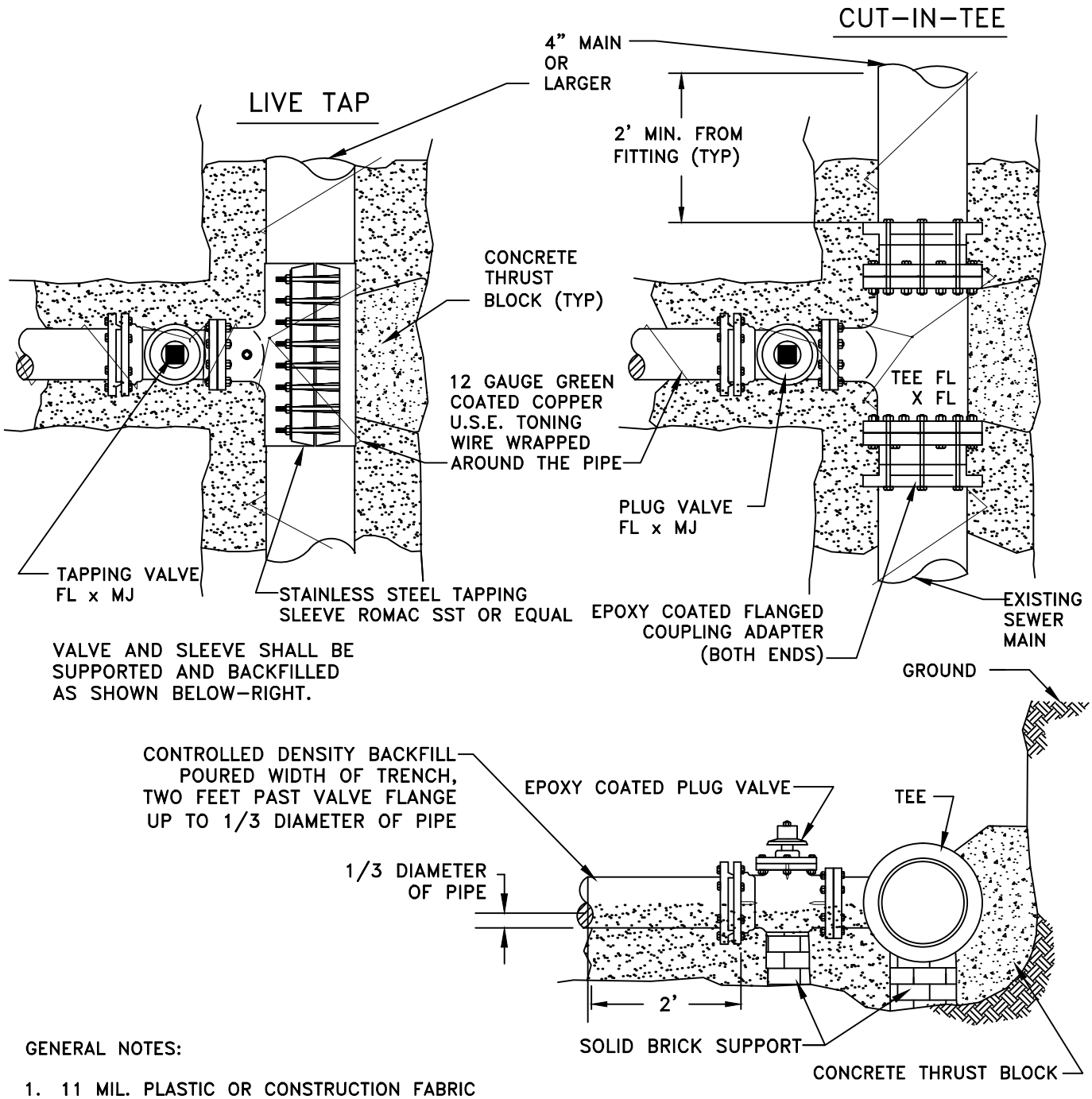
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

LOW POINT DRAIN

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-32

DES.	DWN.	CKD.	DATE
P/W	WHO	RAS	12/15/2014

DG7-32.DWG



GENERAL NOTES:

1. 11 MIL. PLASTIC OR CONSTRUCTION FABRIC SHALL BE WRAPPED AROUND PIPE AND FITTINGS BEFORE THRUST BLOCK IS POURED AND BACKFILLED.
2. CONTROLLED DENSITY FILL SHALL CONSIST OF 1750# SAND, 1750# PEA GRAVEL, 230# WATER, 141# CEMENT, 6 OZ. WATER REDUCING AGENT PER 100# CEMENT.
3. THE MINIMUM DISTANCE FOR ANY TAP OR CUT–IN SHALL BE 2' FROM A BELL END OR FITTING.
4. SUPPORT VALVE AND SLEEVE CONTINUOUSLY THROUGH INSTALLATION.
5. CONNECT TO EXISTING TRACER WIRE PER DETAIL 7–9.
6. CUT–IN TEE SHALL BE EPOXY COATED 10 MILS THICK OR COATED WITH PROTECTO 401 OR APPROVED EQUAL.

