

IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TENNESSEE

UNITED STATES OF AMERICA and, )  
the STATE OF TENNESSEE, *ex. rel.* )  
ROBERT E. COOPER, in his representative )  
capacity as the Attorney General and )  
Reporter of Tennessee, )

Plaintiffs, )

and )

TENNESSEE CLEAN WATER )  
NETWORK, )

Intervening Plaintiff, )

v. )

THE CITY OF MEMPHIS, )

Defendant. )  
\_\_\_\_\_ )

Civil Action No. 2:10-cv-02083-SHM-dkv

CONSENT DECREE

## TABLE OF CONTENTS

I. <u>JURISDICTION AND VENUE</u> .....	-7-
II. <u>APPLICABILITY</u> .....	-7-
III. <u>OBJECTIVES</u> .....	-9-
IV. <u>DEFINITIONS</u> .....	-9-
V. <u>COMPLIANCE REQUIREMENTS</u> .....	-16-
VI. <u>REVIEW OF DELIVERABLES/CERTIFICATION OF DELIVERABLES</u> .....	- 40-
VII. <u>CIVIL PENALTY</u> .....	-44-
VIII. <u>REPORTING REQUIREMENTS</u> .....	-46-
IX. <u>STIPULATED PENALTIES</u> .....	-49-
X. <u>FORCE MAJEURE</u> .....	-54-
XI. <u>DISPUTE RESOLUTION</u> .....	-56-
XII. <u>RIGHT OF ENTRY INFORMATION COLLECTION AND RETENTION</u> .....	-59-
XIII. <u>EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS</u> .....	-61-
XIV. <u>COSTS</u> .....	-63-
XV. <u>NOTICES</u> .....	-64-
XVI. <u>EFFECTIVE DATE</u> .....	-66-
XVII. <u>RETENTION OF JURISDICTION</u> .....	-66-
XIII. <u>MODIFICATION</u> .....	-66-
XIX. <u>TERMINATION</u> .....	-67-
XX. <u>PUBLIC PARTICIPATION</u> .....	-68-
XXI. <u>SIGNATORIES/SERVICE</u> .....	-68-

XXII. INTEGRATION .....-69-

XXIII. FINAL JUDGMENT .....-69-

XXIV. APPENDICES .....-69-

WHEREAS, Plaintiff, the United States of America (“United States”), by the authority of the Attorney General of the United States and through its undersigned counsel, acting at the request and on behalf of the United States Environmental Protection Agency (“EPA”), filed a Complaint (“Complaint”) on February 5, 2010, alleging that Defendant, the City of Memphis, Tennessee (“Memphis”), has violated and continues to violate Sections 301 and 402 of the Clean Water Act (“CWA”), 33 U.S.C. §§ 1311 and 1342;

WHEREAS, Plaintiff, the State of Tennessee (“State”), acting at the request of the Tennessee Department of Environment and Conservation (“TDEC”), joined in the Complaint and seeks injunctive relief and civil penalties for Memphis’ alleged violations of the Tennessee Water Quality Control Act (“TWQCA”), Tenn. Code Ann. §§ 69-3-101 *et seq.*, and the regulations promulgated pursuant thereto;

WHEREAS, on February 12, 2010, Intervening Plaintiff, the Tennessee Clean Water Network (“TCWN”), filed a Motion to Intervene as a Matter of Right seeking to intervene in the action initiated by the United States and the State pursuant to Section 505(b)(1)(B) of the CWA, 33 U.S.C. § 1365(b)(1)(B);

WHEREAS, the United States and the State filed an Amended Complaint (“Amended Complaint”) concurrently with the lodging of this Consent Decree amending the allegations of Memphis’ violations of the CWA and the TWQCA;

WHEREAS, the TCWN filed an Amended Motion to Intervene as a Matter of Right, pursuant to Section 505(b)(1)(B) of the CWA, 33 U.S.C. § 1365(b)(1)(B), concurrently with lodging of this Consent Decree which provided for its complaint (“TCWN Complaint”) to be filed upon entry of this Consent Decree;



WHEREAS, Memphis is a “municipality” pursuant to Section 502(4) of the CWA, 33 U.S.C. § 1362(4); and, therefore, a “person” pursuant to Section 502(5) of the CWA, 33 U.S.C. § 1362(5), and Tenn. Code Ann. § 69-3-103(25);

WHEREAS, the State is also a Plaintiff in this action and is joined as a Party under Section 309(e) of the CWA, 33 U.S.C. § 1319(e), which requires the state in which a municipality is located to be joined as a party whenever the municipality is a party to a civil action brought by the United States under Section 309 of the CWA;

WHEREAS, TDEC has been authorized by EPA to administer the National Pollutant Discharge Elimination System (“NPDES”) pursuant to Section 402(b) of the CWA, 33 U.S.C. § 1342(b);

WHEREAS, Memphis’ Wastewater Collection and Transmission System (“WCTS”) transports wastewater to two publicly owned wastewater treatment plants (“WWTPs”), M.C. Stiles WWTP and T.E. Maxson WWTP, which are operated by Memphis pursuant to NPDES Permit Numbers TN0020711 and TN0020729, respectively;

WHEREAS, Memphis has reported to TDEC Sanitary Sewer Overflows (“SSOs”) from the WCTS;

WHEREAS, the United States, the State and the TCWN contend that Memphis has violated the effluent limitations in the NPDES Permits associated with foam;

WHEREAS, the United States, the State and the TCWN contend that these SSOs and effluent limit violations are violations of the CWA, TWQCA, and Memphis’ NPDES Permits;

WHEREAS, this Consent Decree requires Memphis to develop, submit, finalize, and implement plans for the continued improvement of its WCTS and WWTPs to address SSOs and effluent limitation for foam;

WHEREAS, TDEC has indicated to Memphis that reissued NPDES permits for the M.C. Stiles and T.E. Maxson WWTPs will require Memphis to meet new NPDES permit requirements pertaining to disinfection and, if applicable, dechlorination of WWTP effluent which will require the expenditure of significant resources;

WHEREAS, Memphis asserts that it took over the grease program from the Shelby County Government on or about 1997 and since that time there has been a significant downward trend in the number of SSOs from Memphis' WCTS as indicated on the chart in Appendix A, attached hereto and incorporated herein;

WHEREAS, on or about October 31, 2005, TDEC approved Memphis' grease program and Memphis has been implementing a program to control grease in its WCTS, including issuing permits to approximately 3,200 restaurants to control grease entering the WCTS;

WHEREAS, the Parties have negotiated in good faith and have reached a settlement of the issues raised in the Amended Complaint and the TCWN Complaint;

WHEREAS, Memphis' agreement to this Consent Decree is not an admission of liability, and except for Memphis' consent to jurisdiction and venue as provided in Section I of this Consent Decree, and it is not an adjudication or admission of any fact or law;

WHEREAS, the Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and will avoid

litigation between the Parties and that this Consent Decree is fair, reasonable, and in the public interest;

NOW THEREFORE, with the consent of the Parties, it is hereby ORDERED, ADJUDGED and DECREED as follows:

### **I. JURISDICTION AND VENUE**

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, and Section 309(b) of the CWA, 33 U.S.C. § 1319(b), and over the Parties. This Court has supplemental jurisdiction over the state law claims asserted by the State pursuant to 28 U.S.C. § 1367. Venue is proper in the Western District of Tennessee pursuant to Section 309(b) and 505 of the CWA, 33 U.S.C. §§ 1319(b) and 1365, and 28 U.S.C. §§ 1391(b) and 1395(a), because the violations alleged in the Amended Complaint are alleged to have occurred in this judicial district. For purposes of this Decree, or any action to enforce this Decree, Memphis consents to the Court's jurisdiction over this Decree and any such action and over Memphis and consents to venue in this judicial district.

2. For purposes of this Consent Decree, Memphis agrees that the Amended Complaint states claims upon which relief may be granted pursuant to Section 309(b) of the CWA, 33 U.S.C. § 1319(b), and TWQCA, Tenn. Code Ann. §§ 69-3-101 *et seq.*

### **II. APPLICABILITY**

3. The obligations of this Consent Decree apply to and are binding upon the United States, the State and the TCWN, and upon Memphis and any successors, assigns, or other entities or persons otherwise bound by law.

4. No transfer of ownership or operation of the WCTS, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve Memphis of its obligation to ensure that the terms of the Decree are implemented. At least thirty (30) Days prior to such transfer, Memphis shall provide a copy of this Consent Decree to the proposed transferee and shall simultaneously provide written notice of the prospective transfer, together with a copy of the proposed written agreement, to EPA, the United States Department of Justice and TDEC, in accordance with Section XV of this Decree (Notices). Memphis shall require, as a condition of any sale or transfer, that the purchaser or transferee agrees in writing to be bound by this Consent Decree and submit to the jurisdiction of the Court for its enforcement. Any attempt to transfer ownership or operation of the WCTS without complying with this Paragraph constitutes a violation of this Decree.

5. Memphis shall provide written notice, either by hard copy or by electronic mail that a copy of this Consent Decree is posted on its website, to all elected officials and employees whose duties might reasonably include compliance with any provision of this Consent Decree. Memphis shall be responsible for ensuring that all employees involved in performing any work pursuant to this Consent Decree perform such work in a manner consistent with the requirements of this Consent Decree. Memphis shall provide written notice that a copy of this Consent Decree is posted on its website to all successful bidders retained to perform work expressly required by this Consent Decree and shall be responsible for ensuring that any contractors hired to perform work pursuant to this Consent Decree comply with the terms of this Consent Decree.

6. In any action to enforce this Consent Decree, Memphis shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

### **III. OBJECTIVES**

7. The express purpose of the Parties entering into this Consent Decree is for Memphis to use its best efforts to prepare and implement all plans, measures, reports, and construction, maintenance, and operational activities called for under this Consent Decree to achieve the goals of: (1) full compliance with the CWA, the TWQCA, and the regulations promulgated thereunder, and (2) the elimination of all SSOs.

