Clear Answers for Clean Water℠

May 12, 2004

Ms. Jo Lynn Traub
Director, Water Division
Region 5, U.S. EPA
77 West Jackson Blvd.
Chicago, IL 60604

Attention: Enforcement and Compliance
And Assurance Branch (WC-15j)

Re: Submittal of Plans of Action
Administrative Order - Docket NO. V-W-04-AO-02

Dear Ms. Traub:

Enclosed please find a response by Joint Permitees City of Duluth and Western Lake Superior Sanitary District to the EPA Administrative Order, part 6b requirement for submittal of plans of action. This response is due by May 14, 2004 in accordance with the EPA extension granted on February 24, 2004. While this document is filed jointly, it presents two separate plans of action for elimination of overflows within the permit area.

We believe this is the final requirement of the Administrative Order and have satisfied all the conditions required by the Order.

The undersigned hereby certify that all statements contained herein are true and accurate to the best of each signatory's knowledge and belief.

City of Duluth

_____
Mark Winson, Chief Administrative Officer

Western Lake Superior Sanitary District

_____
Kurt N.W. Soderberg, Executive Director

cc: Minnesota Pollution Control Agency
Major Waters and Land Section
520 Lafayette Road North
St. Paul, Minnesota 55155-4194
Attention: Michael J. Tibbetts

Duane E. Heaton
WC-15J
USEPA REGION 5
77 West Jackson Boulevard
Chicago, IL 60604-3507

Clear Answers for Clean Water™

CITY OF DULUTH
AND
WESTERN LAKE SUPERIOR SANITARY DISTRICT (WLSSD)

Response To:
EPA Administrative Order
Docket No.: V-W-04-AO-02

Part 6b Requirements

May 12, 2004

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Introduction

Purpose: The Joint Permittees, City of Duluth and the Western Lake Superior Sanitary District (WLSSD) of NPDES/SDS Permit No. MN 0066206, were issued an Administrative Order by the Environmental Protection Agency. The intent of this document is to provide Plans of Action (POA) to the Environmental Protection Agency (EPA) as required by Administrative Order item 6b. by May 14, 2004, as per the formal extension approved by EPA on February 24, 2004. This document, though filed jointly, will present separate POAs developed by each of the Joint Permittees for the elimination of overflows within the Permittees jurisdictions. All other requirements of the Administrative Order are believed to have been submitted previously by the Joint Permittees to the EPA as directed:

The requirements of the POA submittal are as follows:

6. "That within sixty (60) days of receipt of this Order, the Joint Permittees shall submit a detailed Plan of Action (POA) containing a fixed-date schedule describing actions taken, or to be taken, to eliminate bypass/overflow events at all bypass/overflow locations within the Joint Permittees' sanitary sewer system. Although the POA should, to the extent practicable, incorporate the Bypass/Overflow Elimination and Control Program (Part I.C.5. of the Permit) and portions of any other pertinent documents requested in this Order, it should be a separate document and should not simply reference other documents. The POA should include:

    b. A detailed description of capital and operation and maintenance costs of any improvements and/or construction completed, or to be implemented, to eliminate bypass/overflow events from occurring within the Joint Permittees' sanitary sewer system, as required by Part I.B.1. of the Permit."

The Joint Permittees under the requirements of NPDES/SDS MN 0066206 have reached and signed a Joint Agreement defining responsibilities to meet the requirements of the Permit. Under the conditions of the Joint Agreement the Permittees are submitting the individual POAs for the sites they are responsible for.

These POAs will address the elimination of discharges for the bypass/overflow points as listed in Table A of the Permit, which are as follows:

Overflow Point Eliminated/Control Schedule
NPDES/SDS Permit No. MN 0066206

Table A

Bypass/ Overflow Point	Location	Completion Date
1	Duluth Station 16, 37th Ave West	9/30/02
2	Duluth Station 17, Oneota Street	9/30/02
3	Duluth 42nd E. & London Rd. Manhole	9/30/02
4	Duluth 29th E. & 2nd St. Manhole	9/30/02
5	WLSSD Columbus and Arrowhead St. Manhole	9/30/02
6	Duluth Station 26, Jean Duluth Rd.	9/01/03
7	WLSSD Polk St. Station, Central Ave	9/01/03
8	WLSSD Courtland Street Manhole, 25th Ave West	9/01/03
9	Duluth Station 1, 60th Ave East	9/01/03
10	Duluth Station 22, Walnut Street	9/01/03
11	WLSSD Dodge St. Station, 52nd Ave. East	9/01/04
12	Duluth Gary New Duluth Station Manhole	9/01/05
13	WLSSD Lakeside Interceptor, 20th &22nd Ave East	9/01/06
14	Duluth Station 3, 45th Ave East	9/01/06
15	Duluth Station, 20, 88th Ave West	9/01/06
16	WLSSD Endion Station, 18th Ave. East & Waterfront	9/01/06
17	WLSSD East Interceptor, 5th & 3rd Ave East	6/01/07
18	WLSSD Division D Interceptor, Sewer from western portion of service area	6/01/07

Statement of Intent:

By submittal of these POAs, the City of Duluth and the Western Lake Superior Sanitary District are committed to implement these POAs within the prescribed time frame and completion of the activities as described in these plans.

Current Compliance Status:

The City of Duluth and the Western Lake Superior Sanitary District have been working toward the elimination of overflows in the sites listed in Table A of the joint permit. A map of the Western Lake Superior Sanitary Boundaries and the location of the City of Duluth within those boundaries is found in attached Map 1. Map 2 indicates the locations of the overflow sites and Table 1 illustrates the current status of each site. The following sites are believed to be in compliance with the permit and overflows are deemed eliminated:

Overflow Point #	Location
1	Duluth Station 16, 37th Ave West
2	Duluth Station 17, Oneota Street
3	Duluth 42nd E. & London Rd. Manhole
4	Duluth 29th E. & 2nd St. Manhole
5	WLSSD Columbus and Arrowhead St. Manhole
6	Duluth Station 26, Jean Duluth Rd.
8	WLSSD Courtland Street Manhole, 25th Ave West
10	Duluth Station 22, Walnut Street

Since these sites are believed to have been eliminated as overflows the POAs will not address them any further but the plans may contain site specific information on how the elimination was achieved.

The following points are in compliance with the language in the permit; however, the discharges are not eliminated, only controlled. The goals of the Plans of Action are for elimination and therefore, these sites are included in those plans. These three controlled sites are:

Overflow Point #	Location
7	WLSSD Polk St. Station, Central Ave
9	Duluth Station 1, 60th Ave East
14	Duluth Station 3, 45th Ave East

Overflows from the following sites are to be eliminated/controlled by the prescribed permit schedule and will be addressed for elimination in the Plans of Action:

Overflow Point #	Location
11	WLSSD Dodge St. Station, 52nd Ave. East
12	Duluth Gary New Duluth Station Manhole

Overflow Point #	Location (Con't)
13	WLSSD Lakeside Interceptor, 20th & 22nd Ave East
15	Duluth Station, 20, 88th Ave West
16	WLSSD Endion Station, 18th Ave. East & Waterfront
17	WLSSD East Interceptor, 5th & 3rd Ave East
18	WLSSD Division D Interceptor, Sewer from the western portion of the service area

In the Joint Agreement between the Permittees, the City of Duluth has the responsibility of eliminating overflows at points 1, 2, 3, 4, 6, 9, 10, 11, 13, 14, 15, 16, and 17. The Western Lake Superior Sanitary District has agreed to eliminate overflows at points 5, 7, 8, and 18. The WLSSD has also agreed to build control structures if needed at points 7, 11, 13, and 16.

Point 12, the Duluth Gary New Duluth Station manhole overflow site, is being eliminated by the joint efforts of the Permittees by the construction of an overflow storage basin which will be in operation in 2004.

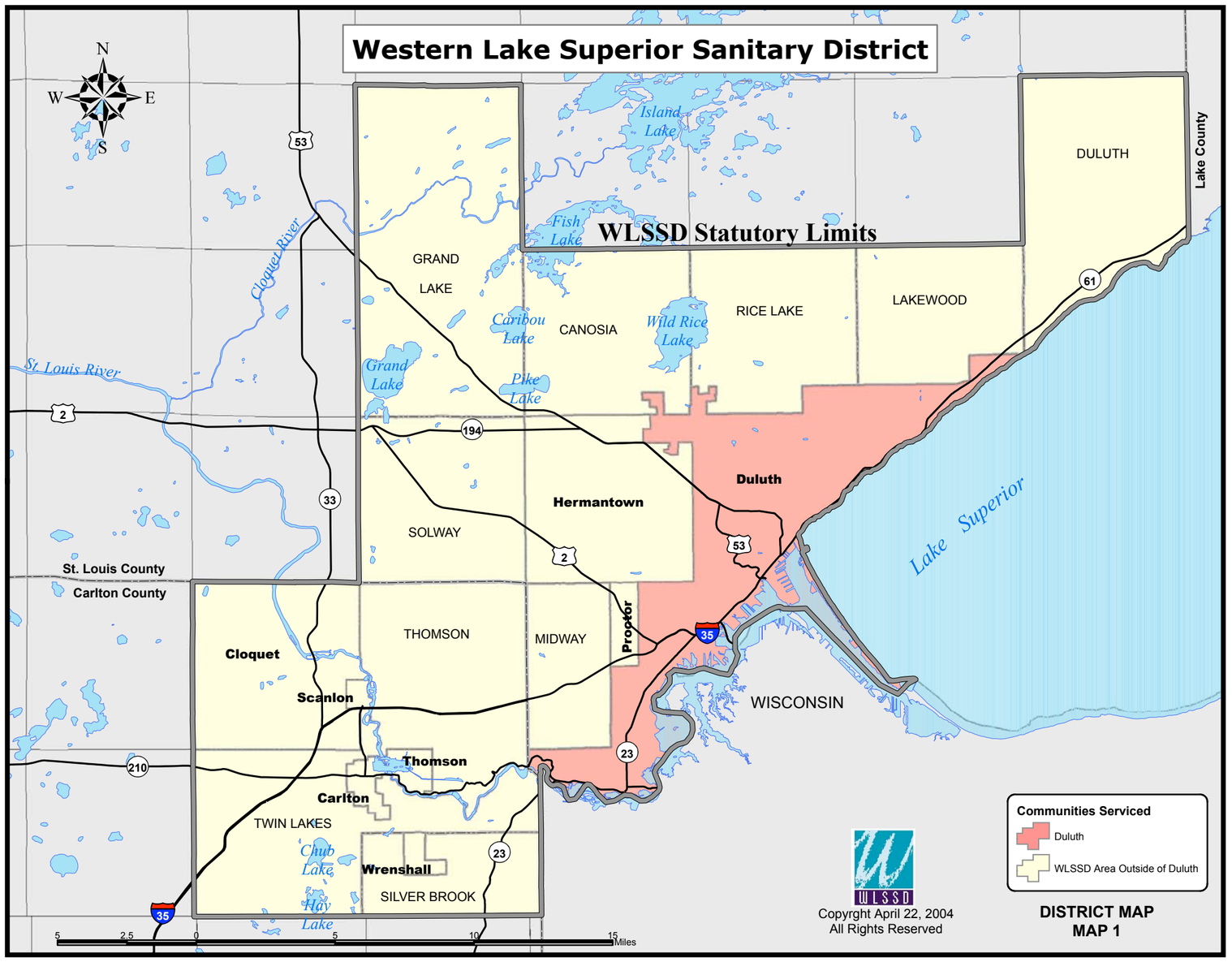
Plans of Action:

In conformance with the Permittees Joint Agreement, each Permittee is submitting a Plan of Action addressing the sites for which they have assumed responsibility. These Plans of Action summarize activities, either current or proposed, for the elements of each Permittees' individual actions. These plans address not just the elimination of overflow sites but also incorporate actions toward the implementation of an improved wastewater conveyance and management system. The anticipated results of the Plans of Action are illustrated in Table 2.