DG7–33.DWG

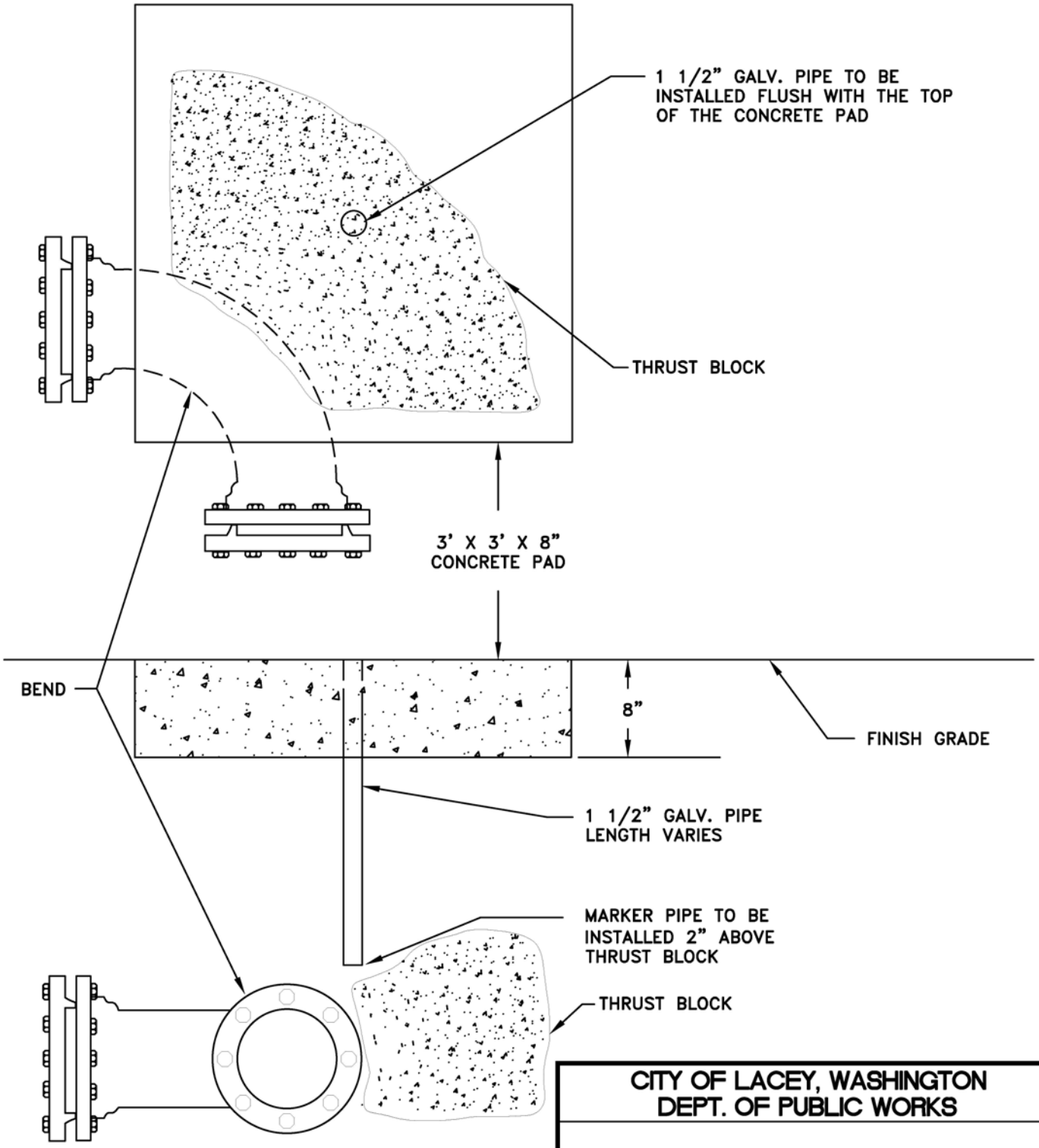
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

CONNECTION TO EXISTING PRESSURE MAIN 4" OR LARGER

APPROVED
Roger A Schaeuble
CITY ENGINEER

DWG. NO. 7–33

DES.	DWN.	CKD.	DATE
P/W	WHO	RAS	12/15/2014



GENERAL NOTES:
1. TO BE INSTALLED IN EASEMENTS IN AREAS OTHER THAN GRAVEL ACCESS ROADS, PRIVATE ROADS, PARKING LOTS AND PLAYGROUNDS.