### **IV. DEFINITIONS**

8. Terms used in this Consent Decree that are defined in the CWA or in regulations promulgated pursuant to the CWA shall have the meanings assigned to them in the CWA, 33 U.S.C. §§ 1251 *et seq.*, and regulations promulgated under the CWA, unless otherwise provided in this Decree. Whenever the terms set forth below are used in this Consent Decree, the following definitions shall apply:

a. “Amended Complaint” shall mean the amended complaint filed by the United States and the State concurrently with the lodging of this Consent Decree which amends the Complaint.

b. “Building Backup” shall mean a wastewater release or backup into a building or private property that is caused by blockages, flow conditions, or other malfunctions in the Wastewater Collection and Transmission System. A wastewater backup or release that is

caused by blockages, flow conditions, or other malfunctions of a Private Lateral is not a Building Backup.

c. “Bypass” shall have the meaning set forth at 40 C.F.R. § 122.41(m).

d. “Calendar Quarter” shall mean the 3 month periods ending on March 31, June 30, September 30, and December 31.

e. “Calendar Year” shall mean the 12 month period starting on January 1 and ending on December 31.

f. “Certification” or “Certify” when used in this Consent Decree shall require Memphis to comply with Section XII (Information Collection and Retention) of this Consent Decree.

g. “Complaint” shall mean the complaint filed by the United States and the State in this action on February 5, 2010.

h. “Consent Decree” or “Decree” shall mean this Decree and all appendices attached hereto listed in Section XXIV. In the event of a conflict between this document and any appendix, this document shall control.

i. “CWA” shall mean the Clean Water Act, as amended, 33 U.S.C. §§ 1251, *et seq.*

j. “Date of Lodging” shall mean the date this Consent Decree is filed for lodging with the Clerk of the Court for the United States District Court for the Western District of Tennessee.

k. “Day” shall mean a calendar day unless expressly stated to be a business day. In computing any period of time under this Consent Decree, where the last day would fall

on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next business day.

l. “Defendant” shall mean the City of Memphis, Tennessee and any successor thereto.

m. “Deliverable” shall mean any written document required to be prepared and/or submitted by or on behalf of Memphis pursuant to this Consent Decree.

n. “DOJ” shall mean the United States Department of Justice.

o. “EPA” shall mean the United States Environmental Protection Agency and any of its successor departments or agencies.

p. “Effective Date” shall have the definition provided in Section XVI.

q. “Force Main” shall mean any pipe that receives and conveys, under pressure, wastewater from the discharge side of a pump. A Force Main is intended to convey wastewater under pressure.

r. “Gravity Sewer Line” or “Gravity Sewer” shall mean a pipe that receives, contains and conveys wastewater not normally under pressure, but is intended to flow unassisted under the influence of gravity.

s. “Infiltration” as defined by 40 C.F.R. § 35.2005(b)(20) shall mean water other than wastewater that enters the WCTS (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include and is distinguished from Inflow.

t. “Inflow” as defined by 40 C.F.R. § 35.2005(b)(21) shall mean water other than wastewater that enters the WCTS (including sewer service connections) from sources such

as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm water, surface runoff, street wash waters, or drainage. Inflow does not include, and is distinguished, from Infiltration.

u. “I/I” shall mean the total quantity of water from inflow, infiltration, and rainfall induced infiltration without distinguishing the source.

v. “Intervening Plaintiff” shall mean the Tennessee Clean Water Network.

w. “Lift Station” shall mean facilities in the WCTS (not at the WWTPs) comprised of pumps which lift wastewater to a higher hydraulic elevation, including all related electrical, mechanical, and structural systems necessary to the operation of that lift station.

x. “Memphis” shall mean the City of Memphis, Tennessee, including all of its departments, agencies, instrumentalities such as the Public Works Division, and any successors thereto.

y. “MOM” or “Management, Operations, and Maintenance” shall mean a program of accepted industry practices to properly manage, operate and maintain sanitary wastewater collection, transmission and treatment systems, investigate capacity-constrained areas of these systems, and respond to SSO events.

z. “NPDES” shall mean the National Pollutant Discharge Elimination System authorized under Section 402 of the CWA, 33 U.S.C. § 1342.

aa. “NPDES Permits” shall mean NPDES permit No. TN0020711 issued to Memphis pursuant to Section 402 of the Clean Water Act, 33 U.S.C. § 1342, for the M.C. Stiles WWTP effective on April 1, 2000, and NPDES permit No TN0020729 issued to Memphis



pursuant to Section 402 of the Clean Water Act, 33 U.S.C. § 1342, for the T.E. Maxson WWTP effective on April 1, 2000, and any future extended, modified, or reissued permits.

bb. “Paragraph” shall mean a portion of this Consent Decree identified by an arabic numeral.

cc. “Parties” shall mean the United States of America on behalf of EPA, the State on behalf of TDEC, the TCWN, and Memphis.

dd. “Plaintiffs” shall mean the United States of America on behalf of EPA and the State of Tennessee on behalf of TDEC.

ee. “Private Lateral” shall mean that portion of a sanitary sewer conveyance pipe that extends from the wastewater main to the single-family, multi-family, apartment, or other dwelling unit or commercial or industrial structure to which wastewater service is provided.

ff. “Public Document Repository” or “PDR” shall mean the Memphis Central Library, located at 3030 Poplar Avenue, Memphis, Tennessee 38111 and Memphis’ website.

gg. “Publicly Owned Treatment Works” or “POTW” shall mean a publicly owned treatment works or POTW as defined in 40 C.F.R. § 403.3(q), and includes the WCTS and the WWTPs as defined in this Consent Decree.

hh. “Sanitary Sewer Overflow” or “SSO” shall mean an overflow, spill, or release of wastewater from Memphis’ WCTS or WWTPs including: (a) Unpermitted Discharges; (b) overflows, spills, or releases of wastewater that may not have reached waters of the United States or the State; and (c) all Building Backups.

ii. “Section” shall mean a portion of this Consent Decree identified by a roman numeral.

jj. “State” shall mean the State of Tennessee, acting on behalf of TDEC, including all of its departments, agencies, and instrumentalities.

kk. “SORP” shall mean the Sewer Overflow Response Plan that Memphis developed and will implement pursuant to Subparagraph 10.a., a copy of which is attached hereto as Appendix B.

ll. “Subparagraph” shall mean a portion of a paragraph identified by lowercase letters.

mm. “TCWN” shall mean the Tennessee Clean Water Network.

nn. “TCWN Complaint” shall mean the complaint filed by the TCWN concurrently with entry of this Consent Decree which alleges the same CWA violations as set forth in the Amended Complaint.

oo. “TDEC” shall mean the Tennessee Department of Environment and Conservation and any successor departments or agencies of the State.

pp. “Timely” when applied to the submittal of a Deliverable shall mean submitted (*e.g.*, postmarked) no later than the deadline established in this Consent Decree (or in a document approved pursuant to this Consent Decree) and containing all of the elements pertaining to the submittal as set forth in this Consent Decree (or in a document approved pursuant to this Consent Decree). “Timely,” when applied to the implementation of any Work shall mean implemented no later than the deadline established in this Consent Decree (or in a document approved pursuant to this Consent Decree) and in accordance with the elements pertaining to such Work as set forth in this Consent Decree (or in a document approved pursuant to this Consent Decree).

qq. “TWQCA” shall mean the Tennessee Water Quality Control Act, Tenn. Code Ann. §§ 69-3-101, *et seq.*

rr. “United States” shall mean the United States of America, acting on behalf of EPA, including its departments, agencies, and instrumentalities.

ss. “Unpermitted Discharge” shall mean a discharge of pollutants which reaches waters of the United States or the State from (a) the WCTS, (b) WWTPs through a point source not specified in an NPDES Permit, or (c) WWTPs which constitutes a prohibited Bypass except if the criteria set forth at 40 C.F.R. § 122.41(m)(2) or 40 C.F.R. § 122.41(m)(4)(i)(A) – (C) are met.

tt. “Wastewater Collection and Transmission System” or “WCTS” shall mean the municipal wastewater collection, retention and transmission system, including all pipes, Force Mains, Gravity Sewer Lines, Lift Stations, pumps, manholes, and appurtenances thereto, which are owned or operated by Memphis and service Memphis and which flow to the M.C. Stiles and T.E. Maxson WWTPs.

uu. “Wastewater Treatment Plant” or “WWTP” shall mean devices or systems used in the storage, treatment, recycling, and reclamation of municipal wastewater. For purposes of this Consent Decree, this definition shall refer only to following treatment facilities: the M.C. Stiles WWTP located at 2303 N. 2nd St., Memphis, Tennessee, and the T.E. Maxson WWTP located at 2685 Plant Road, Memphis, Tennessee, and all components of such sewage treatment plants.

vv. “Work” shall mean all activities Memphis is required to perform under this Consent Decree.

## **V. COMPLIANCE REQUIREMENTS**

9. Obligation to Perform Work. Upon the Effective Date of this Consent Decree, Memphis shall commence to implement the Work pursuant to this Consent Decree. All Work shall be performed using sound engineering practices, which may include appropriate provisions of the *Handbook: Sewer System Infrastructure Analysis and Rehabilitation*, EPA/625/6-91/030, 1991; *Existing Sewer Evaluation and Rehabilitation*, WEF MOP FD-6, 1994; and the *Tennessee Design Criteria for Sewage Works* in accordance with Tenn. Comp. R. & Reg., ch. 1200-4-2-03.

10. Management, Operations and Maintenance (“MOM”) Programs. Except for the MOM Programs already developed by Memphis and attached to this Consent Decree as appendices, Memphis shall develop the specific MOM Programs set forth below and ensure that each MOM Program has a written, defined purpose; a written, defined goal; is documented in writing with specific detail; is implemented by trained personnel; has established performance measures where applicable; and has written procedures for periodic review. The Parties recognize that during the term of this Consent Decree Memphis may need or want to revise the MOM Programs set forth below. Such revisions shall not be considered modifications to the Consent Decree for purposes of Section XIII (Modification). Memphis must obtain EPA’s prior written approval of any revision to the substance of any MOM Program required by this Consent Decree and shall comply with the provisions of Section VI. Memphis may revise the form of any MOM Program required by this Consent Decree without EPA’s approval and shall provide a copy of any such revised Program to EPA and TDEC, and place a copy of any such revised Program in the PDR within seven (7) Days after making such revision. Nothing in this Consent Decree shall limit Memphis’ ability to modify any other of its programs not specifically required

by this Consent Decree for the design, planning, construction, operation, and maintenance of its WCTS or WWTPs in any fashion not inconsistent with this Decree.

a. Sewer Overflow Response Plan. Memphis submitted to EPA and TDEC on March 11, 2011 a Sewer Overflow Response Plan (“SORP”) that provides for (i) timely and effective methods and means of responding to, cleaning up, and/or minimizing the impact of SSOs; (ii) timely reporting the location, estimated volume, cause, impact, and other pertinent information of SSOs to EPA, TDEC and other appropriate regulatory agencies; and (iii) notifying the potentially impacted public. A copy of the SORP is attached hereto as Appendix B and incorporated by reference herein. Memphis shall implement the SORP as an enforceable obligation under this Consent Decree.

b. Fats, Oil, and Grease (“FOG”) Management Program. Memphis has developed and has been implementing a FOG Management Program since its Grease MOM Program document was approved by TDEC in October of 2005. Notwithstanding any improvements already achieved through the FOG Management Program, Memphis submitted to EPA and TDEC on March 11, 2011 an updated FOG Management Program containing the results of its re-evaluation to expand or modify its existing Program to control further the discharge of FOG into Memphis’ WCTS. A copy of the updated FOG Management Program is attached hereto as Appendix C and incorporated by reference herein. Memphis shall implement the updated FOG Management Program as an enforceable obligation under this Consent Decree.

c. Lift Station and Force Main Operations and Maintenance Program.  
Within three hundred sixty-five (365) Days after the Effective Date of this Consent Decree, Memphis shall submit to EPA and TDEC for review and comment a Lift Station and Force Main

Operations and Maintenance Program (“Lift Station & Force Main O&M Program”). The goal of the Lift Station & Force Main O&M Program is to facilitate proper operation and maintenance activities associated with the Lift Stations and Force Mains within the WCTS. The Lift Station & Force Main O&M Program shall include the requirements set forth in Subparagraphs 10.c.(i). through (ix). below.