The individual Plans of Action are in the following Appendixes:

Appendix A – City of Duluth

Appendix B – Western Lake Superior Sanitary District


Western Lake Superior Sanitary District
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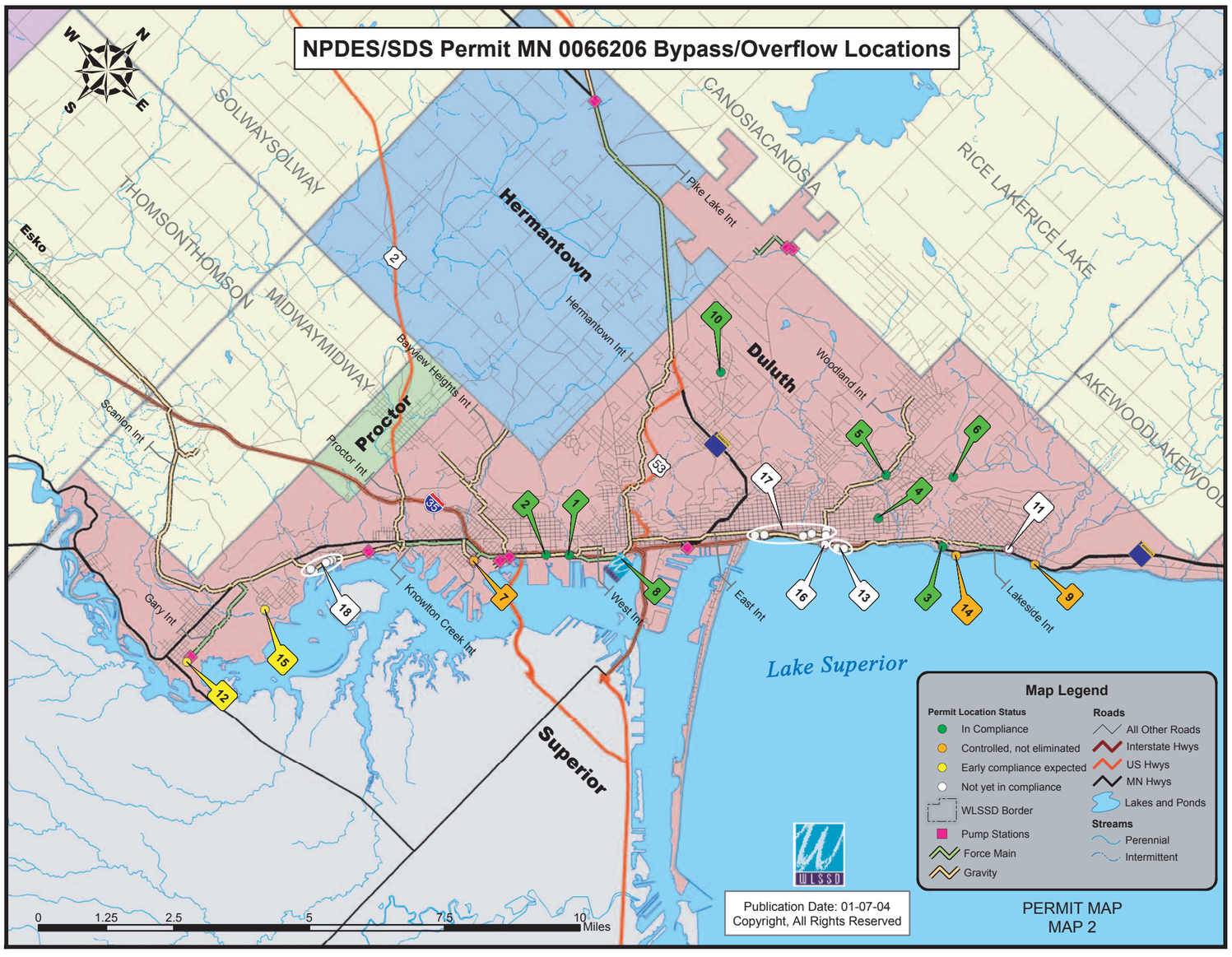
WLSSD Statutory Limits
Island Lake
Fish Lake
Clquet River
St. Louis River
Grand Lake
Caribou Lake
Pike Lake
Wild Rice Lake
Chub Lake
Hay Lake
53
2
33
194
61
35
210
23
GRAND LAKE
CANOSIA
RICE LAKE
LAKEWOOD
DULUTH
Lake County
Duluth
Hermantown
SOLWAY
St. Louis County
Carlton County
THOMSON
MIDWAY
Proctor
Cloquet
Scanlon
Thomson
Carlton
TWIN LAKES
Wrenshall
SILVER BROOK
WISCONSIN
Lake Superior
5 2.5 0 5 10 15 Miles
Communities Serviced
Duluth
WLSSD Area Outside of Duluth
ULSSD
Copyrght April 22, 2004
All Rights Reserved
DISTRICT MAP
MAP 1


NPDES/SDS Permit MN 0066206 Bypass/Overflow Locations
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SOLWAY
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THOMSON
MIDWAY
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CANOSIA
CANOSIA
RICE LAKE
RICE LAKE
LAKEWOOD
LAKEWOOD
Esko
Hermantown
Hermantown Int
Pike Lake Int
Duluth
Woodland Int
Bayview Heights Int
Proctor
Proctor Int
Scanlon Int
Gary Int
Knowlton Creek Int
West Int
East Int
Lakeside Int
Superior
Lake Superior
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6
10
17
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14
3
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16
8
7
18
15
12
0 1.25 2.5 5 7.5 10 Miles
Map Legend
Permit Location Status
In Compliance
Controlled, not eliminated
Early compliance expected
Not yet in compliance
WLSSD Border
Pump Stations
Force Main
Gravity
Roads
All Other Roads
Interstate Hwys
US Hwys
MN Hwys
Lakes and Ponds
Streams
Perennial
Intermittent
WLSSD
Publication Date: 01-07-04
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PERMIT MAP
MAP 2

Current Status of Collection System Overflow Locations Identified in Joint Duluth/WLSSD NPDES Permit

Permit Overflow Pt #	Name of Overflow Site	Owned By:	Compliance Date	Responsible for Control Structure	Responsible for Storage or Elimination	Notes:
1	City Lift Station 16	City	9/30/02	City	City	Last overflow reported in 1998, major sources of I&I located and eliminated. This site is determined to be eliminated but continued monitoring and sources reductions will continue.
2	City Lift Station 17	City	9/30/02	City	City	Last overflow reported in 2002 and the lift station has been reconstructed for increased capactiy. The site will continue to be monitored and source reductions will continue.
3	42nd Avenue East and London Rd	City	9/30/02	City	City	This site has been eliminated due primarily to line maintenance, cleaning and root removals. The last recorded overflow was in 1999.
4	29th Avenue East and 2nd St.	City	9/30/02	City	City	This site has also been eliminated to line maintenance, cleaning and root removals. The last recorded overflow was in 1999.
5	Columbus and Arrowhead Road	WLSSD	9/30/02	WLSSD	WLSSD	Line maintenance performed eliminated overflow, site monitored, further clean water source reductions in service area expected
6	City Lift Station 26	City	9/1/03	City	City	This site is believed to be eliminated due to the reconstruction of the lift station increasing output capacity in 1999.
7	WLSSD Polk Street Station	WLSSD	9/1/03	WLSSD	WLSSD	Control Struture installed September 2003. Foundation drain disconnection program by the City in 2005 and 2006. Elimination expected, but WLSSD responsible for storage structure, if necessary.
8	WLSSD Main Plant Site	WLSSD	9/1/03	WLSSD	WLSSD	Increased wet weather capacity by the installation of a 20 MGD vertical turbine pump in the influent channel.
9	City Lift Station 1	City	9/1/03	City	City	Control Stucture installed in 1999 and this basin is the site of the 2004 pilot project for lateral disconnection. Additional considerations are being evalueated in conjunction for eliminations with points 11 and 14. See Duluth's POA.
10	City Lift Station 22	City	9/1/03	City	City	Eliminated in 2002 with a station reconstruction.
11	WLSSD Lakeside Station (#16)	WLSSD	9/1/04	WLSSD	City	Control structure scheduled for 2004 by WLSSD. Elimination in 2005 by construction of a storage basin. A request has been made to the legislature for State bonding funds.
12	Gary/New Duluth Pump Station	City storm sewer	9/1/05	Joint	Joint	Storage basin is constructed, liner to be installed in spring, 2004 and available for use in mid-summer.
13	WLSSD Lakeside Interceptor Manholes - Lakewalk and Water Street	WLSSD	9/1/06	WLSSD	City	Control structure in 2006 by WLSSD will eliminate by moving overflow to Point 16.
14	City Lift Station 3 - 45th Avenue East	City	9/1/06	City	City	Control structure installed in 1999. Elimination in 2005 by combination storage basin for three overflow locations.
15	City Lift Station 20 - Morgan Park	City	9/1/06	City	City	Lift station and collection system currently undergoing a complete reconstruction, construction estimated completion by 2004
16	WLSSD Endion Station - Lakewalk	WLSSD	9/1/06	WLSSD	City	Control structure in 2006 by WLSSD. Footing drain disconnections from 2003 to 2005, Service connection rehabs 2005 - 2013, and elimination by 2016 via storage basin in 2013.
17	WLSSD East Interceptor Manholes - East Superior Street (Pickwick, 3rd Avenue E)	WLSSD	6/1/07	WLSSD		Control structure in 2005 by WLSSD. Footing drain removal program in these basins from 2006 to 2014. Elimination expected by 2016 via storage constructed in 2013.
18	WLSSD Division D Manholes - Sappi site to Riverside	WLSSD	6/1/07	WLSSD	WLSSD	Elimination expected by 2007 due to source elimination by municipalities and industry.