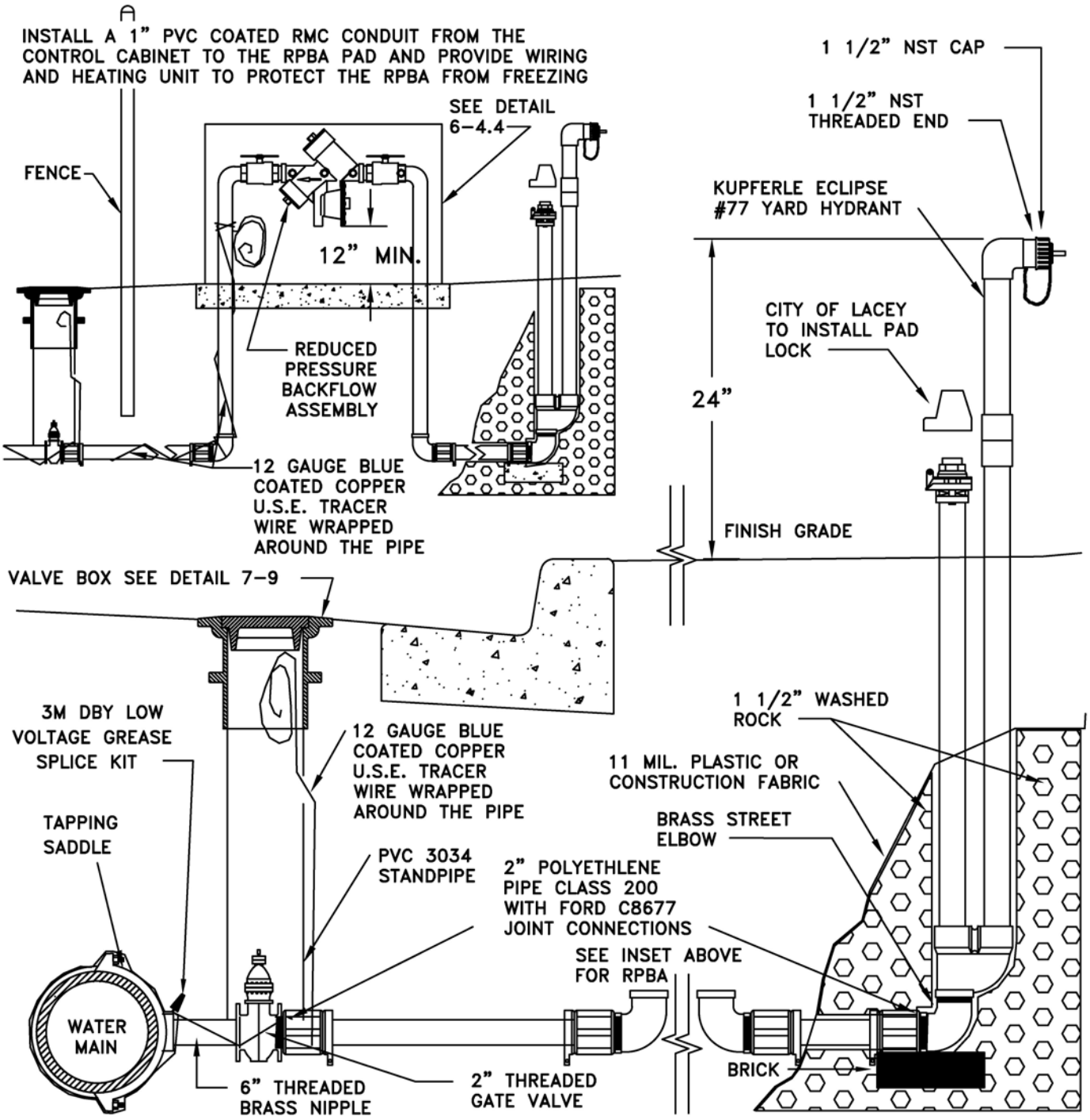
DG7-40.1.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

BEND MARKER TYPE II FOR NON-PAVED AREAS

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-40.1

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. THE WATER MAIN IS LOCATED 6' NORTH OR EAST OF THE CENTERLINE.
2. THE BROKEN LINES INDICATE A MISSING DISTANCES. ALL DISTANCES SHALL BE SHOWN ON THE PLANS.
3. TWO (2) COATS OF RED EPOXY PAINT IS REQUIRED AFTER INSTALLATION.
4. INSTALL A RPBA WITHIN THE FENCED AREA WITH NO OBSTRUCTIONS AROUND IT. SEE DETAIL 7-18.1 AND 7-18.2.
5. THE WASH HYDRANT SHALL BE INSTALLED WITHIN THE FENCED AREA OF A LIFT STATION.
6. THE ENCLOSURE FOR THE RPBA SHALL BE A HOT BOX HB-200 WITH HEAT COIL.
7. TAP PER DETAIL 6-11.