(i). Identification of the means and modes of communication between Lift Stations, field crews, and supervising staff.

(ii). Technical specifications of each Lift Station within the WCTS.

(iii). A description of each Lift Station monitoring system which shall continuously monitor, report, and transmit information for each Lift Station. Specifically, the Lift Station & Force Main O&M Program shall provide for Memphis to install, if it has not already done so, on or before March 31, 2012 or one hundred-eighty (180) Days after the Effective Date of this Consent Decree, whichever is later, Supervisory Control and Data Acquisition (“SCADA”) systems at all Lift Stations identified on Appendix D, attached hereto and incorporated by reference herein.

(iv). Written preventive operations and maintenance schedules and procedures which shall be scheduled appropriately and shall include, but not be limited to, written procedures for the following:

(A). Periodic service and calibration of instrumentation such as flow meters, liquid level sensors, alarm systems, elapsed time meters, and remote monitoring equipment.

(B). Inspection and service for air release valves.

(C). Predictive (including non-physical inspections) and/or physical inspection and service for all Lift Stations including, but not be limited to:

- (1) reading, recording and maintaining records of information from the elapsed time meters and pump start counters;
- (2) observing and documenting wet well conditions, including grease and/or debris accumulation;
- (3) checking and re-setting, as necessary to improve system performance, wet well pumping points (*e.g.*, floats);
- (4) checking, recording and maintaining records of system pressure(s);
- (5) checking SCADA and/or alarm components;
- (6) checking stand-by power sources; and
- (7) identifying maintenance needs.

(D). The assessment of Force Mains, including an evaluation of potential sulfide and corrosion control options, and a summary report of findings, including a recommendation of the preferred sulfide and corrosion control method(s); provided, however, that such corrosion control options and methods shall not apply to components made of plastic or other similar materials.

(E). Inspection of Force Main easements, including inspection of creek crossings, stream bank encroachment toward Force Mains, and easement accessibility to identify whether further action would be necessary for Memphis to be able to have access should a problem arise. Inspections shall include written reports, and where appropriate, representative

photographs or videos of appurtenances being inspected (Force Mains, creek crossings, etc.). Inspectors shall promptly report any observed SSOs to their area supervisors and shall record any evidence of SSOs which may have occurred since the last inspection. Any observed SSO shall be promptly reported in accordance with the SORP.

(F). A schedule for the maintenance of easements. Memphis need not remove permanent structures (*e.g.*, parts of buildings), fences surrounding private property, or trees or vegetation to assure that a portion of the WCTS is accessible. If, however, an SSO occurs that requires remediation, Memphis may need to cut down trees or remove vegetation to remediate the SSO.

(G). A description of resource commitments such as staffing, contractual support and equipment.

(v). Written standard emergency/reactive operations and maintenance procedures. Memphis, subject to its discretion, may use portable pumps, portable generators or alternative power sources as it deems appropriate. At a minimum, the standard emergency/reactive Lift Station operating procedures shall include:

(A). Criteria used to determine the need for emergency operations and maintenance.

(B). Initiation/use of stand-by power (*e.g.*, portable generators), where applicable.

(C). Initiation/use of portable pump use (*e.g.*, bypass/pump-around operations), where applicable.



(D). Evaluation of the need for additional equipment for emergency/reactive operations, including, but not limited to, additional portable generators and/or additional portable pumps (for pump-around operations).

(E). Evaluation of the need for on-site standby power (*e.g.*, on-site generator and/or 2nd electrical feed from the power grid) for each Lift Station should Memphis choose, subject to its discretion, not to have a portable pump available at the Lift Station.

(F). Establishing standard forms, reporting procedures and performance measures for emergency/reactive operations and maintenance.

(vi). An inventory management system that includes:

(A). Lists of critical equipment and critical spare parts.

(B). A list of where critical spare parts and critical equipment may be secured to allow repairs in a reasonable amount of time for those spare parts and critical equipment that are not stored by Memphis (*e.g.*, including spare pipe having a diameter of 24 inches or greater). The list shall also set forth an inventory of spare parts and critical equipment stored by Memphis, as applicable.

(C). Written procedures for updating the critical spare parts and equipment inventories in the inventory management system.

(vii). A common information system that Memphis will use to track implementation of the Lift Station & Force Main O&M Program, track maintenance activities (including Lift Station equipment histories), and track management, operations, and maintenance performance indicators.

(viii). The key performance indicators (“KPIs”) Memphis will track to measure performance of the WCTS using the information system referenced in Subparagraph 10.c.(vii). above. These KPIs shall include the number of SSOs per mile of Force Main and/or number of Lift Stations; maintenance activities tracked by type (corrective, preventive, and emergency) and such other KPIs as Memphis may suggest and EPA approve.

(ix). Reports which list equipment problems and the status of work orders generated during the prior month.

d. Gravity Sewer System Operations and Maintenance Program. Within three hundred sixty-five (365) Days after the Effective Date of this Consent Decree, Memphis shall submit to EPA and TDEC for review and comment, a Gravity Sewer System Operations and Maintenance Program (“Gravity Sewer System O&M Program”) to prevent SSOs, particularly those caused by FOG, roots and/or debris obstructions. The Gravity Sewer System O&M Program shall include the requirements set forth in Subparagraphs 10.d.(i) through (xii). below.

(i). Written preventive operations and maintenance schedules and procedures which shall be scheduled appropriately and shall include, but not be limited to, written procedures for the following:

(A). Inspection and maintenance of all Gravity Sewers, manholes and inverted siphons.

(B). Observing and documenting Gravity Sewer, manhole and inverted siphon conditions, including grease, roots, and/or debris accumulation.

(C). Identifying maintenance needs.

(D). Scheduling preventive maintenance work/cleaning which Memphis may schedule in connection with the CSAP and/or IRP programs.

(ii). An engineering evaluation of potential sulfide and corrosion control options and a summary report of findings, including a recommendation of the preferred sulfide and corrosion control method(s); provided, however, that such corrosion control options and methods shall not apply to components made of plastic or other similar materials.

(iii). Memphis may prioritize the evaluation of the Gravity Sewer system based upon the size of the pipe (*e.g.*, starting with the larger pipes and work back to smaller pipes), location of SSOs, community input or other criteria it finds appropriate.

(iv). Inspection of Gravity Sewer, manhole, and inverted siphon easements, including inspection of: creek crossings, stream bank encroachment toward Gravity Sewers, manholes and inverted siphons, and easement accessibility (including the need to control vegetative growth or encroachment of man-made structures or activities that could threaten the integrity of the affected Gravity Sewer, manholes, or inverted siphon). Inspections shall include written reports, and where appropriate, representative photographs or videos of appurtenances being inspected (Gravity Sewers, manholes, inverted siphons, creek crossings, etc.). Inspectors shall promptly report any observed SSOs to their area supervisors and shall record any evidence of SSOs which may have occurred since the last inspection. Any observed SSO shall be promptly reported in accordance with the SORP.

(v). A schedule for the maintenance of easements. Memphis need not remove permanent structures (*e.g.*, parts of buildings), fences surrounding private property, or trees or vegetation to assure that a portion of the WCTS is accessible. If, however, an SSO

occurs that requires remediation, Memphis may need to cut down trees or remove vegetation to remediate the SSO.

(vi). A description of resource commitments such as staffing, contractual support, and equipment.

(vii). Written standard Gravity Sewer system emergency/reactive operations and maintenance procedures. At a minimum, the standard Gravity Sewer system emergency/reactive operations and maintenance procedures shall include:

(A). Criteria used to determine the need for emergency operations and maintenance.

(B). Initiation/use of maintenance equipment (*e.g.*, vacuum truck, jet washing truck and/or combination truck).

(C). Initiation/use of portable pump use (*e.g.*, bypass/pump-around operations).

(D). Evaluation of the need for additional equipment for emergency/reactive operations and maintenance, including, but not limited to, additional vacuum/cleaning truck(s), portable jet-washing equipment, and/or portable pumps (for pump-around operations).

(E). Establishing standard forms, reporting procedures, and performance measures for emergency/reactive operations and maintenance.

(viii). Data attributes for Memphis' mapping program allowing program data to be compared in Memphis' information management system against other pertinent data such as the occurrence of SSOs, including repeat SSO locations, and permit violations.

(ix). An inventory management system that includes:

(A). Lists of critical equipment and critical spare parts.

(B). A list of where critical spare parts and critical equipment

may be secured to allow repairs in a reasonable amount of time for those spare parts and critical equipment that are not stored by Memphis including spare pipe having a diameter of 42 inches or greater. The list shall also set forth an inventory of spare parts and critical equipment stored by Memphis, as applicable.

(C). Written procedures for updating the critical spare parts and equipment inventories in the inventory management system.

(x). A common information system that Memphis will use to track implementation of the Gravity Sewer System O&M Program, track maintenance activities, and track management, operations, and maintenance performance indicators.

(xi). The KPIs Memphis will track to measure performance of the WCTS using the information system referenced in Subparagraph 10.d.(ix). above. These KPIs shall include:

(A). The linear footage of Gravity Sewer inspections, the linear footage of Gravity Sewers cleaned, the number of manholes inspected, the number of manholes cleaned/maintained, the number of inverted siphons inspected, the number of inverted siphons cleaned/maintained, the number of SSOs per mile of Gravity Sewer, and such other KPIs as Memphis may suggest and EPA approve; and

(B). Maintenance activity tracked by type (corrective, preventive, and emergency).