In compliance	Controlled, not eliminated	Early compliance expected	Not yet in compliance

Prepared by Kurt Soderberg
Modified 5/10/04

Table 1

Final Status of Collection System Overflow Locations Identified in Joint Duluth/WLSSD NPDES Permit

Permit Overflow Pt #	Name of Overflow Site	Owned By:	Compliance Date	Responsible for Control Structure	Responsible for Storage or Elimination	Notes:
1	City Lift Station 16	City	9/30/02	City	City	Last overflow reported in 1998, major sources of I&I located and eliminated. This site is determined to be eliminated but continued monitoring and sources reductions will continue.
2	City Lift Station 17	City	9/30/02	City	City	Last overflow reported in 2002 and the lift station has been reconstructed for increased capacity. The site will continue to be monitored and source reductions will continue.
3	42nd Avenue East and London Rd	City	9/30/02	City	City	This site has been eliminated due primarily to line maintenance, cleaning and root removals. The last recorded overflow was in 1999.
4	29th Avenue East and 2nd St.	City	9/30/02	City	City	This site has also been eliminated to line maintenance, cleaning and root removals. The last recorded overflow was in 1999.
5	Columbus and Arrowhead Road	WLSSD	9/30/02	WLSSD	WLSSD	Line maintenance performed eliminated overflow, site monitored, further clean water source reductions in service area expected to eliminate the overflow
6	City Lift Station 26	City	9/1/03	City	City	This site is believed to be eliminated due to the reconstruction of the lift station increasing output capacity in 1999.
7	WLSSD Polk Street Station	WLSSD	9/1/03	WLSSD	WLSSD	Control Structure installed September 2003. Foundation drain disconnection program by the City in 2005 and 2006. Elimination expected, but WLSSD responsible for storage structure, if necessary.
8	WLSSD Main Plant Site	WLSSD	9/1/03	WLSSD	WLSSD	Increased wet weather capacity by the installation of a 20 MGD vertical turbine pump in the influent channel.
9	City Lift Station 1	City	9/1/03	City	City	Control Structure installed and this basin is the site of the 2004 pilot project for lateral disconnection. Additional considerations are being evaluated in conjunction for eliminations with points 11 and 14. See Duluth's POA.
10	City Lift Station 22	City	9/1/03	City	City	Eliminated in 2002 with a station reconstruction.
11	WLSSD Lakeside Station (#16)	WLSSD	9/1/04	WLSSD	City	Control structure scheduled for 2004 by WLSSD. Elimination in 2005 by construction of a storage basin.
12	Gary/New Duluth Pump Station	City storm sewer	9/1/05	Joint	Joint	Storage basin intended to eliminate overflow potential; in service by midsummer 2004. Foundation drain disconnection program and/or service connection rehabilitation will occur after 2016.
13	WLSSD Lakeside Interceptor Manholes - Lakewalk and Water Street	WLSSD	9/1/06	WLSSD	City	Control structure in 2006 by WLSSD will eliminate by moving overflow to Point 16.
14	City Lift Station 3 - 45th Avenue East	City	9/1/06	City	City	Elimination in 2005 by combination storage basin for three overflow locations.
15	City Lift Station 20 - Morgan Park	City	9/1/06	City	City	Lift station and collection system rehabilitation will eliminate the overflow from this station, construction estimated completion by 2004.
16	WLSSD Endion Station - Lakewalk	WLSSD	9/1/06	WLSSD	City	Control structure in 2006 by WLSSD. Footing drain disconnections from 2003 to 2005, Service connection rehabs 2005 - 2013, and elimination by 2016 via storage basin in 2013.
17	WLSSD East Interceptor Manholes - East Superior Street (Pickwick, 3rd Avenue E)	WLSSD	6/1/07	WLSSD		Control structure in 2005 by WLSSD. Footing drain removal program in these basins from 2006 to 2014. Elimination expected by 2016 via storage constructed in 2013.
18	WLSSD Division D Manholes - Sappi site to Riverside	WLSSD	6/1/07	WLSSD	WLSSD	Elimination expected by 2007 due to source elimination by municipalities and industry. If modeling shows continued presence of high peak flow potential, WLSSD will build storage facility.

In compliance	Controlled, not eliminated	Early compliance expected	Not yet in compliance

Prepared by Kurt Soderberg
Modified 5/10/04

Table 2

City of Duluth

Plan of Action

EPA Administrative Order
Docket No.: V-W-04-AO-02

Part 6b Requirements

May 2004

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9	-- Long Term Capital Improvement Program Infrastructure Replacement Lift Station Upgrades
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Exhibit A – Annual Expenditures
Exhibit B – Footing Drain Disconnection & Service Lateral Repair Schedule

City of Duluth

Introduction/Background

The City of Duluth has previously documented the activities of the City's Sanitary Sewer Collection System in its Comprehensive Sewer Plan - originally prepared in July 2000 and most recently updated in November 2003, and included as part of the previous submittals provided to the Environmental Protection Agency as required under Item 6.a. of the Administrative Order.

The stated purpose of the City's Comprehensive Sewer Plan is to serve "*as a guiding document for all activities of the Sanitary Sewer Utility and is intended to provide a reference for both short and long term decision making.*" The Plan was modeled on recommended components of the Capacity, Management, Operations and Maintenance Program (CMOM) program, and both outlines existing conditions and develops strategies for continual improvement of the Utility. The Comprehensive Sewer Plan is a working document, and addresses both ongoing activities and new programming to comply with CMOM requirements. In addition, the Plan incorporates the following focus areas (i.e., "goals") of the City's Sanitary Sewer Utility:

1. An effective predictive maintenance plan.
2. A progressive Sanitary Sewer Overflow (SSO) prevention program.
3. Rapid and efficient customer service response.
4. Ongoing capital improvement and utility upgrade planning.
5. Equitable rate structuring and utility cost distribution.

The City's Comprehensive Sewer Plan (again based on a CMOM focus) will serve as the core of the City's Plan of Action relative to eliminating and preventing sanitary sewer overflows. Additional specified components of the Plan of Action will include an expanded long-term capital improvement plan, an enhanced Inflow & Infiltration (I/I) reduction program, and Sanitary Sewer Overflow (SSO) storage facility construction. As an integral part of the City's Plan of Action, Engineering and Utility Operations staff will meet as least annually (and more often as necessary) to review the effectiveness of both the Comprehensive Sewer Plan and the final Plan of Action, and to make appropriate adjustments to both as our information base increases and new and/or better technologies become available.

The City's Plan of Action was developed within a twelve (12) year time schedule. This time frame was chosen after investigating all the reasonable potential opportunities available to accomplish the task of total elimination of sanitary sewer overflows - including technical, personnel and financial constraints involved in meeting these requirements.

General Implementation Strategies

The City of Duluth is proposing to incorporate the following strategies into its Plan of Action for the term of the Plan (2004 to 2016):

Comprehensive Sewer Plan

As previously noted, the City's Comprehensive Sewer Plan serves as the basis for all current and ongoing activities relative to the City's Sanitary Sewer Utility, and therefore will also serve as the core of the City's Plan of Action relative to eliminating and preventing sanitary sewer overflows.

As contained either within or in conjunction with the Comprehensive Sewer Plan, the following existing programs will continue to focus in great part on the reduction and elimination of sanitary sewer overflows.

Predictive Maintenance Program

A. Cleaning: The City's current regular cleaning program involves the cleaning of all public sewer mains on a five-year revolving basis. Annually, supervisory staff meets to review the past year's activity and schedule routine maintenance. In addition, time is allocated within the schedule for emergency maintenance issues. The City's existing work order tracking system is currently being updated to accept additional information relative to system cleaning, and to allow a better tracking mechanism. In addition, Utility Operations staff is currently working with the Geographic Information System (GIS) staff to establish direct GIS links that will allow for visual tracking of cleaning patterns for future planning in support of the Plan of Action.

B. Televising Lines (by Closed Circuit Television): The Sanitary Utility maintains a closed circuit television (CCTV) truck and has televised all the sanitary sewer lines in the City, with the results maintained in video/CD/DVD files. In addition, log sheets with comments are produced at the time a line is televised. As part of the Plan of Action, a procedure for reviewing television tapes in areas of overflows is being developed to insure that information is acted on promptly. In addition, CCTV crews will be receiving additional training in order to better work cooperatively (a) with Utility Operations supervisory staff to assess the condition of lines and rate repair priorities - with emphasis those lines contributing inflow and infiltration receiving the highest priority; and (b) with Engineering staff to assess lines for capital projects.

C. Flow Monitoring: Sanitary Sewer lines are monitored for flows using flow monitoring devices placed both at strategic points in the system, and at the site of every identified City overflow. New flow monitoring equipment is being purchased in 2004 to expand these efforts. As part of the Plan of Action, Utility Operations and Engineering staffs are developing a flow-monitoring program to support the Capacity Modeling Program, with additional flow monitors to be purchased as part of this expanded activity. In addition, the City has installed rain gauges downstream of identified SSO locations to more accurately track rain-related bypasses, and the locations and types of rain gauges are being reviewed to develop the best tracking as part of the Plan of Action.

D. Lift Station Maintenance: A crew of lift (pumping) station operators performs maintenance on a regular schedule at the City's 44 lift stations. In addition, the City has in place a SCADA system to track and report problems with lift stations. The system is installed in 37 of 44 lift stations and will be installed in additional pump stations if deemed warranted. The City has also purchased portable generators to address power failure in the lift stations, and has in place an emergency plan based on the capacity of the lift stations that would allow utility staff to insure continuous flow of wastewater by using the portable generators to pump down lift stations wells. The plan as written in 1999 was used successfully following a major ice storm in the spring of 2002.

E. Capital Maintenance: All equipment utilized by the Sanitary Sewer Utility receives regularly scheduled maintenance to insure that it is readily available to support both regular and emergency maintenance activities.

F. Upgrading of Infrastructure: Records are maintained of all infrastructure. Based on observations during cleaning, televising of lines and flow monitoring, decisions are made for upgrading of structures in a timely manner. These upgrades are reviewed with Engineering, prioritized and included in the Capital Improvement Plan. As part of the Plan of Action, long-term capital infrastructure improvements will be further defined – both within the Capital Improvement Program included in the Comprehensive Sewer Plan, and as a stand-alone strategy component within this Plan of Action.

Inflow and Infiltration Reduction Program

The City recognizes that Inflow and Infiltration (I/I) reduction is essential to maintaining a cost effective, healthy and safe municipal sanitary sewer system, and the City's I/I Reduction Program has been in operation since the early 1990's. The program addresses the private components of inflow and infiltration - most specifically connections of footings and roof drains, and leaking sanitary sewer laterals. As part of the Plan of Action, continued and increased efforts will focus on I/I source reduction, both as an existing component of the Comprehensive Sewer Plan, and as a stand-alone strategy within this Plan of Action.

Within the Comprehensive Sewer Plan, the existing I/I Reduction Program includes the following:

A. Disconnection of roof drains – as mandated by current City ordinances - through ongoing surveys and follow-up contacts by compliance officers.

B. Disconnection of footing drains (which were allowed up to 1977) through a grant program established by the City to assist homeowners with associated costs – generally ranging from $1,200 to $2,000 per home.

C. Monitoring and eliminating illegal connections to the sanitary sewer system through the use of dye and smoke testing, closed-circuit televising, and regular system maintenance inspections.

D. Providing information and assistance to the public to make them aware of I/I problems and methods for removal.

E. Development of Sanitary Sewer Overflow (SSO) storage facilities (to be discussed further as a stand-along strategy in this Plan of Action).

F. Development of a sanitary sewer lateral lining demonstration project (to be discussed further as part of the stand-alone "I/I Source Reduction" strategy in this Plan of Action).

Capital Improvement Program

The City's Sanitary Sewer Utility has an ongoing five-year capital improvement plan that considers both infrastructure and equipment replacement/rehabilitation. In addition, the Utility works closely with the City's comprehensive Street Improvement Program (SIP) to insure that infrastructure considerations are part of the decision-making process for SIP project identification and programming. Capital improvements to the City's sanitary sewer system will be a part of the Plan of Action, both as an existing component of the Comprehensive Sewer Plan, and as a stand-alone strategy within this Plan of Action.