DG7-41.DWG

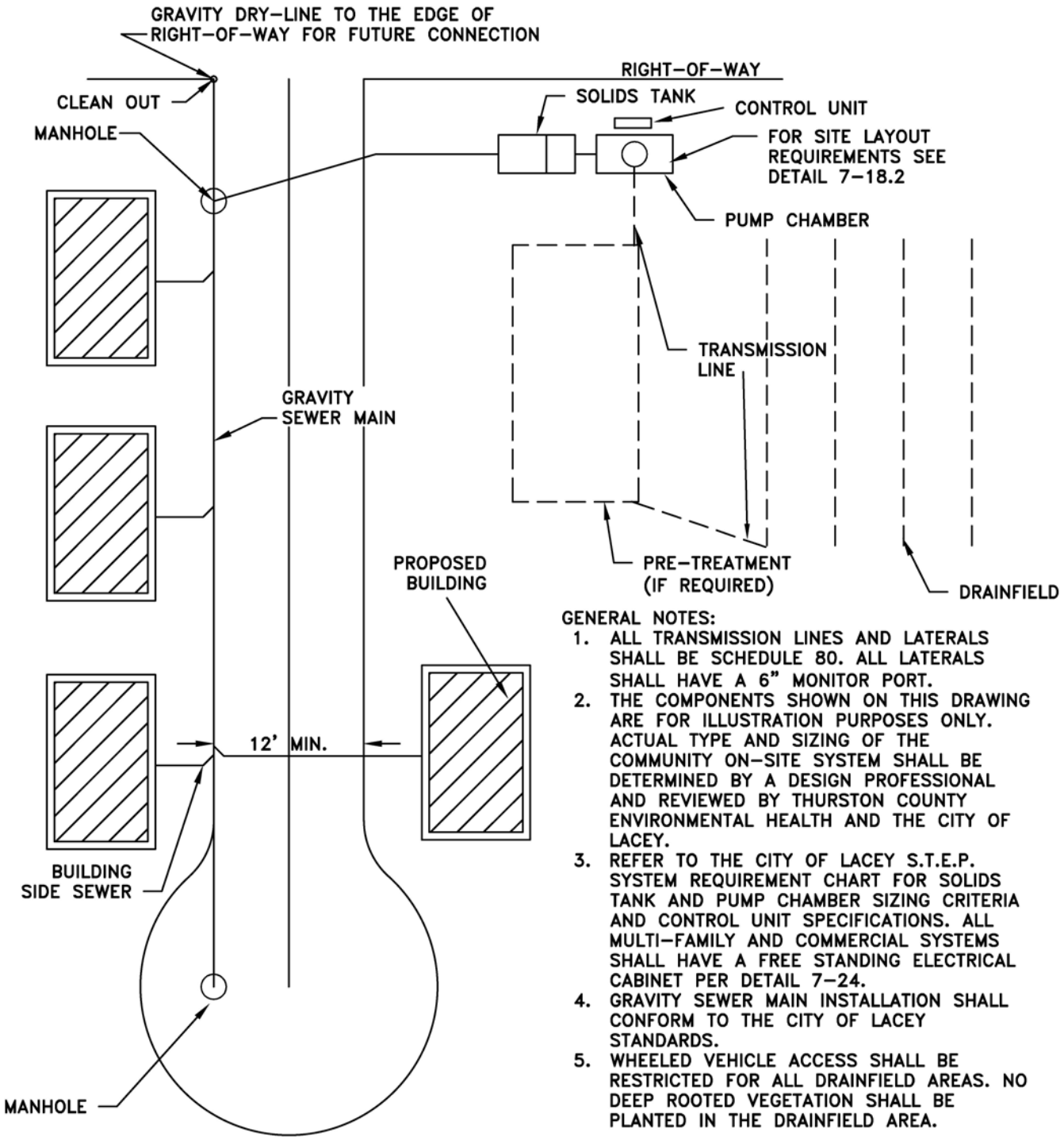
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

LIFT STATION WASH HYDRANT

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-41

DES.	DWN.	CKD.	DATE
WHO	WHO	RAS	12/15/2014



GENERAL NOTES:

1. ALL TRANSMISSION LINES AND LATERALS SHALL BE SCHEDULE 80. ALL LATERALS SHALL HAVE A 6" MONITOR PORT.
2. THE COMPONENTS SHOWN ON THIS DRAWING ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL TYPE AND SIZING OF THE COMMUNITY ON-SITE SYSTEM SHALL BE DETERMINED BY A DESIGN PROFESSIONAL AND REVIEWED BY THURSTON COUNTY ENVIRONMENTAL HEALTH AND THE CITY OF LACEY.
3. REFER TO THE CITY OF LACEY S.T.E.P. SYSTEM REQUIREMENT CHART FOR SOLIDS TANK AND PUMP CHAMBER SIZING CRITERIA AND CONTROL UNIT SPECIFICATIONS. ALL MULTI-FAMILY AND COMMERCIAL SYSTEMS SHALL HAVE A FREE STANDING ELECTRICAL CABINET PER DETAIL 7-24.
4. GRAVITY SEWER MAIN INSTALLATION SHALL CONFORM TO THE CITY OF LACEY STANDARDS.
5. WHEELED VEHICLE ACCESS SHALL BE RESTRICTED FOR ALL DRAINFIELD AREAS. NO DEEP ROOTED VEGETATION SHALL BE PLANTED IN THE DRAINFIELD AREA.