(xii). Reports which list equipment problems and the status of work orders generated during the prior month.

e. Inter-Jurisdictional Agreement Program. Within one hundred eighty (180) Days after the Effective Date of this Consent Decree, Memphis shall submit to EPA and TDEC for review and comment an Inter-Jurisdictional Agreement Program for when Memphis renews existing agreements or enters into new agreements that cover the collection, conveyance, and treatment of sewage by Memphis from municipal satellite sewer systems. The Parties agree that this Subparagraph 10.e. and the requirements of this Program shall not be applicable to Memphis' agreements with the Town of Collierville, Tennessee due to the minimal collection of sewage by Memphis from Collierville. The Parties acknowledge that TDEC continues to be responsible in all respects for enforcing the requirements of any state operating permits issued to municipal satellite sewer systems. Memphis shall not be responsible for enforcement of any such permits or for management or oversight of any such municipal satellite sewer systems as a requirement of this Consent Decree. At minimum, the Inter-Jurisdictional Agreement Program shall include the requirements set forth in Subparagraphs 10.e.(i). through (iii). below.

(i). The Program shall delineate the minimum provisions to be set forth in these inter-jurisdictional agreements with which the contracting municipality must comply. Such provisions shall include, but not be limited to, the following:

(A). Requirements on the contracting party to properly manage, operate, and maintain its sewage collection and conveyance systems so as to minimize peak flows into Memphis' WCTS by excluding, to the maximum reasonable extent, the intrusion of surface and ground water and other extraneous flows.

(B). Requirements on the contracting party to ensure compliance with the legal authorities required in 40 C.F.R. § 403.8(f) with regard to equivalent control, monitoring and enforcement of industrial use dischargers into Memphis' WCTS from municipal satellite sewer systems.

(ii). The Program shall also delineate provisions addressing the term or life of these agreements; mechanisms for appropriate modification of the agreements; and mechanisms for enforcement of the agreements (including a description of the legal support necessary to develop, oversee and enforce the agreements) such as provisions permitting termination of the agreement and physical disconnection from Memphis' WCTS within a reasonable time not exceeding two (2) years upon the failure of the contracting party to comply with its management, operations, and maintenance obligations.

(iii). The Program shall provide that when any of Memphis' currently existing agreements expire or terminate, Memphis may, but shall not be required to, renew any such agreement or enter into a new agreement covering the collection, conveyance, and treatment of sewage from such other municipal satellite sewer system. In the event Memphis does renew such an agreement or enters into any such new agreement, each agreement shall be consistent with the requirements of the Inter-Jurisdictional Agreement Program.

f. Continuing Sewer Assessment Program ("CSAP") for the WCTS. Within three hundred sixty-five (365) Days after the Effective Date of this Consent Decree, Memphis shall submit to EPA and TDEC for review and comment a CSAP to assess and analyze the infrastructure of the WCTS. The CSAP shall establish procedures for setting priorities and schedules for undertaking the WCTS assessment components set forth in Subparagraph 10.f.(i).

through (viii). below including, as necessary, dyed water flooding, corrosion defect identification, manhole assessment, flow monitoring, closed circuit television inspection (“CCTV”), defect analysis, smoke testing, and lift station performance assessment.

Memphis agrees that the CSAP schedules and priorities shall provide for the assessment of approximately ten percent (10%) of the WCTS on average per year following EPA approval of the CSAP. For purposes of calculating this ten percent (10%) figure for the first year following EPA approval of the CSAP, Memphis may include any assessment activity that it conducted after April 1, 2011. The CSAP shall develop these priorities and schedules taking into consideration the nature and extent of customer complaints; flow monitoring, including flow isolation studies; location and cause of SSOs, including those identified pursuant to the other MOM Programs set forth in this Paragraph 10 of this Consent Decree; any remedial measures already undertaken; field crew work orders; any preliminary sewer assessments, such as midnight flow monitoring; and any other relevant information. In addition, Memphis has determined that the areas of the WCTS identified on the map in Appendix E, attached hereto and incorporated herein, shall be assessed in the first year following EPA approval of the CSAP. These areas have been determined by Memphis to be a priority based in part on the age of the sewer system (the downtown Memphis area has the oldest sewers, most in excess of fifty (50) years old), and on an analysis of the past SSO frequencies and volumes. In addition, areas near surface waters that have been included on TDEC’s CWA Section 303(d) list of impaired waters for pathogens also received priority by Memphis. Finally, Memphis also considered areas that have been identified by EPA as potentially having environmental justice issues (minority and low income neighborhoods) when developing the priority area for the first year’s assessment.



Furthermore, Memphis has determined that the Lick Creek areas of the WCTS identified on Appendix F, attached hereto and incorporated herein, shall be assessed no later than the second year following EPA approval of the CSAP. If such assessment work is undertaken after April 1, 2011 but prior to the second year following approval of the CSAP and Memphis has otherwise assessed ten percent (10%) of other portions of the WCTS in the first year following approval of the CSAP, Memphis may be credited for such work as assessment work undertaken during the second year following approval of the CSAP.

The CSAP shall include standard procedures for a CSAP information management system and performance goals for each component of the CSAP set forth in Subparagraphs 10.f.(i). through (viii). below. The CSAP shall include the following components applied when appropriate using best professional judgment:

(i). Dyed Water Flooding. The Dyed Water Flooding component of the CSAP shall establish standard procedures for conducting dyed water testing to locate illegal connections and structural defects within WCTS that may or may not contribute to I/I within the WCTS. Structural defects shall be identified using standard codes defined under the Pipe Assessment Certification Program (“PACP”) and Manhole Assessment Certification Program (“MACP”) standards of the National Association of Sewer Service Companies (“NASSCO”), Owings Mills, MD (<http://www.nassco.org>).

(ii). Corrosion Defect Identification. The Corrosion Defect Identification component of the CSAP shall establish standard procedures for inspecting and identifying WCTS infrastructure that is either corroded or at risk of corrosion. The Corrosion

Defect Identification component shall include a system for prioritizing repair of existing corrosion defects, corrosion identification forms, and procedures for a corrosion defect analysis.

(iii). Manhole Condition Assessment. The Manhole Condition Assessment component of the CSAP shall establish standard procedures for the condition assessment of manholes within the WCTS. The Manhole Condition Assessment component shall include manhole inspection forms and procedures for a manhole defect analysis.

(iv). Flow Monitoring. The Parties agree that flow monitoring is not required at this time but the need may arise in the future in the event circumstances so warrant. As such, the Flow Monitoring component of the CSAP shall establish procedures for initiating flow monitoring when deemed necessary by Memphis' engineering analyses to characterize base flows and I/I rates within the WCTS where capacity-related concerns arise. The procedures shall identify the process used to establish flow monitoring locations, appropriate flow monitoring techniques, sewer cleaning associated with flow monitoring, and a procedure for rainfall measurement.

(v). Closed Circuit Television ("CCTV") Inspection. The CCTV inspection component of the CSAP shall establish standard procedures for CCTV inspection within the WCTS to support sewer assessment and rehabilitation activities, and shall include procedures for CCTV inspection and a process for the retention and retrieval of CCTV inspection data.

(vi). Gravity Sewer Line and Force Main Defect Analysis. The Gravity Sewer Line and Force Main defect analysis component of the CSAP shall establish standard procedures for analysis of Gravity Sewer Line and Force Main defects within the WCTS. The

Gravity Sewer Line and Force Main Defect Analysis component shall establish standard defect codes identified using PACP and MACP; defect identification procedures and guidelines; and a standardized process for cataloging Gravity Sewer Line and Force Main defects.

(vii). Smoke Testing. The Smoke Testing component of the CSAP shall establish standard procedures for smoke testing of the Gravity Sewer Lines within the WCTS to identify sources of I/I, including cross connections and other unauthorized connections. Such procedures shall include Private Lateral investigations to identify sources of I/I. The Smoke Testing component shall include smoke testing forms and procedures for smoke testing defect analysis.

(viii). Lift Station Performance and Adequacy. The Lift Station Performance and Adequacy component of the CSAP shall establish standard procedures for the evaluation of Lift Station performance and Lift Station adequacy within the WCTS. The Lift Station Performance and Adequacy component shall include:

(A). The use of pump run time meters; pump start counters; computation of Nominal Average Pump Operating Time ("NAPOT"); root cause failure analysis protocols; and appropriate remote sensing such as Supervisory Control and Data Acquisition ("SCADA");

(B). The evaluation of station capacity, as described in the *Pumping Systems* chapter of the most current version of WEF's Manual of Practice FD-4, *Design of Wastewater and Stormwater Pumping Stations*;

(C). The evaluation of critical response time, defined as the time interval between activation of the high wet well level alarm and the first SSO, under peak flow conditions;

(D). The evaluation of station conditions, based upon both physical inspection and recent operating and mechanical failure history during at least the past five years;

(E). The evaluation of station design and equipment, including redundancy of pumps and electrical power supply, and other equipment installed, based upon Chapter 40, *Wastewater Pumping Stations* of the most recent edition of *Recommended Standards for Wastewater Facilities* by the Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (commonly known as the “Ten State Standards”); and

(F) The evaluation of the ability of maintenance personnel to take corrective action within the critical response time calculated for each Lift Station.