Components of the existing Capital Improvement Program include:

A. Purchasing of equipment to increase the efficiency and quality of maintenance and construction processes.

B. Advance scheduling of non-emergency repairs and improvements.

C. Use of appropriate construction measures to insure the durability of the system.

D. Training of employees in proper methods of construction and equipment usage.

Emergency Repair and Cleaning Response Program

Despite proactive efforts to maintain the City's sanitary sewer system, it is recognized that emergency repairs are required, and must be addressed on a priority basis. Consequently, Utility Operations maintains both emergency repair and cleaning crews on call to respond to these situations. This component of the City's Comprehensive Sewer Plan includes the following:

A. Emergency Cleaning: Emergency cleaning requirements may be the result of private lateral/system backup into basements or sanitary sewer overflows into the

street. Calls received are dispatched directly to appropriate crews for immediate response and action.

B. Emergency Repairs: Emergency repairs can come as the result of storms or unpredicted collapse of lines, and again are dispatched directly to appropriate crews on an immediate response priority.

C. Spill Reporting: The City reports all spills and discharges to the State Duty Officer as per current reporting requirements, and follows up by filing a detailed incident report.

Capacity Modeling

In conjunction with the Comprehensive Sewer Plan, the City has in place a System Evaluation and Capacity Assurance Plan (SECAP) to control, eliminate and prevent sanitary sewer overflows within the City's component of the joint WLSSD/City sanitary sewer system. Under the City's Comprehensive Sewer Plan, the City's sanitary sewer system was originally divided into 23 basins, and flow/capacity analysis was undertaken using a HYDRA model. More recently, the system model has been re-divided into 30 basins and the City is working with an engineering consultant to review the existing flow/capacity model on a basin-by-basin basis. The results of this review will assist in refining the City's sanitary sewer system model, and will also provide additional information to be used in its overall I/I source reduction program.

Public Education and Outreach

In 2003 the City began a public outreach program that focuses on alerting residents to their role in reducing sanitary sewer overflows. The program has developed brochures providing information on the Inflow and Infiltration Program, and information on home and business maintenance activities to prevent blockage in sanitary sewers. The City has purchased a video illustrating the problems of inflow and infiltration, and developed two acrylic models to explain the problem – all of which are used regularly in public education settings.

The City of Duluth has two web sites that provide information on the Inflow and Infiltration problem. The City web site – www.ci.duluth.mn.us – provides basic information and contact numbers. The educational web site – www.duluthstreams.org –provides additional information and educational links to other resources.

Inflow & Infiltration Source Reduction

As previously stated in this Plan of Action, the City's existing Comprehensive Sewer Plan includes as a component an "Inflow and Infiltration Reduction Program". However,

as the City strongly believes that Inflow & Infiltration (I/I) reduction is the most critical aspect of the elimination and prevention of sanitary sewer overflows, it has been included as a stand-alone strategy within this Plan of Action.

Following is expanded information regarding the three components of the City's I/I source reduction efforts that are included in this strategy – roof drain disconnections, footing drain disconnections and sewer lateral rehabilitation/repair.

Roof Drain Disconnection Program

In the mid-1990's, the City launched an intensive program to disconnect roof drains. City Meter Readers were trained to identify sources of I/I from roof connections and yard drains. Over a three-month period, all properties were inspected, and those that appeared to be contributing I/I were identified. Water Quality Specialists then followed-up with individual building owners, and the program achieved disconnection of almost all roof drain connections. The program is on going and continues to insure the disconnection of roof drains that were not identified previously.

Footing Drain Disconnection Program

In 1977, City ordinances were updated to ban the connection of footing drains to the sanitary sewers. However, as more than 75% of the homes in the City are older than 30 years, a significant portion did not meet code. In 1995, the City began a formal program for the disconnection of footing drains. The disconnection program provides for removal of I/I at the source and thus is the most effective long-term component for eliminating the problem.

The disconnection program was originally a voluntary program that provided grant funding to homeowners to disconnect foundation drains from the sanitary sewer and install sump pumps. In the fall of 2003, the ordinance was revised to make disconnection mandatory on a sanitary sewer drainage basin-by-basin approach. Currently the City has inspected over 90% of the homes in basins 1, 2, 3, 4, and 5.

As part of the Plan of Action, the City will inspect approximately 850 homes a year in order to complete the planned disconnection of over 500 homes each year, with those basins associated with bypasses to be targeted first. Where homes have been identified as contributing I/I from footing drains, disconnections have been made. In 2004, the utility will complete work in basins 1-5, and begin work in basin 6. The overall schedule is further outlined in Exhibit B of this Plan of Action.

In fall 2003, City ordinances were also revised to require inspections of all rental properties, and to require property sellers to inform buyers whether or not their properties are in compliance. These ordinances are being reviewed for further changes at present as part of the Plan of Action.

Sewer Lateral Repair Program

In 2003, the City began a pilot program to measure the effectiveness of lining laterals in removing I/I. The City has targeted a neighborhood of 100 homes. The neighborhood of older homes recently had City sanitary sewer lines replaced as part of the Street Improvement Program. In addition, this neighborhood had high participation in the sump pump program so that almost all homes have sump pumps. The laterals of all homes in this area have been televised. Based on evaluation of the information from the televising, the City will either line or replace the laterals from 40 of the homes contributing the highest I/I flows.

The demonstration lateral repair program will be evaluated through additional flow monitoring and televising during wet weather following lateral replacement. After the pilot program is completed and evaluated for effectiveness, the City will review the results and determine future action. The City is estimating that 100 laterals will be replaced yearly as part of the Plan of Action during the 12-year program. The effectiveness of the program will be evaluated by on-going televising and flow monitoring, and the program will be adjusted dependent on demonstrated results. In addition, the lateral repair program will be used in conjunction with the City's capital improvement program to insure that sanitary sewer main and lateral replacement/repairs are addressed in a coordinated manner for maximum effectiveness and cost efficiency.

Long Term Capital Improvement Program

As previously stated in this Plan of Action, the City Comprehensive Sewer Plan includes a "Capital Improvement Program" that has provided for significant upgrades to date to the City's "public" sanitary sewer system (i.e., mains, manholes, etc.) to insure that that I/I contributions from the City's system are minimized. However, the City strongly believes that the aging of the existing public infrastructure will require an even greater focus on system rehabilitation and replacement. Therefore, an expanded long-term capital improvement program has been included as a stand-alone strategy within this Plan of Action.

The City's overall long-term infrastructure planning is based on a five-year Capital Improvement Plan. Based on information from evaluation of the existing system and evaluation of future needs, the long-term capital program identifies major projects for improving the sanitary sewer system. Decisions are made based on system capacity, residential and commercial development, existing system condition, and other factors. Again, the plan is based on a five-year projection, with Engineering and Utility Operations staff meeting annually to review and update the plan. The plan also is developed in conjunction with the City's Street Improvement Program, both directing the locations of projects and evaluating the need for sewer improvements in identified areas.

Infrastructure Replacement

In 2002, the Mayor of Duluth established a Task Force to provide citizen involvement and input into the assessment of the City's sanitary sewer and water infrastructure, and to provide direction and future policy as to its long-term maintenance and replacement. As an outcome of the Task Force efforts, the following recommendations were made and subsequently implemented:

1. *Establish significantly higher capital reinvestment levels for infrastructure preservation – to be funded through utility rate adjustments.*
2. *Establish segregated revenue accounts for capital expenditures and debt service to increase funding visibility, and to create stable and reliable funding environment.*
3. *Increase water utility revenues approximately $970,000 through a 3-year / 5% per year rate increase, which in turn would provide $2,025,000 annually for capital improvements.*
4. *Increase sanitary sewer utility revenues approximately $1,030,000 through a 3-year / 3% per year rate increase, which in turn would provide $2,200,000 annually for capital improvements.*
5. *Develop a financial management policy for capital spending which balances direct capital expenditure (pay as you go) with debt financing (pay as you use), and also monitors the interest rate environment for favorable debt financing and refinancing opportunities.*
6. *Initiate an aggressive legislative advocacy effort to increase State and Federal assistance with infrastructure reinvestment.*

Through the implementation of these recommendations, the City has been able to expand its efforts in upgrading its sanitary sewer system replacement program – especially as it relates to increased funding generated by the targeted 3-year / 3% per year sanitary sewer rate increase which will generate an additional $1,030,000 per year for system rehabilitation and replacement

Lift Station Upgrades

In 1995, the City established a program to upgrade a minimum of two sanitary sewer lift (pump) stations per year. This schedule was developed following a comprehensive study of all lift stations by an outside consulting firm. The study reviewed electrical, mechanical and structural issues, and the related recommendations have been used to identify capital improvement needs for specific stations. Lift station upgrades continue to be programmed as part of the City's annual Capital Improvement budget, and in 2005 the City plans to review the status of the overall study goals and make adjustments as necessary. In addition, the City is currently reviewing power reliability issues at its lift stations, and will be proceeding with a comprehensive analysis and expected plan to

install on-site electrical generators at key lift stations within its sanitary sewer system.

Sanitary Sewer Overflow Storage Facilities

As previously outlined, reduction of Inflow & Infiltration (I/I) from surface and/or groundwater sources – especially during precipitation/runoff events – has and will continue to be the primary focus of the City's efforts to both eliminate and prevent sanitary sewer overflows (SSO's). However, given the continued aging – and related deterioration – of both the public and private components of the City's sanitary sewer system, the City recognizes that the construction of SSO storage facilities at selected locations will expectedly be a necessary part of our long-term SSO elimination and prevention strategy.

The location and size of SSO storage facilities to be constructed will be based on the results off the City's ongoing and enhanced efforts to achieve significant I/I source reduction (as previously discussed in this Plan of Action) within specified sanitary sewer drainage basins, and is further outlined later in this Plan of Action on a location-by-location basis in the "Site-Specific Elimination Activity" section.

Site-Specific Elimination Activity

The City of Duluth (City) has a Joint Agreement with the Western Lake Superior Sanitary District (WLSSD) outlining the responsibilities of each entity in the elimination of overflows as listed in NPDES/SDS Permit No. MN0066206 Table A. The City of Duluth has agreed to eliminate overflows at points 1, 2, 3, 4, 6, 9, 10, 11, 13, 14, 15, 16, and 17. Point 12, the Duluth Gary/New Duluth Station Manhole overflow site is being eliminated by the joint efforts of the Permittees by the construction of a storage basin which will be in operation in 2004.

As will be further described in this section, the City of Duluth believes that overflows at six of the fourteen points listed above have been eliminated, and will be further prevented through ongoing efforts as previously described in "General Implementation Strategies" – most specifically involving (a) the Comprehensive Sewer Plan, (b) Inflow and Infiltration Source Reduction and (c) the Long Term Capital Improvement Program. In addition, the City expects that overflows at points 12 and 15 will be eliminated by the end of this year due to current ongoing construction/reconstruction projects combined with implementation of the General Implementation Strategies noted above.

For elimination of overflows at the remaining six sites within the proposed 12-year time frame, the City intends to focus its Plan of Action on a progressive process involving the following strategies:

1. The City will continue to address the overall prevention of sanitary sewer overflows through the ongoing activities outlined in its Comprehensive Sewer Plan and the Long Term Capital Improvement Program.