SEWER
CITY OF LACEY

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

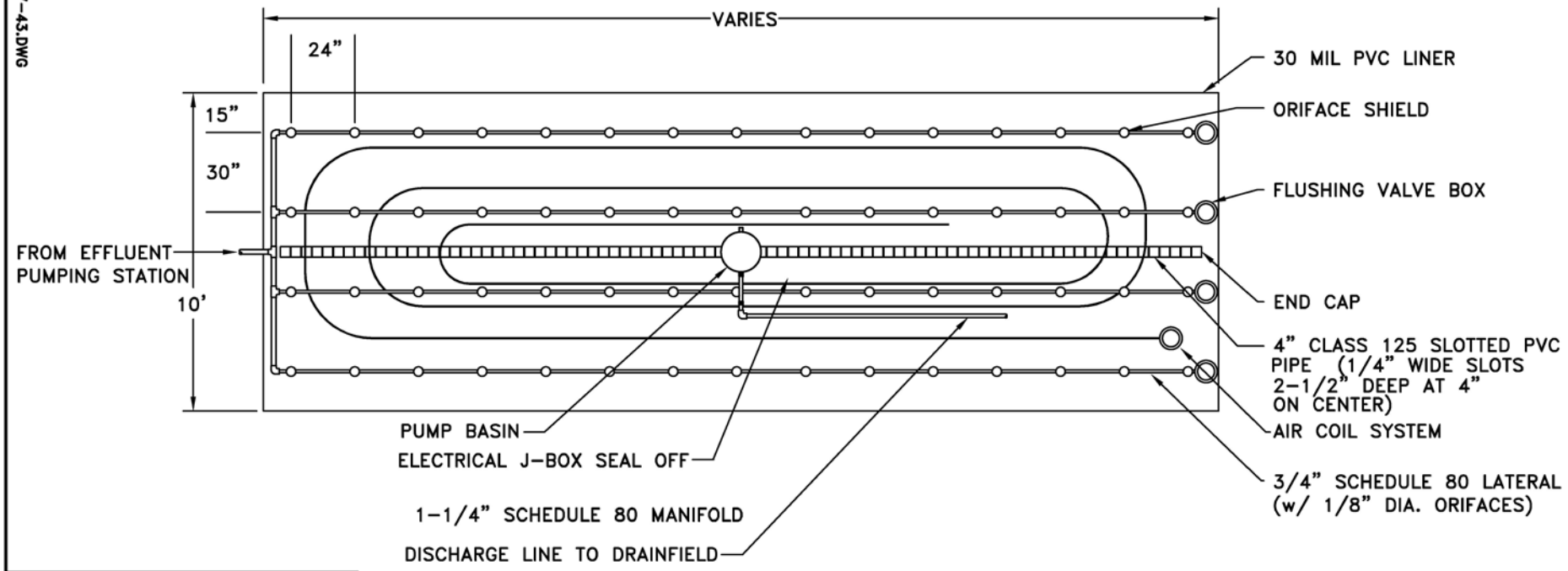
TYPICAL INTERIM SEWAGE FACILITIES LAYOUT

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7-42

DES.	DWN.	CKD.	DATE
P/W	ANM	RAS	12/15/2014

DG7-42.DWG

DG7-43.DWG



TOP VIEW – INTERMITTENT SAND FILTER

NOT TO SCALE

GENERAL NOTES:

1. ALL STORMWATER AND ROOF DRAINS SHALL BE DIRECTED AWAY FROM ALL ON-SITE SEWAGE DISPOSAL COMPONENTS.

2. ALL COMPONENTS OF THE ON-SITE SEWAGE DISPOSAL SYSTEM SHALL BE INSPECTED AND APPROVED BY THURSTON COUNTY ENVIRONMENTAL HEALTH, THE CITY OF LACEY, AND THE SYSTEM DESIGNER PRIOR TO BACKFILL. THE SYSTEM DESIGNER SHALL SUBMIT AN AS-BUILT DRAWING TO THURSTON COUNTY ENVIRONMENTAL HEALTH AND THE CITY OF LACEY FOR REVIEW AND APPROVAL. APPROVAL OF THE AS-BUILT DRAWING BY THURSTON COUNTY ENVIRONMENTAL HEALTH SHALL BE REQUIRED PRIOR TO CITY OF LACEY FINAL PUBLIC WORKS APPROVAL.