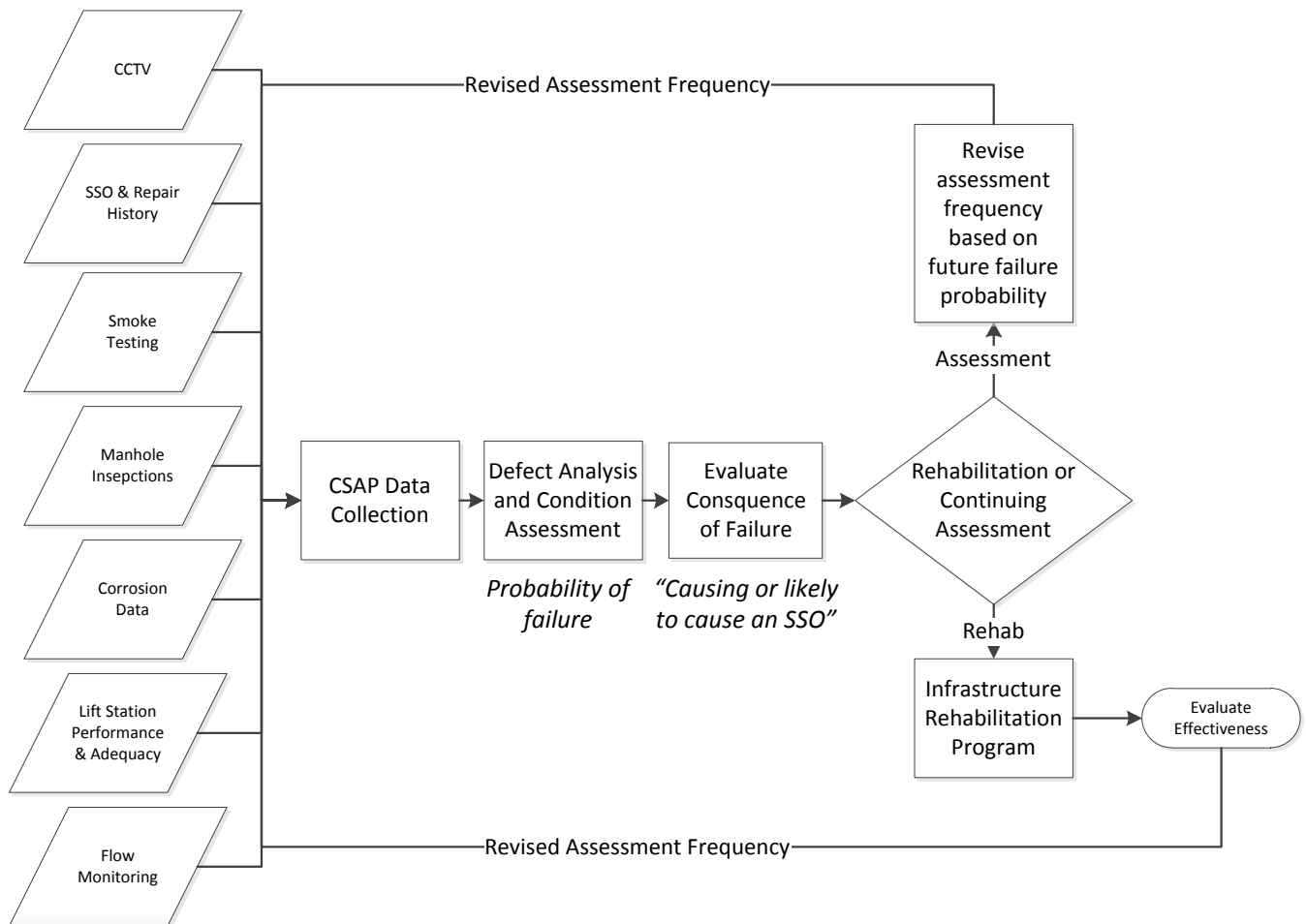
g. Infrastructure Rehabilitation Program (“IRP”) for the WCTS. Within one hundred eighty (180) Days after EPA approval of the CSAP, Memphis shall submit to EPA and TDEC for review and comment an IRP. The IRP shall take into account information gathered pursuant to the CSAP and the other MOM Programs set forth in this Paragraph 10 of this Consent Decree, including maintenance and SSO data, to assess the condition of the WCTS including Gravity Sewers, Lift Stations, and Force Mains. Memphis shall use this information and the judgment of trained and qualified wastewater professionals to rate the condition of each WCTS asset with respect to I/I, structural defects, and the other conditions causing, or that are

likely to cause, SSOs due to conveyance capacity concerns or structural failure. Such professional(s) shall use this information and his or her professional judgment to predict the probability of defects worsening to result in structural or capacity concerns prior to the next CSAP inspection. An example of an evaluation rating is set forth in the table below:

5	Very Poor Condition/Failed	Structural collapse causing surcharge or SSO; Partial collapse or collapse imminent; Severe I/I causing downstream overflow; pump failure causing SSO
4	Poor Condition	Major defects or sags causing debris build up; root balls; moderate I/I over numerous defects causing some surcharging but no SSO; recurring maintenance activities
3	Moderate Condition	Mild to moderate structural defects observed, Root intrusions
2	Good Condition	No very poor, poor or moderate conditions observed
1	Excellent Condition	New

The IRP utilization of the CSAP information will provide the basis for evaluating and prioritizing how Memphis will manage and respond to defects found in the WCTS. The management and response to asset conditions could include infrastructure rehabilitation, on-going maintenance activities, and/or additional assessments. A conceptual process diagram for the IRP process is set forth in Figure 1 below:

Figure 1 Process Diagram



The purpose of the IRP is to establish a process associated with making rehabilitation decisions, but it shall not be necessary for the IRP to include deadlines for specific rehabilitation projects. The assessed condition of each WCTS asset shall be used to prioritize and schedule rehabilitation efforts, maintenance activities and CSAP implementation frequencies. Revisions to the CSAP frequency will be based on the condition or probability of future failure of the asset, and the consequences of such failure. The IRP shall include a description of the techniques to be used for WCTS rehabilitation such as cured-in-place lining, pipe bursting, pipeline replacement,

point repairs and manhole lining or replacement. The IRP shall also provide Memphis with the flexibility to include other techniques that are determined to be appropriate by Memphis based on conditions observed.

The IRP shall include standard procedures for an IRP information management system and procedures for analysis of the effectiveness of completed rehabilitation for each component of the IRP set forth in Subparagraphs 10.g.(i). through (iv). below.

(i). Gravity Line Rehabilitation. The Gravity Line Rehabilitation component shall establish a process for setting Gravity Sewer Line rehabilitation priorities and schedules; shall establish an ongoing inventory of Gravity Sewer Line rehabilitation, including identification of the rehabilitation techniques used; and shall require an analysis of the effectiveness of completed rehabilitation.

(ii). Manhole Rehabilitation. The Manhole Rehabilitation component shall establish a process for setting manhole rehabilitation priorities and schedules and shall establish an ongoing inventory of manhole rehabilitation, including identification of the rehabilitation techniques used.

(iii). Lift Station Rehabilitation. The Lift Station Rehabilitation component shall establish a process for setting Lift Station rehabilitation priorities and schedules and shall establish an ongoing inventory of Lift Station rehabilitation, including identification of the rehabilitation techniques used.

(iv). Force Main Rehabilitation. The Force Main Rehabilitation component shall establish a process for setting Force Main rehabilitation priorities and schedules

and shall establish an ongoing inventory of force main rehabilitation, including identification of the rehabilitation techniques used.

11. Priority Rehabilitation Projects.

a. Priority Areas Projects. As set forth in Subparagraph 10.f. above, Memphis has determined that the areas of the WCTS identified in Appendix E shall be assessed pursuant to the CSAP in the first year following EPA approval of the CSAP. In addition, Memphis agrees to prioritize the areas of the WCTS identified on the map in Appendix G, attached hereto and incorporated herein, in its implementation of the IRP. The priority areas in Appendix G are a subset of the areas identified in Appendix E. Because the priority areas in Appendix G are part of the priority assessment areas, both areas have the same characteristics in terms of age, frequency and volumes of SSOs, proximity to CWA Section 303(d) listed streams and proximity to environmental justice communities. However, Memphis has determined that the rehabilitation priority areas shown in Appendix G include areas with the highest numbers of SSOs in recent years and encompass nearly all watersheds for the impaired streams in the priority assessment areas shown in Appendix E, specifically the Cypress Creek and Cane Creek watersheds. Memphis shall complete all rehabilitation projects within the priority areas identified in Appendix G pursuant to the IRP within six (6) years and seven (7) months after EPA's approval of the IRP. Twenty-five (25) months after EPA's approval of the IRP but no later than twenty-seven (27) months after EPA's approval of the IRP, Memphis shall submit to EPA and TDEC for review and comment an Interim Priority Areas Project Report setting forth a summary of the results to date of the implementation of the CSAP and IRP within the priority areas identified in Appendix G, including a thorough analysis of assessment data collected during



implementation of the CSAP and IRP, and a description of the specific rehabilitation measures implemented by Memphis in these priority areas pursuant to the IRP. Within six (6) months after Memphis completes construction of rehabilitation projects within the priority areas identified in Appendix G pursuant to the IRP, Memphis shall submit to EPA and TDEC for review and comment a Final Priority Areas Project Report setting forth a complete summary of the results of the implementation of the CSAP and IRP within the priority areas identified in Appendix G, including a thorough analysis of assessment data considered and/or collected during implementation of the CSAP and IRP, and a description of all the specific rehabilitation measures implemented by Memphis in these priority areas pursuant to the IRP.

b. Critical Infrastructure Areas Projects. In addition to the assessment and rehabilitation of the priority areas described above, Memphis has also indentified three (3) additional areas within the WCTS that will receive prioritized rehabilitation projects due to the critical nature of the infrastructure and the potential consequences of large volumes of SSOs in the event of infrastructure failure. These critical areas are shown on the map in Appendix H, attached hereto and incorporated herein. The first critical area focuses on the 42-inch to 48-inch Wolf River Interceptor. The portion of the interceptor length that is to be rehabilitated runs approximately one thousand (1,000) feet in the northern area adjacent to the Wolf River. Portions of the Wolf River Interceptor have failed in the past and during repairs of these sections, as well as through other visual inspections, Memphis has determined that this approximately one thousand (1,000) foot section of the interceptor should receive priority before additional failures occur. Failures of the Wolf River Interceptor could potentially create large volume SSOs which can be avoided if rehabilitation is completed. This portion of the Wolf River Interceptor will be

assessed, cleaned, and rehabilitated as a priority project. The second critical area requiring rehabilitation is the portion of the 96-inch interceptor at the entrance/exit ramp located at mile 51 of Interstate 240 which is approximately one thousand three hundred fifty (1,350) feet in length. This interceptor represents critical infrastructure due to its proximity to the Interstate 240 because of the disruption to traffic that could be caused as a result of any failure. During manhole rehabilitation in other segments of this interceptor, as well as through other visual inspections, Memphis has determined that this portion of the interceptor is in need of rehabilitation. Memphis has observed indications of deteriorated areas within this interceptor that will require rehabilitation as a priority project in order for Memphis to avoid the potential for large volume SSOs should a failure occur. The third critical area requiring rehabilitation is the 84-inch interceptor located where McLean Boulevard crosses the Wolf River and Interstate 40, which is approximately six hundred (600) feet in length. During rehabilitation in other segments of this interceptor, as well as through other visual inspections, Memphis has determined that this portion of the interceptor is in need of rehabilitation. Memphis has observed indications of deteriorated areas within this portion of the interceptor that will require rehabilitation as a priority project in order for Memphis to avoid the potential for large volume SSOs should a failure occur. Memphis shall complete all rehabilitation projects within these three (3) critical areas identified in Appendix H within five (5) years after the Effective Date of this Consent Decree. Within six (6) months after Memphis completes construction of rehabilitation projects within the critical areas identified in Appendix H, Memphis shall submit to EPA and TDEC for review and comment a Final Critical Areas Project Report setting forth a complete summary of the results of the implementation of the CSAP and IRP within the critical areas identified in Appendix H,

including a thorough analysis of assessment data considered and/or collected and a description of all the specific rehabilitation measures implemented by Memphis in these critical areas.

c. Prior Assessment Areas Projects. Based on previous inspection and assessment activity performed by Memphis on various interceptors and large sewer lines in the WCTS, Memphis has identified four (4) additional rehabilitation projects which shall be implemented and completed pursuant to this Consent Decree. Memphis agrees to complete these additional rehabilitation projects within four (4) years after the Effective Date of this Consent Decree. These rehabilitation projects are:

(i) Cured In-Place Pipe (“CIPP”) lining of the Nonconnah Interceptor between manholes numbered N06-119 and N06-127;

(ii) Rehabilitation or replacement of manholes on Mud Island that include manhole number M10-005 plus the two (2) additional manholes immediately downstream and repair of the liner in the corresponding portion of the 60-inch interceptor near these manholes (such repair work will require the temporary pump around of wastewater during construction);

(iii) Rehabilitation of approximately sixty-four (64) manholes identified as having heavy or medium corrosion in Appendix B of a June 6, 2006 study report prepared by Buchart-Horn on behalf of Memphis; and

(iv) CIPP lining on segments of the Wolf River Interceptor between demarcation points W05-120 and W05-130.