2. The City will continue to address I/I reduction on a basin-by-basin basis through its Inflow and Infiltration Source Reduction efforts. In those basins already included in the footing drain disconnection program, these efforts will include the continuation of this program to a maximum saturation level. In those basins not yet targeted, these efforts will include implementation of the footing disconnection program (to a maximum saturation level), followed by the implementation of the service lateral repair program.

3. The City will monitor the success of its I/I source reduction efforts on an annual basis through system modeling in order to determine the level of overall I/I reduction achieved within the basin(s) contributing to each overflow site. However, current estimates indicate that the footing drain disconnection program and/or the service lateral repair program may not achieve full elimination of sanitary sewer overflows at the six remaining sites. Consequently, the City will plan to construct sanitary sewer overflow (SSO) storage facilities as necessary – and at a capacity to be based on I/I source reduction modeling – to fully eliminate current and prevent future overflows.

Following is a description of the City's actions at each specific site:

Point 1 - Duluth Station 16, 37th Avenue W:

This overflow site is believed to have been eliminated. It is located near the intersection of 37th Avenue West and Oneota Street. The last overflow was recorded in 1998, and since then a major identified source of inflow and infiltration has been eliminated by disconnecting roof drains at a large manufacturing facility upstream of this overflow point.

This site will continue to be monitored, and additional I/I source reduction work as previously described in this Plan of Action will insure that no future overflows will occur at this location.

Point 2 - Duluth Station 17, Oneota Street:

This overflow site is believed to have been eliminated. It is located near the intersection of Oneota Street and 41st Avenue W. The last overflow was recorded in 2002, and since then the City has reconstructed this lift station – increasing the station pumping capacity from 700 gallons per minute to 1,000 gallons per minute.

This site will continue to be monitored, and additional I/I source reduction work as previously described in this Plan of Action will insure that no future overflows will occur at this location.

Point 3 - Duluth 42nd Avenue E & London Road Manhole:

This overflow site is believed to have been eliminated. It is located in the intersection of 42nd Avenue East and London Road. The last overflow was recorded in 1999, and since then the City has completed additional maintenance and cleaning activities to remove debris and tree roots downstream of the overflow point.

This site will continue to be monitored, and additional I/I source reduction work as previously described in this Plan of Action will insure that no future overflows will occur at this location.

Point 4 - Duluth 29th Avenue E & 2nd Street Manhole:

This overflow site is believed to have been eliminated. It is located in the intersection of 29th Avenue East and 2nd Street. The last overflow was recorded in 1999, and since then the City has completed additional maintenance and cleaning activities to remove debris and tree roots downstream of the overflow point.

This site will continue to be monitored, and additional I/I source reduction work as previously described in this Plan of Action will insure that no future overflows will occur at this location.

Point 6 - Duluth Station 26, Jean Duluth Road:

This overflow site is believed to have been eliminated. It is located near the intersection of Jean Duluth Road and Cherie Lane. This lift station was reconstructed in 1999, and the station's firm pumping capacity has been increased from 88 gallons per minute to 175 gallons per minute. The last overflow was recorded in 2002, and was a result of a mechanical equipment failure not associated with inflow/infiltration or wet weather flows.

This site will continue to be monitored, and additional I/I source reduction work as previously described in this Plan of Action will insure that no future overflows will occur at this location.

Point 9 - Duluth Station 1, 60th Avenue E:

This overflow site is located near the intersection of 60th Avenue E and London Road, and is in compliance with the current NPDES/SDS permit following reconstruction of the lift station and installation of a control structure in 1992. In addition, there has been significant reduction of I/I into this station as a result of the City's completion of the footing drain disconnection program within the contributing sewer basin. This program however has not fully eliminated the sanitary sewer overflows at this location.

In late 2003, the City began a pilot sewer lateral repair program in the contributing sewer basin upstream from this overflow site. Previously, the City has previously completed significant capital improvements to the public sanitary sewer system in this basin, and through the footing drain disconnection program had achieved over 90% disconnection of contributing footing and foundation drains. Consequently, this basin was determined to be the optimum location for the pilot sewer lateral repair program. The initial phase of the program (completed in 2003) involved closed-circuit televising of identified sewer laterals to quantify and prioritize the estimated level of I/I contribution attributable to the sewer lateral itself. The second phase of the program (to be completed in 2004) will involve the repair of 40 high-priority sewer laterals through the use of a "cure-in-place" piping lining process. Overall outcomes of the pilot program (including I/I reduction levels and related costs) will serve as determining factors in the expansion of this program within this and other targeted sewer basins.

In addition, the City – in working with engineering consultants on a planned SSO storage facility at overflow Point 11 to meet the compliance date requirement of the current NPDES/SDS permit – has recently identified a opportunity to reduce/eliminate overflows from three individual points (9, 11 and 14) through the construction of a single SSO storage facility near overflow Point 11. (See Point 11 for additional information.)

Under this identified opportunity, the outflow from Duluth Station 1 would be re-routed from Duluth Station 3 (overflow Point 14) to a new pumping station / storage facility near the current site of WLSSD Dodge Street Station (Point 11). This facility would be sized to accommodate the majority of wet weather flows from Duluth Station 1, and would thereby significantly reduce sanitary sewer overflows at Point 9, as well as eliminating overflows at Point 14.

The City and its consultants are currently reviewing historical overall wet weather flow volumes through Duluth Station 1 in order to determine if the combination of the proposed storage facility and modifications to Duluth Station 1 would eliminate all overflows at this location. Should this review indicate that it would not, and should the sewer lateral repair program as previously described not attain a sufficient level of I/I reduction in the sewer basin upstream of Duluth Station 1, the City would then proceed with the design and construction of a second SSO storage facility near Point 9 that would be properly sized to meet the necessary excess capacity requirements. Although no formal analysis has been completed on this facility to date, the estimated maximum capacity would be approximately 800,000 gallons at a cost of $3.0-$4.0 million.

Under this Plan of Action, sanitary sewer overflows at Point 9 would be reduced and/or possibly eliminated by year-end 2005 following the construction of the SSO storage facility adjacent to WLSSD Dodge Street Station, but fully eliminated by year-end 2007 following the completion of the sewer lateral program in this sewer basin and/or the construction of the SSO storage facility adjacent to Duluth Station 1 (if necessary).

Point 10 - Duluth Station 22, Walnut Street:

This overflow site is believed to have been eliminated. It is located on Walnut Street west of Swan Lake Road. The last overflow was recorded in 2002, and since then the lift station has been reconstructed – increasing the capacity by 100% through the installation of a second sanitary sewer force main out of the station.

This site will continue to be monitored, and additional I/I source reduction work as previously described in this Plan of Action will insure that no future overflows will occur at this location.

Point 11 - WLSSD Dodge Street Station, 52nd Avenue E:

This overflow site is located at the intersection of 52nd Avenue E and Dodge Street. There has been significant reduction of I/I into this station as a result of the City's completion of the footing drain disconnection program within the contributing sewer basin. This program however has not fully eliminated the sanitary sewer overflows at this location.

As previously noted under Point 9, the City has been working with engineering consultants on a planned SSO storage facility at overflow Point 11 to meet the compliance date requirement of the current NPDES/SDS permit for this overflow point. Based on initial design parameters, the facility would have a required capacity of approximately 800,000 gallons and an estimated cost of approximately $3.0 million.

However, and as also previously discussed under Point 9, the City and its consultants have recently identified an opportunity to eliminate overflows from three individual points (9, 11 and 14) through the construction of a single SSO storage facility, adjacent pumping station and related system piping additions near overflow Point 11. The City and its consultants are currently in the process of refining the preliminary design of this SSO storage facility, and expect to complete final design of the facility by July 2004. Construction would be expected to begin on this facility in the third quarter of 2004, and be completed in the second quarter of 2005. Based on current estimates, the capacity of this facility would be approximately 1.6 million gallons, and the construction cost would be approximately $4.5 million.

Under this Plan of Action, sanitary sewer overflows at Point 11 would be eliminated by year-end 2005 following the construction of the SSO storage facility, pumping station and related system piping additions adjacent to existing WLSSD Dodge Street Station.

Point 12 - Duluth Gary/New Duluth Station Manhole:

The Gary/New Duluth Station manhole is located in the City's Gary/New Duluth neighborhood. This site overflow is being eliminated by the joint efforts of the Permittees by the construction of an overflow storage basin that has been built and will be lined this spring. The storage basin is expected to be in service preventing all further overflows by mid summer 2004. The overflow storage basin has a design capacity of 1.0 million gallons, and an estimated final construction cost of $430,000.

Under this Plan of Action, sanitary sewer overflows at Point 12 would be eliminated as of year-end 2004 following the completion of the SSO storage facility adjacent to Duluth Gary/New Duluth Station Manhole.

Point 13 - WLSSD Lakeside Interceptor, 20th & 22nd Avenues E:

This overflow site is located at two manholes on WLSSD's Lakeside Interceptor – one at 20th Avenue E and the City's waterfront Lakewalk, and one at 22nd Avenue E and Water Street – both upstream of WLSSD's Endion Station (Point 16).

Because of the proximity of overflow sites 13 and 16, these two locations will be combined within the City's Plan of Action to eliminate overflows. Consequently, site-specific elimination activity for Point 13 is included with Point 16. (See Point 16 for additional information.)

Point 14 - Duluth Station 3, 45th Avenue E:

This overflow site is located near the intersection of 45th Avenue E and London Road, and is in compliance with the current NPDES/SDS permit following reconstruction of the lift station and installation of a control structure in 1999.

As previously discussed under Point 9 and Point 11, the City is currently working with engineering consultants on a planned SSO storage facility at Point 11 that would provide for the elimination of overflows at three individual points (9, 11 and 14) through the construction of a single SSO storage facility and related system modifications near Point 11. This action would eliminate sanitary sewer overflows at Point 14 by re-routing incoming flow from Duluth Station 1 (Point 9) to the new facility. (See Point 9 and Point 11 for additional information.)

Under this Plan of Action, sanitary sewer overflows at Point 14 would be eliminated by year-end 2005 following the construction of the SSO storage facility and related system piping additions adjacent to WLSSD Dodge Street Station.

Point 15 - Duluth Station, 20, 88th Avenue W:

This overflow site is located near the intersection of 88th Avenue W and Hilton Street. The existing lift station at this location is currently being reconstructed as part of a comprehensive $11.3 million sanitary sewer and water utility system replacement project in the City's Morgan Park neighborhood, and is scheduled to be completed in the summer of 2004. This lift station reconstruction, along with related force main improvements, will increase the capacity of the station to a level that will expectedly insure that no future overflows will occur at this location. In addition, replacement of sanitary sewer mains and laterals as part of the utility replacement project will also result in reduced I/I within the contributing sewer basin.

Under this Plan of Action, sanitary sewer overflows at Point 15 would be eliminated by year-end 2004 following the reconstruction of Duluth Station 20 and related sanitary sewer system replacements.

Point 16 - WLSSD Endion Station, 18th Avenue E & Waterfront:

This overflow site is located near 18th Avenue E and the City's waterfront Lakewalk. As previously noted – due to the proximity of overflow sites 13 and 16, these two locations will be combined within the City's Plan of Action to eliminate overflows. Consequently, site-specific elimination activity for Point 13 is included with Point 16.