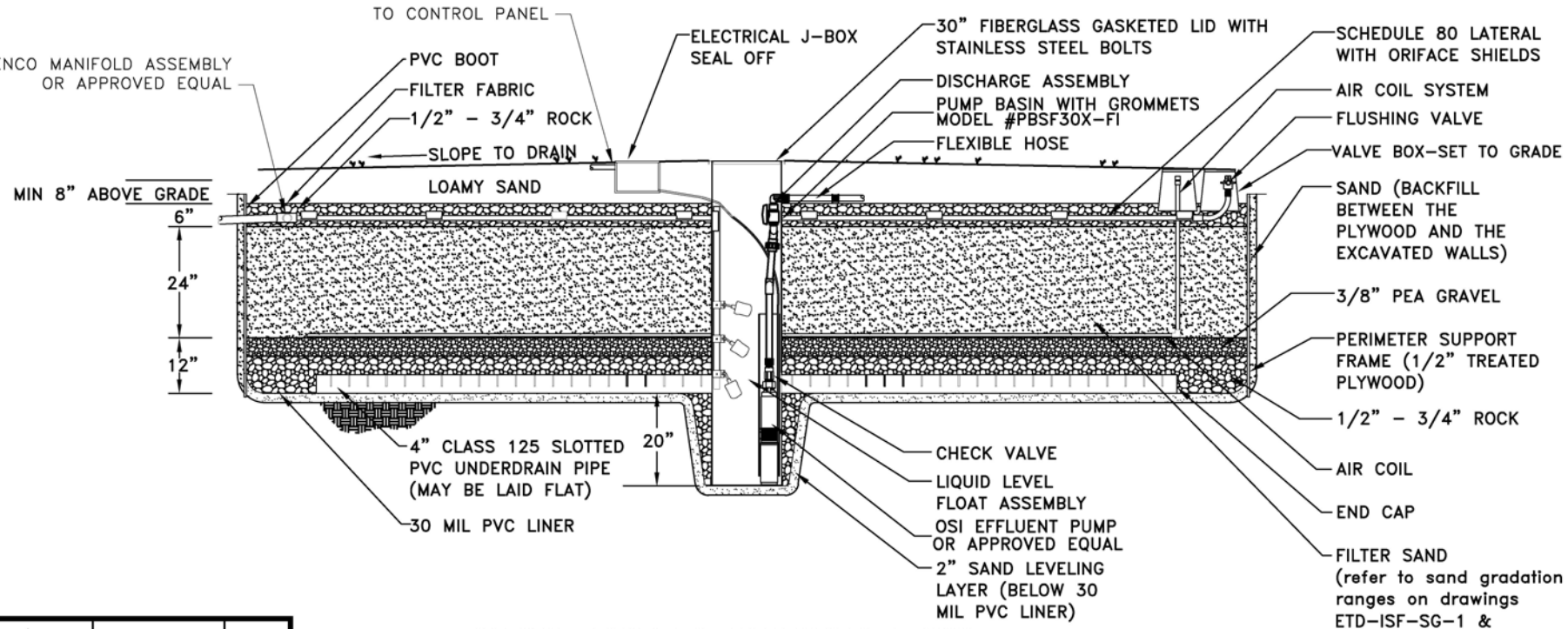
CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