12. M.C. Stiles WWTP Foam Study and Outfall Improvements Work Plan. To address alleged noncompliance associated with foam discharged from the M.C. Stiles WWTP,

Memphis agrees to implement as an enforceable obligation under this Consent Decree the M.C. Stiles WWTP Foam Study and Outfall Improvements Work Plan, dated September 15, 2010, which is attached hereto as Appendix I and incorporated by reference herein. It is the expectation of the Parties that this Work Plan, once implemented, will eliminate the underlying cause(s) of the alleged noncompliance with the NPDES Permit for the M.C. Stiles WWTP. In the event EPA and TDEC determine within one (1) year after Memphis' completion of the work under this Work Plan that this Work Plan failed to address alleged noncompliance associated with foam discharge from the M.C. Stiles WWTP, EPA and TDEC shall so notify Memphis in writing. Within ninety (90) Days of receiving this notification or such other time as agreed to by EPA and TDEC, Memphis shall submit to EPA and TDEC for review and comment a revised Work Plan to address the alleged noncompliance, subject to Memphis' right to invoke Dispute Resolution under Section XI of this Consent Decree; provided, however, that in any such Dispute, EPA shall bear the burden of proof with respect to its allegation of noncompliance associated with foam discharge from the M.C. Stiles WWTP.

## **VI. REVIEW OF DELIVERABLES/CERTIFICATION OF DELIVERABLES**

13. Public Document Repository. Prior to the initial submission of a Deliverable to EPA and TDEC pursuant to Subparagraphs 10.c., 10.d., 10.e., 10.f., 10.g., 11.a., 11.b., or 11.c., Memphis shall notify the Reference Librarian at the Memphis Central Library (located at 3030 Poplar Avenue, Memphis, Tennessee 38111) and the TCWN identifying the Deliverable to be submitted and providing a one-page instruction flyer containing a brief synopsis of the Deliverable and instructions on how to navigate to Memphis' website and shall make available a copy of each Deliverable on Memphis' website. The Central Library in Memphis and Memphis'

website shall constitute the Public Document Repository (“PDR”). Memphis shall allow the public, including the TCWN, a period of thirty (30) Days to inspect and comment to Memphis on the Deliverable (“Public Review Requirement”). Memphis shall provide instructions to the public in the PDR for submitting comments. Thereafter, Memphis shall consider public comments for a period of up to fifteen (15) Days. Memphis shall bear the sole responsibility for depositing all Deliverables in the PDR. Within seven (7) Days after its submission to EPA and TDEC, Memphis shall place a copy of the submitted version of the Deliverable in the PDR in the same fashion as the original submission and notify the TCWN that the document has been filed. Within seven (7) Days after EPA’s approval or modification by EPA pursuant to this Section, if revised, Memphis shall place a copy of such version of the Deliverable in the PDR. This copy shall replace all previous copies of that Deliverable in the PDR and shall remain in the PDR along with all comments until termination of this Consent Decree. In addition, Memphis shall maintain in the PDR a listing of all Deliverables and comments. If Memphis resubmits a Deliverable to EPA in response to EPA comments pursuant to Paragraph 17, such resubmission is not subject to the thirty (30) Day public comment period nor is Memphis required to obtain public comment on the resubmission.

14. Timing of Review of Deliverables. EPA and TDEC agree to use best efforts to expeditiously review and comment on Deliverables. If EPA issues written comments and decisions on the Deliverables required in Subparagraphs 10.f. or 10.g. or Paragraph 11 of this Consent Decree more than one-hundred and twenty (120) Days after receipt of such submission, or on any other Deliverable more than sixty (60) Days after receipt of such submission, any subsequent deadline or milestone that is dependent upon such comments or decisions shall be

extended. The length of the extension shall be determined by calculating the number of Days between EPA's receipt of the submission and the date of EPA's written response, less one-hundred and twenty (120) Days (in the case of the Deliverables required in Subparagraphs 10.f. or 10.g. or Paragraph 11) or sixty (60) Days (in the case of any other Deliverable). Within thirty (30) Days of the date that Memphis knows or should know of a deadline or milestone that Memphis believes is extended under this Paragraph, Memphis shall inform EPA and TDEC, in writing, of its belief and the amount of time Memphis believes the deadlines or milestones are extended. If EPA disagrees with Memphis' determination that a deadline is dependent upon such comments or decisions, EPA shall inform Memphis in writing. Memphis may dispute EPA's conclusion regarding whether a deadline is dependent upon such comments or decisions pursuant to Section XI (Dispute Resolution).

15. EPA Action on Deliverables. After review of any Deliverable that is required to be submitted pursuant to this Consent Decree, EPA, after consultation with TDEC, shall in writing:

- a. approve the submission;
- b. approve part of the submission and disapprove the remainder; or
- c. disapprove the submission.

16. Approved Deliverables. If a Deliverable is approved by EPA pursuant to Subparagraph 15.a., Memphis shall take all actions required by the Deliverable in accordance with the schedules and requirements of the Deliverable as approved. If the Deliverable is approved only in part pursuant to Subparagraph 15.b., Memphis shall, upon written direction from EPA, after consultation with TDEC, take all actions required by the approved plan, report,

or other item that EPA, after consultation with TDEC, determines are technically severable from any disapproved portions, subject to Memphis' right to dispute only the specified conditions or the disapproved portions, under Section XI of this Decree (Dispute Resolution). Following EPA approval of any Deliverable or portion thereof, such Deliverable or portion thereof so approved shall be incorporated into, and become enforceable under, this Consent Decree.

17. Disapproved Deliverables. If the Deliverable is disapproved in whole or in part pursuant to Subparagraph 15.b. or c., Memphis shall, within thirty (30) Days or such other time as EPA and Memphis agree to in writing, correct all deficiencies and resubmit to EPA the Deliverable, or disapproved portion thereof, for approval, in accordance with Paragraphs 15 and 18. If the resubmission is approved in whole or in part, Memphis shall proceed in accordance with Paragraph 16.

18. Stipulated Penalties Accruing. Any stipulated penalties applicable to the original Deliverable, as provided in Section IX of this Decree, shall accrue during the thirty (30)-Day period or other specified period, but shall not be payable unless the resubmitted Deliverable is untimely or is disapproved in whole or in part; provided that, if the original submission was so deficient as to constitute a material breach of Memphis' obligations under this Decree, the stipulated penalties applicable to the original submission shall be due and payable notwithstanding any subsequent resubmission.

19. Resubmitted Deliverable. If a resubmitted Deliverable, or portion thereof, is disapproved in whole or in part, EPA, after consultation with TDEC, may again require Memphis to correct any deficiencies, in accordance with preceding Paragraph 17, or may itself correct any deficiencies, subject to Memphis' right to invoke Dispute Resolution under Section XI of this

Consent Decree and the right of EPA to seek stipulated penalties as provided in preceding Paragraph 18. Upon EPA's correction of any deficiencies, such resubmitted plan, report, or other item, or portion thereof, will be incorporated into and become enforceable under this Consent Decree and shall be implemented by Memphis according to the approved schedule subject to Memphis' right to invoke Dispute Resolution.

20. Certification. In all Deliverables, notices, documents or reports submitted to the United States and State pursuant to this Consent Decree, Memphis shall, by a Memphis senior management official, sign and certify such notices, documents and reports as follows:

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

## **VII. CIVIL PENALTY**

21. Memphis shall pay a civil penalty of \$1,290,000 as set forth in Paragraphs 22 and 23 below.

22. Within sixty (60) Days after the Effective Date of this Consent Decree, Memphis shall pay to the United States \$645,000 of the civil penalty due by FedWire Electronic Funds Transfer ("EFT") to the U.S. Department of Justice in accordance with written instructions to be



provided to Memphis, following lodging of the Consent Decree, by the Financial Litigation Office of the U.S. Attorney's Office for the Western District of Tennessee, 200 Jefferson Avenue, Room 811, Memphis, TN 38103; phone number (901) 544-4010. At the time of payment, Memphis shall send a copy of the EFT authorization form and the EFT transaction record, together with a transmittal letter, which shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in United States et al. v. City of Memphis, and shall reference the civil action number and DOJ case number 90-5-1-1-09720, to the United States in accordance with Section XV of this Decree (Notices); by email to [acctsreceivable.CINWD@epa.gov](mailto:acctsreceivable.CINWD@epa.gov); and by mail to:

EPA Cincinnati Finance Office

26 Martin Luther King Drive

Cincinnati, Ohio 45268

In the event that full cash payment to the United States is not made within sixty (60) Days after the Effective Date of this Consent Decree, Memphis shall pay to the United States interest on the balance due from the original due date to the date of full payment, at the rate calculated pursuant to 28 U.S.C. § 1961.

23. Memphis shall make payment as directed by the State as follows: Memphis shall spend \$645,000 on the State Projects in accordance with, and as more particularly set forth in, Appendix J of this Consent Decree. TDEC has approved this payment as appropriate State Projects recognizing the value of these projects and their potential to positively impact the local environment.