Under this Plan of Action, the City of Duluth will eliminate overflows at Points 13 and 16 no later than 2013 through the implementation of the following progressive activities as previously described in the "General Implementation Strategies" and the introduction to "Site-Specific Elimination Activity":

1. Ongoing I/I source reduction through the continuation of the footing drain disconnection program within the contributing sewer basins. Based on current estimates, the City anticipates that footing drain disconnection saturation will occur within the contributing sewer basins by the end of 2005, and although I/I will be significantly reduced – overflows will not be fully eliminated.

2. Additional I/I source reduction through the implementation of the service lateral repair program beginning in 2005 and continuing through 2015 – the term of the Plan of Action. Based on current estimates, the City anticipates that although I/I will continue to be significantly reduces through this program – overflows will not be fully eliminated.

3. Construction of one or more SSO storage facilities within the contributing sewer basins no later than 2012. Based on current I/I source reduction estimates through 2012, the total required capacity of SSO storage facilities to eliminate overflows at Points 13 and 16 is estimated at one million gallons.

Under this Plan of Action, sanitary sewer overflows at Points 13 and 16 would be eliminated by year-end 2012.

Point 17 - WLSSD East Interceptor, 3rd & 5th Avenues E:

This overflow site is located at two manholes on WLSSD's East Interceptor - one at 3rd Avenue E and Superior Street, and one at 5th Avenue E and Superior Street.

Under this Plan of Action, the City of Duluth will eliminate overflows at Point 17 no later than 2013 through the implementation of the following progressive activities as previously described in the "General Implementation Strategies" and the introduction to "Site-Specific Elimination Activity":

1. Initial I/I source reduction through the implementation of the footing drain disconnection program within the contributing sewer basins beginning in 2006. Based on current estimates, the City anticipates that footing drain disconnection saturation will occur within the contributing sewer basins by the end of 2014, and although I/I will be significantly reduced – overflows will not be fully eliminated.

2. Additional I/I source reduction through the implementation of the service lateral repair program beginning in 2014 and continuing through 2015 – the term of the Plan of Action. Based on current estimates, the City anticipates that although I/I will continue to be significantly reduces through this program – overflows will not be fully eliminated.

3. Construction of one or more SSO storage facilities within the contributing sewer basins no later than 2013. Based on current I/I source reduction estimates through 2013, the total required capacity of SSO storage facilities to eliminate overflows at Point 17 is estimated at one million gallons.

Under this Plan of Action, sanitary sewer overflows at Point 17 would be eliminated by year-end 2013.

Summary

As previously noted in throughout this document, The City's Plan of Action to eliminate and prevent sanitary sewer overflows will use City's current Comprehensive Sewer Plan (based on a CMOM focus) as the core component and strategy. Additional components of the Plan of Action will include an expanded long-term capital improvement plan, an enhanced Inflow & Infiltration (I/I) reduction program, and Sanitary Sewer Overflow (SSO) storage facility construction. As a further component of the City's Plan of Action, Engineering and Utility Operations staff will meet regularly to review the effectiveness of both the Comprehensive Sewer Plan and the final Plan of Action, and to make adjustments to both as appropriate and/or necessary.

Based on current information, the City has estimated the following totaled 12-year expenditures for the Plan of Action as outlined:

General I/I Reduction (Comprehensive Sewer Plan)	$10.0 million
Footing & Foundation Drain Disconnections (Grants)	$ 9.5 million
Service Lateral Repairs/Rehabilitations	$ 6.4 million
Debt Service on SSO Storage Facilities	$ 9.1 million
I/I Reduction Program Evaluation	$ 1.1 million
TOTAL	$36.2 million

As further detailed in Exhibit A of this Plan of Action, annualized SSO elimination/ compliance costs are projected to increase from $1.91 million in 2004 to $3.86 million by 2015 – the end of the 12-year period.

In addition, the City currently estimates that the total capital improvement expenditures for the 12-year period to specifically address sanitary sewer overflow elimination and prevention will be approximately $30.3 million. (Further details regarding the annual level of expenditures and total capital expenditures can be found in Exhibit A of this Plan of Action.)

The City of Duluth has estimated that a cumulative projected revenue increase of 30% (minimum) will be required to meet the totaled 12-year expenditure levels noted above over the proposed 12-year Plan of Action period. Using as a base the City's current average monthly residential sanitary sewer bill of $39.40 (which is the highest in the upper Midwest and the second-highest for similar-sized cities in the nation – based on a 2002 water and wastewater rate study completed by Raftelis Financial Consulting), the City estimates that the average monthly residential sanitary sewer bill will increase to $51.00 (without inflation) by the end of the proposed 12-year Plan of Action period.

In conclusion, the City of Duluth – as documented in this Plan of Action – is committed to the elimination and prevention of sanitary sewer overflows, and believes that the 12-year Plan of Action as outlined is both comprehensive and implementable given the identified technical, personnel and financial considerations and constraints involved in meeting this goal.

Exhibit A - Annual Expenditures for 12-Year Program

		1995 to 2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Totals
Total Homes - City	25,000															
Total Homes - Target Basins	14,150															
Footing Drain Inspections		4,531	850	850	850	850	850	850	850	850	850	850	260	0	0	13,291
Footing Drain Disconnections		2,624	510	510	510	510	510	510	510	510	510	510	156	0	0	7,880
Service Lateral Repairs		0	40	100	100	100	100	100	100	100	100	100	300	360	360	1,960
Annual Compliance Costs:																
General I/I Reduction Costs			$730,000	$845,000	$845,000	$845,000	$845,000	$845,000	$845,000	$845,000	$845,000	$845,000	$845,000	$845,000	$845,000	$10,025,000
I/I Program Evaluation Costs			$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$1,200,000
Footing Drain Disconnection Costs	@$1800		$918,000	$918,000	$918,000	$918,000	$918,000	$918,000	$918,000	$918,000	$918,000	$918,000	$280,800	$0	$0	$9,460,800
Service Lateral Repair Costs	@$4000		$160,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$1,200,000	$1,440,000	$1,440,000	$6,400,000
Debt Service Payments			$0	$32,000	$710,000	$710,000	$710,000	$710,000	$710,000	$710,000	$710,000	$1,130,000	$1,470,000	$1,470,000	$1,470,000	$9,072,000
Total Annual Compliance Cost:			$1,908,000	$2,295,000	$2,973,000	$2,973,000	$2,973,000	$2,973,000	$2,973,000	$2,973,000	$2,973,000	$3,393,000	$3,895,800	$3,855,000	$3,855,000	$36,157,800
Annual Capital Expenditures:																
Infrastructure Replacement			$340,000	$680,000	$1,030,000	$1,030,000	$1,030,000	$1,030,000	$1,030,000	$1,030,000	$1,030,000	$1,030,000	$1,030,000	$1,030,000	$1,030,000	$11,320,000
Lift Station Upgrades			$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$1,800,000
SSO Storage Facilities			$800,000	$7,200,000						$400,000	$4,000,000	$3,600,000				$16,000,000
(Est. Size in gal.)				2,400,000							1,000,000	1,000,000				
(Location)				(Lakeside)							(Endion)	(East Inter)				
Total Annual Capital Expenditures			$1,290,000	$8,030,000	$1,180,000	$1,180,000	$1,180,000	$1,180,000	$1,180,000	$1,580,000	$5,180,000	$4,780,000	$1,180,000	$1,180,000	$1,180,000	$30,300,000

Notes re: Annual Compliance Costs

1.) General I&I Reduction cost represent costs expended to meet current annual activities as outline in the City's Comprehensive Sewer Plan.

2.) I/I Program Evaluation costs represent costs expended to evaluate Plan of Action results on an annual basis.

3.) Footing Drain Disconnection and Service Lateral Repair costs reflect direct costs associated with each activity.

4.) Debt Service Payment costs reflect debt service on SSO storage basin capital expenditures only. (Infrastructure Replacement and Lift Station Upgrade capital costs to be paid from cash/revenues.)

5.) Totalized Costs are for the 12-Year Program (2004-2015) only. (2016 costs are provided as representative of ongoing activities following the 12-Year Program completion.)

Exhibit B - Footing Drain Disconnection and Service Lateral Repair Schedule for 12-Year Program

	No. of Homes	1995 to 2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Totals
Point 9 - Duluth Station 1																
- Sewer Basin #1	500															
Footing Drain Inspections		491	9													500
Footing Drain Disconnections		301	5													306
Service Lateral Repairs		0	40													40
Point 11 - WLSSD Dodge St Station																
- Sewer Basin #2	1,200															
Footing Drain Inspections		1,172	28													1,200
Footing Drain Disconnections		717	17	0	0	0	0	0	0	0	0	0	0	0	0	734
Service Lateral Repairs													100	120	120	340
Point 16 - WLSSD Endion Station																
(also includes Points 13 & 14)																
- Sewer Basins #3-#6	4,090															
Footing Drain Inspections		2,633	813	644												4,090
Footing Drain Disconnections		1,419	488	386	0	0	0	0	0	0	0	0	0	0	0	2,293
Service Lateral Repairs				100	100	100	100	100	100	100	100	100	0	0		900
Point 17 - WLSSD East Interceptor																
- Sewer Basins #7-#14	6,380															
Footing Drain Inspections		0	0		110	850	850	850	850	850	850	850	260			6,320
Footing Drain Disconnections		0	0	0	66	510	510	510	510	510	510	510	156	0	0	3,792
Service Lateral Rehabs													200	240	240	680
Point 7 - WLSSD Polk St Station																
- Sewer Basins #25-#26	1,980															
Footing Drain Inspections		235	0	206	740											1,181
Footing Drain Disconnections		127	0	124	444	0	0	0	0	0	0	0	0	0	0	695
Service Lateral Repairs																0
TOTALS	14,150															
Footing Drain Inspections		4,531	850	850	850	850	850	850	850	850	850	850	260	0	0	13,291
Footing Drain Disconnections		2,564	510	510	510	510	510	510	510	510	510	510	156	0	0	7,820
Service Lateral Rehabs		0	40	100	100	100	100	100	100	100	100	100	300	360	360	1,960

Notes:

1.) I/I source reduction program assumes 60% of homes inspected in target basins are "I/I contributing" and would be disconnected during term of program.

2.) I/I source reduction efforts in sewer basins #3-#6 would reduce sanitary sewer overflows at Points 13, 14 & 16.

3.) I/I source reduction efforts in sewer basins #25-#26 would reduce sanitary sewer overflows at Point 7 - which by agreement is under WLSSD's responsibility to eliminate.

4.) Due to expected achievement of maximum saturation levels in target basins, footing drain disconnections are shown to be completed in 2014, with related funding transferred to service lateral repairs.

Western Lake Superior Sanitary District

Clear Answers for Clean Water™

Plan of Action

EPA Administrative Order
Docket No.: V-W-04-AO-02

Part 6b Requirements

May 12, 2004

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11 E. SUMMARY

Exhibit A – Municipal Peak Flow Standards Chart

Table A – WLSSD Plan of Action Capital Improvement Planning

Western Lake Superior Sanitary District:

A. INTRODUCTION

The Western Lake Superior Sanitary District (WLSSD) is located in northeastern Minnesota at the western tip of Lake Superior. The WLSSD covers an area of approximately 530 square miles in northeastern Carlton County and southeastern St. Louis County.