INTERMITTENT SAND FILTER PLAN VIEW

DES.	DWN.	CKD.	DATE	DWG. NO.
P/W	ANM	RAS	12/15/2014	7-43

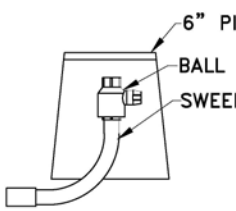
APPROVED
CITY ENGINEER

DG7-44.DWG



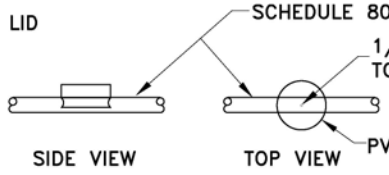
SIDE VIEW - TYPICAL SAND FILTER WITH PUMP DISCHARGE

NOT TO SCALE



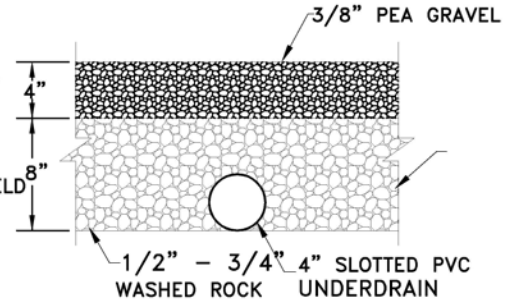
FLUSHING VALVE DETAIL

NOT TO SCALE



STANDARD ORIFICE SHIELD DETAIL

NOT TO SCALE



UNDERDRAIN DETAIL FOR PUMP DISCHARGE

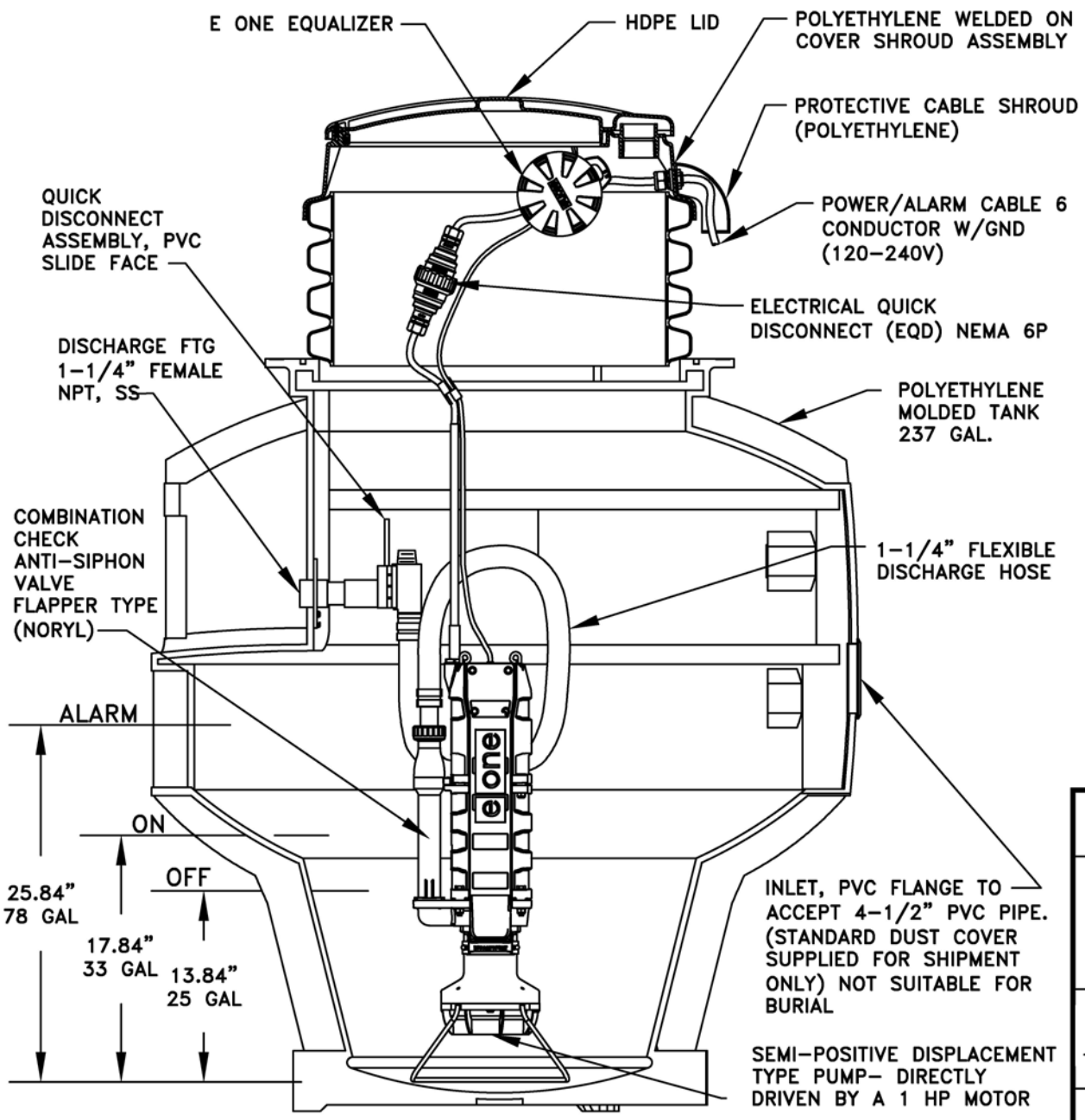
NOT TO SCALE

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

INTERMITTENT SAND FILTER PROFILE VIEW

APPROVED CITY ENGINEER	DWG. NO.
Ken A Schoenrock	7-44

DES.	DWN.	CKD.	DATE
P/W	ANM	RAS	12/15/2014



GENERAL NOTES:

1. CONCRETE BALLAST MAY BE REQUIRED. BALLAST CALCULATIONS SHALL BE COMPLETED AND PROVIDED TO THE CITY ENGINEER FOR REVIEW. SEE INSTALLATION INSTRUCTIONS FOR DETAILS.
2. THE CONTROL PANEL SHALL BE THE E–ONE PROTECT PLUS WITH OPTIONAL BUILT IN GENERATOR PLUG AND AUTOMATIC TRANSFER SWITCH.
3. THE POWER SUPPLY BREAKER IN THE CUSTOMER HOME ELECTRICAL PANEL SHALL BE 30 AMP.
4. ELECTRICAL CONDUIT SHALL BE PROPERLY SEALED ACCORDING TO MANUFACTURER'S INSTRUCTIONS TO PREVENT WATER INTRUSION.
5. THE GRINDER ASSEMBLY SHALL BE SET ON A MINIMUM OF 6" PEA GRAVEL BEDDING MATERIAL.
6. BACK FILL REQUIREMENTS SHALL COMPLY WITH MANUFACTURER'S REQUIREMENTS.
7. CARE SHALL BE TAKEN TO INSURE THE TANK IS PROPERLY VENTED. MANUFACTURER'S REQUIREMENTS FOR BURIAL DEPTH, BACKFILL AROUND LID AND VENTING SHALL BE STRICTLY FOLLOWED. THE TANK AND LID SHALL NEVER BE INSTALLED IN AN AREA WHERE HIGH GROUND WATER OR FLOODING ARE POSSIBLE THAT MAY AFFECT PROPER VENTING.
8. PRIOR TO START UP THE INLET LATERAL AND TANK SHALL BE THOROUGHLY CLEANED, FLUSHED AND FREE OF DIRT, SAND, ROCKS, DEBRIS OR FOREIGN MATERIAL.