### **VIII. REPORTING REQUIREMENTS**

24. **Quarterly Reports.** Beginning thirty (30) Days after the first full three (3) month period following the Effective Date, and thirty (30) Days after each subsequent three (3) month period thereafter until termination of the Consent Decree, Memphis shall submit to EPA and TDEC for review and comment a Quarterly Report that shall include the date, time, location, source, estimated duration, estimated volume, receiving water (if any), and cause of all SSO Events occurring in the applicable three (3) month period. In reporting such SSO data, Memphis shall provide the information in a tabulated electronic format (*e.g.*, Excel spreadsheet) as it deems appropriate. For purposes of this Section VIII (Reporting Requirements), a “SSO Event” shall mean the total time period SSO(s) (as defined in Subparagraph 8.hh. of this Consent Decree) occurs at the same location and due to the same causes(s). For example, a collapsed pipe that results in a SSO on multiple days is a single SSO Event.

25. **Semi-Annual Reports.** Beginning thirty (30) Days after the first full six (6) month period following the Effective Date, and thirty (30) Days after each subsequent six (6) month period until termination of the Consent Decree, Memphis shall submit to EPA and TDEC for review and comment a Semi-Annual Report. Each Semi-Annual Report shall include, at a minimum:

a. A description of projects and activities completed and milestones achieved during the previous applicable six (6) month period pursuant to the requirements of this Consent Decree, in Gantt chart or similar format, including a description of the status of compliance or non-compliance with the requirements of this Consent Decree and, if applicable, the reasons for non-compliance. If any non-compliance cannot be fully explained at the time the report is due,

Memphis shall include a statement to that effect in the report. Memphis shall investigate to determine the cause of the non-compliance and then shall submit an amendment to the report, including a full explanation of the cause of the non-compliance, within thirty (30) Days after submission of the Semi-Annual Report.

b. A summary of significant projects and activities anticipated to be performed, and milestones anticipated to be achieved, in the successive applicable six (6) month period to comply with the requirements of this Consent Decree, in Gantt chart or similar format.

c. Any additional information Memphis determines is appropriate to demonstrate that Memphis is implementing the remedial actions required under this Consent Decree in an adequate and timely manner.

26. Annual Reports. Beginning sixty (60) Days after the first full twelve (12) month period following the Effective Date, and sixty (60) Days after each subsequent twelve (12) month period until termination of this Consent Decree, Memphis shall submit to EPA and TDEC for review and comment an Annual Report. Each Annual Report shall cover the most recent applicable twelve (12) month period and shall include, at a minimum:

a. A summary of the MOM Programs implemented or modified pursuant to this Consent Decree, including a comparison of actual performance with any performance measures that have been established.

b. A trends analysis of the number, volume, duration, and cause of Memphis' SSO Events for a twenty-four (24) month period updated to reflect the SSO Events that occurred during the previous twelve (12) month period. In reporting trends and other SSO data, Memphis shall provide the information in such format as it deems appropriate.

27. Except as otherwise provided in the SORP, whenever any violation of this Consent Decree or any other event affecting Memphis' performance under this Decree or its NPDES Permits may pose an immediate threat to the public health or welfare or the environment, Memphis shall notify EPA and TDEC orally or by electronic or facsimile transmission as soon as possible, but no later than twenty-four (24) hours after Memphis first knew of the violation or event. This procedure is in addition to the requirements set forth in Subparagraph 25.a.

28. All reports shall be submitted to the persons designated in Section XV of this Consent Decree (Notices) for EPA and TDEC and shall be certified pursuant to Paragraph 20 of this Consent Decree. The certification requirement in Paragraph 20 does not apply to emergency or similar notifications where compliance would be impractical.

29. Compliance with this Section does not relieve Memphis of any other reporting obligations required by the Clean Water Act, the TWQCA, or implementing regulations, or by any other Federal, state, or local law, regulation, permit, or other requirement, including the NPDES Permits.

30. Notification to EPA or TDEC pursuant to this Section of an anticipated delay shall not by itself excuse the delay or otherwise satisfy the notification requirements set forth in Section X (Force Majeure).

31. Any information provided pursuant to this Consent Decree may be used by the United States and the State in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law.

## **IX. STIPULATED PENALTIES**

32. Memphis shall be liable for stipulated penalties to the United States and the State for violations of this Consent Decree as specified below, unless excused under Section X (Force Majeure). A violation includes failing to perform any obligation required by the terms of this Consent Decree, including any work plan or schedule approved under this Consent Decree, according to all applicable requirements of this Consent Decree and within the specified time schedules established by or approved under this Consent Decree.

33. If Memphis fails to pay the civil penalty required to be paid under Section VII of this Consent Decree (Civil Penalty) when due, Memphis shall pay a stipulated penalty of \$1,000 per day for each day that the payment is late.

34. The following stipulated penalties shall accrue for each violation identified below:

a. Unpermitted Discharges.

(i). For each Unpermitted Discharge Event occurring after the final deadline for the completion of rehabilitation projects in the specific priority areas of the WCTS as required in Subparagraph 11.a., a stipulated penalty of \$1,000 may be assessed.

(ii). For each Unpermitted Discharge Event occurring after the final deadline for the completion of rehabilitation projects in the specific critical areas of the WCTS as required in Subparagraph 11.b., a stipulated penalty of \$1,000 may be assessed.

(iii). For each Unpermitted Discharge Event occurring after the final deadline for the completion of the specific rehabilitation projects in the specific prior assessment areas of the WCTS as required in Subparagraph 11.c., a stipulated penalty of \$1,000 may be assessed.

(iv). For each Unpermitted Discharge Event in the WCTS less than or equal to 25,000 gallons, other than any Unpermitted Discharge Event in those priority areas identified in Subparagraphs 11.a. through c., a stipulated penalty may be assessed. Any such stipulated penalty shall be determined as follows:

If the Unpermitted Discharge Event Occurs:	Penalty Per Unpermitted Discharge Event:
Six (6) months after the Effective Date but before forty-eight (48) months after the Effective Date	\$250
Forty-eight (48) months or more after the Effective Date	\$500

(v). For each Unpermitted Discharge Event in the WCTS greater than 25,000 gallons but less than or equal to 100,000 gallons, other than any Unpermitted Discharge Event in those priority areas identified in Subparagraphs 11.a. through c., a stipulated penalty may be assessed. Any such stipulated penalty shall be determined as follows:

If the Unpermitted Discharge Event Occurs:	Penalty Per Unpermitted Discharge Event:
Six (6) months after the Effective Date but before thirty-six (36) months after the Effective Date	\$500
Thirty-six (36) months or more after the Effective Date	\$1,000

(vi). For each Unpermitted Discharge Event in the WCTS greater than 100,000 gallons, other than any Unpermitted Discharge Event in those priority areas identified in Subparagraphs 11.a. through c., a stipulated penalty may be assessed. Any such stipulated penalty shall be determined as follows:

If the Unpermitted Discharge Event Occurs:	Penalty Per Unpermitted Discharge Event:
Six (6) months after the Effective Date but before twenty-four (24) months after the Effective Date	\$1,000

Twenty-four (24) months or more after the Effective Date \$2,000

(vii). For purposes of this Subparagraph 34.a, an “Unpermitted Discharge Event” shall mean the total time period Unpermitted Discharge(s) (as defined in Subparagraph 8.ss. of this Consent Decree) occurs at the same location and due to the same causes(s). For example, a collapsed pipe that results in an Unpermitted Discharge on multiple days is a single Unpermitted Discharge Event.

b. Failure to Timely Submit Deliverable. For each day Memphis fails to Timely submit any Deliverable, a stipulated penalty for each such Deliverable may be assessed as follows:

Period of Noncompliance:	Penalty Per Deliverable Per Day:
One (1) to thirty (30) days	\$500
More than thirty (30) days	\$1,000

c. Failure to Meet Deadlines in Paragraph 11. For each day Memphis fails to complete the rehabilitation projects pursuant to and in accordance with the final deadlines set forth in Subparagraph 11.a., b., or c., daily stipulated penalties may be assessed for each missed deadline as follows:

Period of Noncompliance:	Penalty Per Violation Per Day:
One (1) to fourteen (14) days	\$500
Fifteen (15) to thirty (30) days	\$1,000
Thirty-one (31) to sixty (60) days	\$1,500
Sixty-one (61) to one hundred-eighty (180) days	\$2,000
More than one hundred-eighty (180) days	\$2,500

d. Failure to Timely Implement State Project Milestones. For each Day Memphis fails to Timely implement a State Project milestone set forth in Appendix J, Paragraph I.G., or fails to make Timely payment of unspent State Project Funds to the State as set forth in Appendix J, Paragraph I.J., daily stipulated penalties may be assessed only as provided for in Appendix J, Paragraphs I.G and I.J., and as follows:

Period of Noncompliance:	Penalty Per Violation Per Day:
One (1) to sixty (60) Days	\$500
More than sixty (60) Days	\$1,500

35. Stipulated penalties under this Section shall begin to accrue on the day after performance is due or on the day a violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

36. Memphis shall pay stipulated penalties to the United States and the State within thirty (30) Days of a written demand by EPA. Memphis shall pay fifty (50) percent of the total stipulated penalty amount due to the United States and fifty (50) percent to the State.

37. The United States may in the unreviewable exercise of its discretion, reduce or waive stipulated penalties otherwise due under this Consent Decree.

38. Stipulated penalties shall continue to accrue as provided in Paragraph 35 during any Dispute Resolution, but need not be paid until the following:

a. If the dispute is resolved by agreement or by a decision of EPA that is not appealed to the Court, Memphis shall pay accrued penalties determined to be owing, together



with interest, to the United States and the State within thirty (30) Days of the effective date of the agreement or the receipt of EPA's decision or order.

b. If the dispute is appealed to the Court and the United States prevails in whole or in part, Memphis shall pay all accrued penalties determined by the Court to be owed, together with interest, within sixty (60) Days of receiving the Court's decision or order, except as provided in Subparagraph 38.c. below.

c. If the District Court's decision is appealed, Memphis shall pay all accrued penalties determined to be owed, together with interest, within fifteen (15) Days of receiving the final appellate court decision.

39. Memphis shall pay stipulated penalties owing to the United States in the manner set forth and with the confirmation notices required by Paragraph 22, except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid. Memphis shall pay stipulated penalties owing to the State by check payable to the "State of Tennessee." Each check shall reference the case name and civil action number herein and shall be sent to:

Sohnia W. Hong  
Office of the Attorney General  
Environmental Division  
P.O. 20207  
Nashville, Tennessee 37202

40. If Memphis fails to pay stipulated penalties according to the terms of this Consent Decree, Memphis shall be liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph shall be

construed to limit the United States or the State from seeking any remedy otherwise provided by law for Memphis' failure to pay any stipulated penalties.