The WLSSD's legislative boundaries include eight cities and ten townships. Included are the cities of Duluth, Cloquet, Carlton, Scanlon, Wrenshall, Hermantown, Proctor and Thomson; and the townships of Silver Brook, Thomson, Twin Lakes, Canosia, Duluth, Grand Lake, Lakewood, Midway, Rice Lake, and Solway.

1. Master Planning Process:

The Western Lake Superior Sanitary District has been proactive in anticipation of the new Capacity, Management, Operations, and Maintenance (CMOM) regulations. As a result the WLSSD had included our conveyance system in our Master Planning Process, a comprehensive look at all facilities, which began in 1995. The report on our conveyance system was entitled the "Comprehensive Wastewater Services Master Plan". This process began in 2001 and was completed in August 2003. This plan laid out the groundwork for our future activities to ensure adequate capacities, maintenance, and management in the operation of our conveyance system. It also determined the capital needs in replacement schedules for our infrastructure needs.

A major element of this planning process was to determine the correct amount of capacity that should be provided to our customers and then determine if we were providing that amount. This process led to the formation and adoption of our municipal peak flow standards. These adopted standards ensure that our customers will have adequate peak flow capacities using standard engineering practices. The WLSSD had committed to providing this Level of Service to its customers, not only in the construction of new or upgrading of old systems, but also to use this standard as a level to attain by our customers in their elimination of excess inflow and infiltration (I&I). The Municipal Peak Flow Standards chart is in Exhibit A. By using this Level of Service concept, we can assure our customers that any overflows that result in our system are due to excessive I&I contributions and not due to limited design capacities of our facilities.

2. Infiltration and Inflow Elimination Program:

The Western Lake Superior Sanitary District has experienced high wet weather flows due to the I&I in the communities and industries it serves. As a result, the

WLSSD has taken steps to assist contributors to eliminate excessive I&I. The WLSSD also required customers to submit plans for I&I reductions. These plans are now being updated and reviewed on an annual basis and require additional measures that need to be taken by the contributors before gaining approval by the WLSSD.

B. GENERAL IMPLEMENTATION STRATEGIES

The Western Lake Superior Sanitary District is proposing to implement the following actions toward the elimination of sewage overflows. The major WLSSD Plan elements are summarized as follows:

1. Control System Reliability Improvements

Replace electro-mechanical level controls with programmable logic controllers. Included in the design is multiple level sensing, float system controls with separate panels, multiple input/output connection devices, and control strategies to sense failures, sound alarms and place/return station operation to a safe condition. This will be installed in the Cloquet Pumping Station, Scanlon Pumping Station and Knowlton Creek Pumping Station in 2004. The improved level control design will be installed in other stations as they are upgraded according to the Master Plan. Upgrade of the Polk Street Station and Railroad Street Station will be completed in 2004.

Automated control power switching has been installed in Cloquet Pumping Station, Scanlon Pumping Station, Knowlton Creek Pumping Station, and Endion Pumping Station to insure control power is available when one line of utility power is out of service.

A return-to-utility power circuit has been added to the uninterruptible power supply (UPS) in all stations to insure control power is supplied by utility power after the UPS has been engaged.

2. Automated Primary Power Switching and Generators

The WLSSD has determined that both sources of utility power, where supplied, and installed generation will be provided with automated switching to insure continuous primary power during interruption of one or both sources of utility power. Permanently mounted emergency generators will be installed at Scanlon Pumping Station, Knowlton Creek Pumping Station, Endion Pumping Station, Bristol Street Pumping Station and at the Main Treatment Plant. Generators are included for consideration in the design of other stations as they are upgraded according to the Master Plan. The WLSSD is assuming installation of full-station capacity power generation at the Knowlton Creek Pumping station,

Scanlon Pumping station and other stations and in-plant pumping capacity/essential loads generation capacity at the main treatment plant.

3. Control Structures

Control structures will be installed at four locations to comply with NPDES permit and to control and measure overflows. The structures may ultimately be used in conjunction with overflow storage basins. A control structure was installed at overflow point 7 - Polk St. Station in 2003. Control structures are being designed for four additional locations. These structures would be located at point 11 - WLSSD Dodge St. Station, point 13 – WLSSD Lakeside Interceptor, point 16 – WLSSD Endion Pump Station, and point 17 - East Interceptor.

4. Master Plan Recommendations

The WLSSD intends to follow the recommendations of the Master Plan for annual replacement/refurbishment of pump stations and interceptors. While shown as a rigid schedule, actual lines/pump stations will be evaluated annually to revise the plan based upon documented needs.

Pump Stations
- 2004 – Railroad Street
- 2005 – Oneota Street
- 2006 – Lakeside Street
- 2010 – Prefab stations @ Silverbrook, Gary, Carlton and Thomson
- 2011 – Prefab stations @ Jay Cooke and Polk

Interceptors:
- 2004 – Polk Street
- 2007 – Portion of Scanlon
- 2008 – Portion of Woodland
- 2009 – Portion of West
- 2010 – Portion of West
- 2011 – Portion of East
- 2012 – Proctor
- 2013 – Portion of Lakeside

C. CONVEYANCE SYSTEM MANAGEMENT

1. Data Collection

The WLSSD SCADA system collects minute by minute data for process points including pumping systems, rain gauges, alarms and control information. Utilities exist to integrate this information with modeling and planning information.

2. Modeling

As part of the Master Plan and ongoing capacity management program, the WLSSD uses system modeling services of our consulting engineer. The model has provided information to understand capacity issues in segments of our system and helped refine I&I capacity control strategies. The WLSSD will continue to use the modeling tools to evaluate program progress, to determine priority projects and on-going modeling for I/I sources and capacity management. WLSSD accounts for modeling, repairs, and miscellaneous improvements in the annual budget.

3. Televising and Cleaning Schedule

The WLSSD has adopted the recommendations of the Master Plan to televise and clean 20% of interceptor sewers annually. The WLSSD will utilize results to document condition and revise maintenance and replacement schedules.

4. Operations and Maintenance Procedure Improvements

WLSSD has adopted recommendations from the Master Plan to improve operations and maintenance procedures.

Standard Operating Procedures (SOP) have been revised and improved for all stations. Station operations checklists are in place for all stations. Emergency response procedures have been developed and are reviewed at least annually, and improvements made where required. Callout specifications and standby-pay status are used to insure notification and availability of adequate staff during high-flow events and system failures.

The WLSSD has developed an online operations and maintenance (O&M) manual which is available to WLSSD staff on the WLSSD Intranet website. The manual is complete for the wastewater treatment facility, and the manuals for the conveyance system pump stations will be completed in 2004.

The WLSSD recently created and filled a maintenance superintendent position shifting that function away from the previous staff configuration.

Preventive and predictive maintenance tasks exist for major equipment in the conveyance system. Annual maintenance is coordinated with the Master Plan capital replacement schedule.

5. System Inspections

All connections to the interceptor system were inspected in 2003. An ongoing plan of inspection is in place and certain connections are scheduled for replacement or repair. Operations and Technical Services staff makes above-ground and internal manhole inspections at least annually. Inspections are documented. A third-party safety inspection was conducted in 2003 and all comments were addressed.

6. Sampling, Notification and Public Education

A sampling and notification procedure exists for overflows in the Lower St. Louis River Basin. The WLSSD SCADA system has alarmed overflow levels for each station and follows the MPCA notification protocol for each overflow event. Staff is called to the scene of each overflow, places barricades, and posts notification signs as prescribed. Additional information may be posted at a later date regarding testing results. Operations and Technical Services Staff have a plan to inspect suspected/potential overflow sites (based upon Master Plan information) following certain weather or operational conditions. Sampling of water quality at lake and river stations is undertaken each week throughout the warm weather season. Information is shared with local beach watch and user groups. A sampling program to document water quality at selected streams entering St. Louis River and Lake Superior is activated when rainfall levels reach a certain level to cause runoff.

The WLSSD conducts numerous activities within its water quality education plan; public tours, static displays, teacher in-services, annual events (RiverQuest), and supports regional environmental events.

7. Public Relations Activities

Every overflow is documented and a news release is prepared within the next 24 hours (usually less during business days) for publication following each overflow event. An inventory of public information materials and an information hotline is operated for questions on water quality issues from the public. The Executive Director maintains a high public profile on the overflow issue, leveraging the message with action directed toward business, education and public agencies.

A project to validate fecal coliform speciation in the service area will demonstrate the source of bacterial contamination in the St. Louis River and Lake Superior.

8. Capital Costs

The anticipated capital costs for the activities above are summarized in Table A – WLSSD Plan of Action Capital Improvement Planning.

D. SITE-SPECIFIC ELIMINATION ACTIVITY

The Western Lake Superior Sanitary District has a Joint Agreement with the City of Duluth outlining the responsibilities of each entity in the elimination of overflows as listed in NPDES/SDS Permit No. MN0066206 Table A. Western Lake Superior Sanitary District has agreed to eliminate overflows at points 5, 7, 8 and 18. The WLSSD has also agreed to build control structures according to the permit at points 7, 11, 13, and 16. Point 12, the Duluth Gary/New Duluth Station Manhole overflow site is being eliminated by the joint efforts of the Permittees by the construction of a storage basin which will be in operation in 2004. The following is a description of WLSSD's actions at each specific site:

Point 5 - WLSSD Columbus and Arrowhead St. Manhole:

This overflow site is believed to have been eliminated. It is located at the intersection of Columbus Avenue and Arrowhead Road in the City of Duluth. The last overflow was recorded in 1997 and since then annual line cleaning and maintenance have eliminated any further incidents of overflows.

The site will continue to be monitored and additional I&I source elimination work as described in the City of Duluth's Plan of Action will ensure that this site will not overflow in the future.

Point 7 - WLSSD Polk St. Station, Central Ave:

An electrically actuated control valve was installed on bypass/overflow pipe during fall 2003 to control overflows from the location.

A comprehensive evaluation of the station was completed by Brown and Caldwell during fall 2003. The evaluation focused on methods for improving the reliability of the station and preliminary design of a storage facility.

WLSSD staff decided to implement station improvements recommended by Brown and Caldwell to enhance reliability of the pump station. Installation of a storage facility is deferred in favor of source reduction to reduce infiltration and inflow to bring the station into compliance. Pump Station improvements include:

Installation of a permanent standby engine generator
Installation of air vents on the pump casings
Modifications to the wet well to prevent air binding of the pumps and ragging
Replacement of the variable frequency drives

Installation of a water service for housekeeping and maintenance of the station

The Polk Street Interceptor will be replaced/rehabilitated during 2004. Although not believed to be a primary source of infiltration and inflow, this project should help to bring the basin into compliance.

The Polk Street basin was smoke tested during the fall of 2003 by WLSSD to identify sources of I&I. The test revealed I&I sources in both public and private portions of the sanitary sewer system. These results have been shared with the City of Duluth and combined efforts have been undertake corrective actions.

The City of Duluth has committed to moving their footing drain disconnection program to the Polk Street Basin during 2005/2006 to bring the Polk Street Basin into compliance. The WLSSD is also evaluating the need to construct an overflow storage basin in the event the I&I source elimination plan by the City of Duluth does not achieve compliance.