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

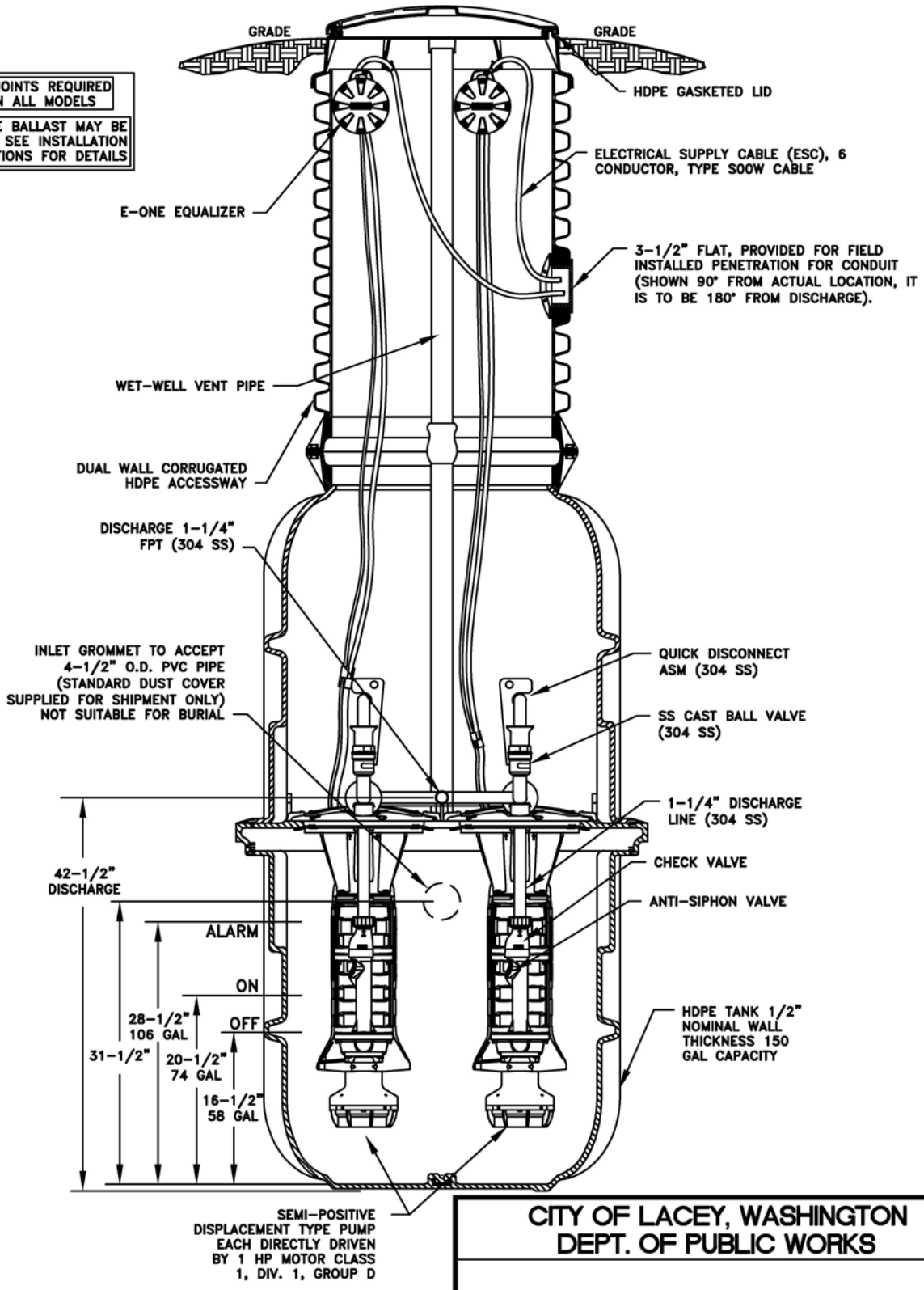
E–ONE WH–231 FOR RESIDENTIAL APPLICATION

APPROVED	DWG. NO.
Roger A Schoessel CITY ENGINEER	7–47

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014

FIELD JOINTS REQUIRED ON ALL MODELS

CONCRETE BALLAST MAY BE REQUIRED SEE INSTALLATION INSTRUCTIONS FOR DETAILS



GENERAL NOTES:
THE PUMP ASSEMBLIES ARE LISTED BY ETL TO FACTORY MUTUAL (FM) STANDARDS FOR CLASS 1, DIVISION 1, GROUP D, THE LEVEL CONTROL SYSTEM, INTEGRAL TO THE PUMP, IS INTRINSICALLY SAFE (THE STATION IS NOT PART OF THE LISTING) ALSO AVAILABLE APPROVED BY CSA FOR CLASS 1, DIVISION 1, GROUP D.

DG7-48.DWG

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

E-ONE DX-152
COMMERCIAL APPLICATION

APPROVED
Roger A Schoessel
CITY ENGINEER

DWG. NO. 7-48

DES	DWN	CKD	DATE
WHO	WHO	RAS	12/15/2014