Point 8 - WLSSD Courtland Street Manhole, 25th Ave West:

This overflow site is believed to have been eliminated. The site is located at manholes on Courtland Street at the inlet piping to the WLSSD Wastewater Treatment Plant. Overflows in the past were caused by previous limitations of the influent screw pumps. This problem was addressing in 2002 by adding a vertical turbine solids handling pump to the influent channel.

The WLSSD is refining and optimizing the operation of the influent pumps to provide the design capacity which should be sufficient to handle peak flows without causing an overflow.

Point 11 - WLSSD Dodge St. Station, 52nd Ave. East:

This site is located at the intersection of Dodge Street and 52nd Avenue East in the City of Duluth. There has been a significant reduction of I&I into this station as a result of the City of Duluth's completion of a footing drain disconnection program. The program however has not eliminated the sanitary sewer overflows.

The station has an 18 inch ductile iron overflow pipe that flows into a storm sewer. A flow sensor is mounted in the end of the pipe at the connection to the storm sewer manhole. A control valve assembly is scheduled to be constructed to control the discharge by September of 2004. The estimated total cost is expected to be $30,400 as estimated by Brown and Caldwell's report "Conceptual Design of Overflow Control', January 2, 2004.

The City of Duluth has asked for State Funding to build a storage facility at this site. Preliminary engineering has begun and a storage site should be available in 2005. The WLSSD is also planning to renovate or replace the station in 2006 at an estimated cost of $765,000. There may be some benefit to combine the City's storage basin project and WLSSD's pump station and control structure projects. That alternative is now being investigated.

Point 12 - Duluth Gary/New Duluth Station Manhole:

The Gary/New Duluth Station manhole overflow site is located in the Gary/New Duluth neighborhood in the City of Duluth. This site overflow is being eliminated by the joint efforts of the Permittees in the construction of an overflow storage basin which has been built and will be lined this spring. The storage basin is expected to be in service preventing all further overflows by mid summer 2004. The overflow storage basin has a holding capacity of one million gallons at an estimated completion cost $430,000. This pumping station is also scheduled for replacement in the WLSSD's ten year capital plan in 2010, at an estimated cost of $640,000.

Point 13 - WLSSD Lakeside Interceptor, 20th & 22nd Ave East: and
Point 16 - WLSSD Endion Station, 18th Ave. East & Waterfront:

Points 13 and 16 are combined for the purpose of construction of a control facility. The Lakeside interceptor feeds the Endion Pump Station, but due to constraints in pipe size, manholes upstream of the station start overflowing when the Endion station is overflowing and at peak output. The Lakeside manholes are located at manholes on the Lakewalk and Water Street upstream of the WLSSD Endion Pump Station. The Endion Pump Station is located at the Lakewalk and 18th Avenue East in the City of Duluth.

The WLSSD is responsible for the installation of control structures at these two sites by September of 2006. As per Brown and Caldwell's report "Conceptual Design of Overflow Control', January 2, 2004, the recommended alternative proposed is a high relief pipe alternative forcing all the flow to the Endion station overflow discharge site. This site is currently being monitoring but controllable on/off valves would have to be added to meet the conditions of "controlled". The estimated cost of this total project, addressing both sites, is $922,000.

Point 17 - WLSSD East Interceptor, 5th & 3rd Ave East:

Point 17 is located at two manholes on WLSSD's East Interceptor; these include one at 5th Avenue East/Superior Street and the other at 3rd Avenue East/Superior Street. Hydraulic modeling indicates that extension of the City of Duluth's footing drain disconnection program will serve to reduce but not eliminate

overflow volumes at the manholes. Therefore overflow control structures will be required as per requirements of the permit.

Design of overflow control will have the objective of minimizing the opportunity for public contact with raw wastewater by eliminating discharge from the manholes. Control shall be provided to utilize maximum surcharge capacity of the interceptor without overflowing the manholes in order to prevent significant increase in overflow volumes.

An upstream control structure with a relief location at 8th Avenue East is the recommended alternative by WLSSD's Engineering Consultant. A pipe would be constructed to connect to a large city storm sewer/creek near the foot of 8th Avenue East. This storm sewer discharges to the lake almost immediately downstream of the connected point and has the sufficient capacity to handle the volume of the discharge.

Automated control logic for this structure is still being investigated, since the controlled discharge will have to anticipate the level in the low manhole some two thousand feet away. The estimated cost of constructing this structure is $433,000. The WLSSD will have this structure installed before June 1, 2007.

Point 18 - WLSSD Division D Interceptor, Cloquet Line:

Division D is WLSSD main interceptor accepting flows from the Sappi Mill, Cloquet, Twin Lakes, Wrenshall, Carlton, Scanlon, Midway, Esko and portions of west Duluth. Overflows have been experienced in manholes D9 and D10, near Spring Street.

WLSSD anticipates that infiltration and inflow reduction by municipalities and industries to comply with approved I&I Reduction Plans and the pretreatment ordinance will substantially reduce I&I at these sites. These source reductions are expected to be significant enough to eliminate all wet weather overflows by the year 2007. Therefore, no overflow control structure is recommended at this site.

E. SUMMARY

The Western Lake Superior Sanitary District is requiring its contributors to minimize the introduction of infiltration and inflow to our system and is depending on the success of their programs. We are also committed to assist those customers with clear water intrusion problems and make every effort possible within our jurisdiction to achieve that goal and the ultimate elimination of all overflows within our system.

Exhibit A

Western Lake Superior Sanitary District Mucicipal Peak Flow Standards

Standards for Inflow and Inflow Reduction

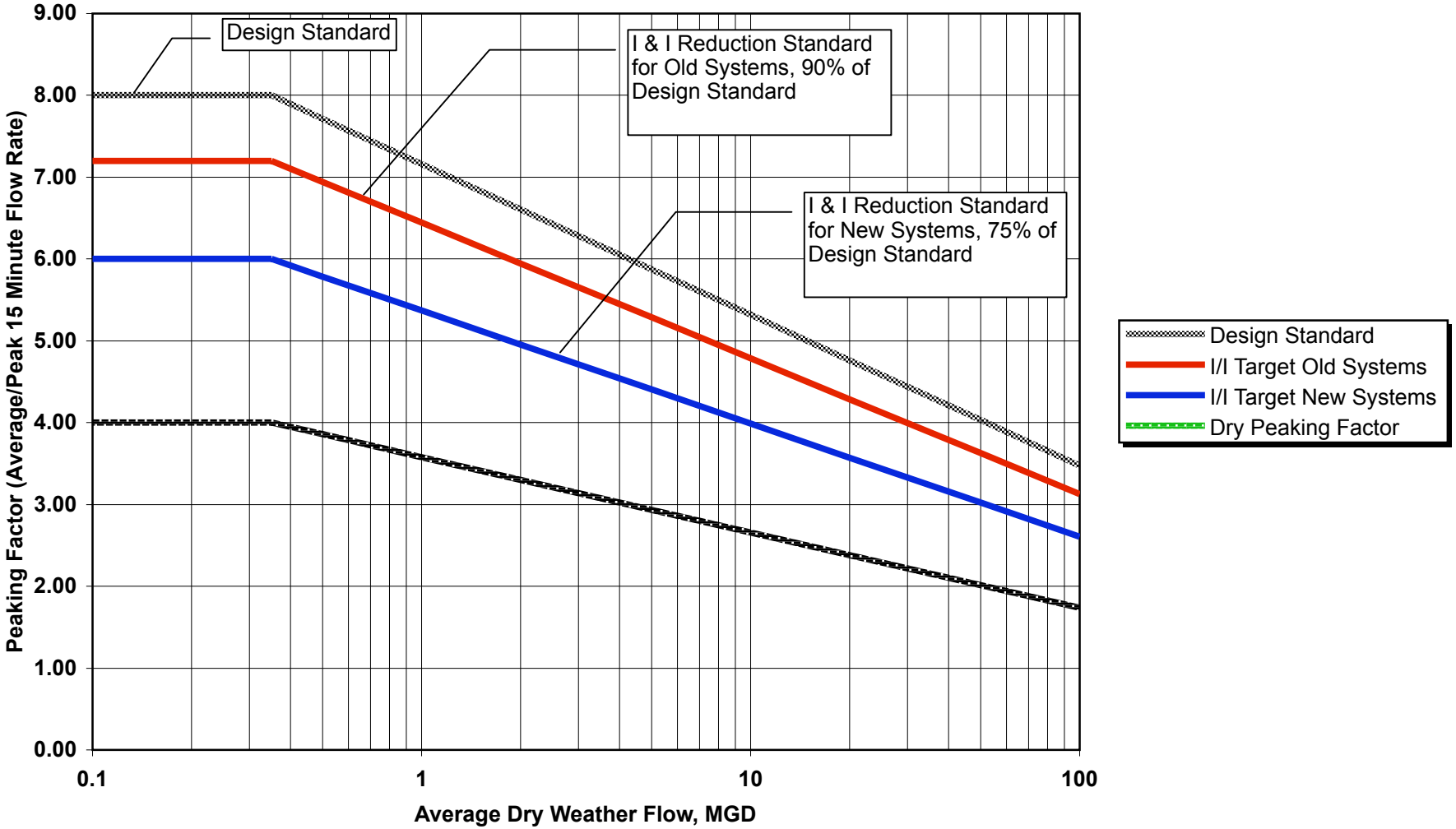

Exhibit A

WLSSD POA Capital Improvement Planning Table A

WLSSD Capital Projects:	2004	2005	2006	2007	2008	2009	2010
Pump Station Refurbishments/Replacements	$1,155,000	$765,000	$900,000			$780,000	$2,600,000
Interceptor Sewer Refurbishment/Replacement	$890,000	$0		$1,650,000	$3,510,000	$3,400,000	$635,000
Interceptor Improvements, I/I and capacity modeling, data analysis	$488,000	$325,000	$342,000	$365,000	$365,000	$375,000	$390,000
Electrical component/Control system upgrades	$675,000						$200,000
Installation of back-up electrical generators at pump stations and the main WLSSD plant	$4,200,000	$25,000					
Closed Circuit televising	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Construction of control structures at overflow locations in permit	$100,000	$433,000	$922,000				
Total WLSSD	$7,608,000	$1,648,000	$2,264,000	$2,115,000	$3,975,000	$4,655,000	$3,925,000

WLSSD Capital Projects:	2011	2012	2013	2014 *	2015 *	2016 *	13-year Total
Pump Station Refurbishments/Replacements	$2,400,000	$5,000,000	$5,000,000	$1,860,000	$1,860,000	$1,860,000	$24,180,000
Interceptor Sewer Refurbishment/Replacement	$135,000	$3,000,000	$3,000,000	$1,622,000	$1,622,000	$1,622,000	$21,086,000
Interceptor Improvements, I/I and capacity modeling, data analysis	$560,000	$580,000	$580,000	$600,000	$600,000	$600,000	$6,170,000
Electrical component/Control system upgrades		$2,000,000	$2,000,000				$4,875,000
Installation of back-up electrical generators at pump stations and the main plant							$4,225,000
Closed Circuit televising	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$1,300,000
Construction of control structures at overflow locations in permit							$1,455,000
Total WLSSD	$3,195,000	$10,680,000	$10,680,000	$4,182,000	$4,182,000	$4,182,000	$63,291,000

* Interceptors and Pump Stations - based upon averages of ten previous years.