41. Subject to the provisions of Section XIII of this Consent Decree (Effect of Settlement/Reservation of Rights), the stipulated penalties provided for in this Consent Decree shall be in addition to any other rights, remedies, or sanctions available to the United States and the State for Memphis' violation of this Consent Decree or applicable law. Where a violation of this Consent Decree is also a violation of the Clean Water Act and/or the TWQCA, Memphis shall be allowed a credit, for any stipulated penalties paid, against any statutory penalties imposed for such violation.

#### **X. FORCE MAJEURE**

42. "Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Memphis, of any entity controlled by Memphis, or of Memphis' consultants and contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Memphis' best efforts to fulfill the obligation. The requirement that Memphis exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any such event (a) as it is occurring and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent possible. "Force Majeure" does not include Memphis' financial inability to perform any obligation under this Consent Decree.

43. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, Memphis shall provide notice orally or by electronic or facsimile transmission to EPA and TDEC, within

three (3) working days (excluding weekends and holidays) of when Memphis first knew that the event might cause a delay. Within fourteen (14) Days thereafter, Memphis shall provide in writing to EPA and TDEC, to the extent known after reasonable investigation, an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Memphis' rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Memphis, such event may cause or contribute to an endangerment to public health, welfare or the environment. Memphis shall include with any notice all available documentation supporting the claim that the delay was attributable to a force majeure event. Failure to comply with the above requirements shall preclude Memphis from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Memphis shall be deemed to know of any circumstance of which Memphis, any entity controlled by Memphis, or Memphis' contractors knew or should have known.

44. If EPA, after a reasonable opportunity for review and comment by TDEC, agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by EPA, after a reasonable opportunity for review and comment by TDEC, for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the

time for performance of any other obligation. EPA will notify Memphis in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

45. If EPA, after a reasonable opportunity for review and comment by TDEC, does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, EPA will notify Memphis in writing of its decision.

46. If Memphis elects to invoke the dispute resolution procedures set forth in Section XI (Dispute Resolution), it shall do so no later than fifteen (15) Days after receipt of EPA's notice. In any such proceeding, Memphis shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Memphis complied with the requirements of Paragraphs 42 and 43 above. If Memphis carries this burden, the delay at issue shall be deemed not to be a violation by Memphis of the affected obligation of this Consent Decree identified to EPA and the Court.

## **XI. DISPUTE RESOLUTION**

47. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. Memphis' failure to seek resolution of a dispute under this Section shall preclude Memphis from raising any such issue as a defense to an action by the United States or the State to enforce any obligation of Memphis arising under this Decree.

48. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Decree shall first be the subject of informal negotiations. The dispute shall be

considered to have arisen when Memphis sends the United States a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute. The period of informal negotiations shall not exceed twenty (20) Days from the date the dispute arises, unless that period is modified by written agreement between the United States and Memphis. The United States shall consult with the State and the TCWN during the period of informal negotiations. If the United States and Memphis cannot resolve a dispute by informal negotiations, then the position advanced by the United States shall be considered binding unless, within sixty (60) Days after the conclusion of the informal negotiation period, Memphis invokes formal dispute resolution procedures as set forth below.

49. Formal Dispute Resolution. Memphis shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by serving on the United States and the State a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting Memphis' position and any supporting documentation relied upon by Memphis. The United States shall serve its Statement of Position within sixty (60) Days of receipt of Memphis' Statement of Position. The United States' Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the United States. The United States shall consult with the State and the TCWN during preparation of its Statement of Position. The United States' Statement of Position shall be binding on Memphis, unless Memphis files a motion for judicial review of the dispute in accordance with the following Paragraph.

50. Judicial Dispute Resolution. Memphis may seek judicial review of the dispute by filing with the Court and serving on the United States and the State, in accordance with Section XV of this Consent Decree (Notices), a motion requesting judicial resolution of the dispute. The motion must be filed within ten (10) working days (excluding weekends and holidays) of receipt of the United States' Statement of Position pursuant to the preceding Paragraph. The motion shall contain a written statement of Memphis' position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree. The United States shall respond to Memphis' motion within the time period allowed by the Local Rules of this Court. The United States shall consult with the State and the TCWN during preparation of its response. Memphis may file a reply memorandum, to the extent permitted by the Local Rules.

51. Standard of Review. Except as otherwise provided in this Consent Decree, in any dispute brought under this Section, Memphis shall bear the burden of demonstrating that its position complies with this Decree. The United States reserves the right to argue that its position is reviewable only on the administrative record and must be upheld unless arbitrary and capricious or otherwise not in accordance with law.

52. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone, or affect in any way any obligation of Memphis under this Consent Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 38. If

Memphis does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section IX (Stipulated Penalties).

**XII. RIGHT OF ENTRY AND INFORMATION COLLECTION AND RETENTION**

53. The United States, the State, and their representatives, including attorneys, contractors, and consultants, shall have the right of entry into any facility covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

- a. monitor the progress of activities required under this Consent Decree;
- b. verify any data or information submitted to the United States or the State in accordance with the terms of this Consent Decree;
- c. obtain samples and, upon request, splits of any samples taken by Memphis or its representatives, contractors, or consultants;
- d. obtain documentary evidence, including photographs and similar data; and
- e. assess Memphis' compliance with this Consent Decree.

54. Upon request, Memphis shall provide EPA and TDEC or their authorized representatives splits of any samples taken by Memphis. Upon request, EPA and TDEC shall provide Memphis splits of any samples taken by EPA or TDEC.

55. Until five years after the termination of this Consent Decree, Memphis shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate in any manner to Memphis' performance of its obligations under this Consent Decree. Drafts of final documents or plans,

and non-substantive correspondence and emails do not need to be retained. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States or the State, Memphis shall provide copies of any non-privileged documents, records, or other information required to be maintained under this Paragraph.

56. At the conclusion of the information-retention period provided in the preceding Paragraph, Memphis shall notify the United States and the State at least ninety (90) Days prior to the destruction of any documents, records, or other information subject to the requirements of the preceding Paragraph and, upon request by the United States or the State, Memphis shall deliver any such documents, records, or other information to EPA or TDEC. Memphis may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege recognized by federal law. If Memphis asserts such a privilege, it shall provide the following:

- a. the title of the document, record, or information;
- b. the date of the document, record, or information;
- c. the name and title of each author of the document, record, or information;
- d. the name and title of each addressee and recipient;
- e. a description of the subject of the document, record, or information;
- f. the privilege asserted by Memphis.

However, no documents, records, or other information required to be created or generated by this Consent Decree shall be withheld on grounds of privilege.



57. Memphis and/or its contractors may also assert that information required to be provided under this Section is protected as Confidential Business Information (“CBI”) under 40 C.F.R. Part 2. As to any information that Memphis seeks to protect as CBI, Memphis shall follow the procedures set forth in 40 C.F.R. Part 2.

58. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States or the State pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of Memphis to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

### **XIII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS**

59. This Consent Decree resolves the civil claims of the United States and the State for the violations alleged in the Amended Complaint filed in this action through the Date of Lodging of this Consent Decree.

60. This Consent Decree also resolves the civil claims of the TCWN for the violations alleged, or that could have been alleged, in the TCWN Complaint filed in this action through the Date of Lodging of this Consent Decree. In addition, this Consent Decree resolves all civil claims of the TCWN for penalties associated with any activity subject to a stipulated penalty under this Consent Decree.

61. The United States and the State reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree, except as expressly stated in Paragraph 59. This Consent Decree shall not be construed to limit the rights of the United States or the State to obtain penalties or injunctive relief under the CWA, TWQCA, or their implementing regulations,

or under other federal or state laws, regulations, or permit conditions, except as expressly specified in Paragraph 59. The United States and the State further reserve all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, Memphis' WCTS and/or WWTPs, whether related to the violations addressed in this Consent Decree or otherwise.

62. Memphis does not admit any liability arising out of the transactions or occurrences alleged in the Amended Complaint or in the TCWN Complaint and reserves all rights regarding factual and legal contentions therein except in an action to enforce this Consent Decree by a Party.

63. In any subsequent administrative or judicial proceeding initiated by the United States or the State for injunctive relief, civil penalties, other appropriate relief relating to Memphis' WCTS and/or WWTPs or Memphis' violations, Memphis shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or the State in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 59 of this Section.

64. This Consent Decree is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. Memphis is responsible for achieving and maintaining complete compliance with all applicable federal, state, and local laws, regulations, and permits; and Memphis' compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein.

The United States and the State do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that Memphis' compliance with any aspect of this Consent Decree will result in compliance with provisions of the CWA, TWQCA, or with any other provisions of federal, state, or local laws, regulations, or permits.

65. This Consent Decree does not limit or affect the rights of Memphis or of the United States or the State against any third parties, not party to this Consent Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against Memphis, except as otherwise provided by law.

66. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

67. The Amended Complaint and this Consent Decree shall constitute and establish diligent prosecution by the United States and the State of Tennessee under CWA section 505(b)(1)(B), 33 U.S.C. § 1365(b)(1)(B), and any other applicable federal or State law, and of all matters alleged in the Amended Complaint arising from the beginning of the applicable statutes of limitation through the Date of Lodging of the Decree.

#### **XIV. COSTS**

68. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States and the State shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the civil penalty or any stipulated penalties due but not paid by Memphis.

## **XV. NOTICES**

69. Unless otherwise specified herein, whenever notifications, submissions, or communications are required by this Consent Decree, they shall be made in writing and addressed as follows:

To the United States:

Chief, Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
Box 7611 Ben Franklin Station  
Washington, D.C. 20044-7611  
Re: DOJ No. 90-5-1-1-09720

and

Chief, Clean Water Enforcement Branch  
Water Protection Division  
ATTN: Brad Ammons  
U.S Environmental Protection Agency, Region 4  
61 Forsyth Street, S.W.  
Atlanta, GA 30303  
(404) 562-9769

To EPA:

Chief, Clean Water Enforcement Branch  
Water Protection Division  
ATTN: Brad Ammons  
U.S Environmental Protection Agency, Region 4  
61 Forsyth Street, S.W.  
Atlanta, GA 30303  
(404) 562-9769

To the State:

Sohnia W. Hong  
Senior Counsel  
Office of the Attorney General  
Environmental Division  
P.O. Box 20207  
Nashville, Tennessee 37202

and

Director, Water Pollution Control  
Tennessee Department of Environment and Conservation  
ATTN: Paul E. Davis  
6<sup>th</sup> Floor, L&C Annex  
401 Church Street  
Nashville, Tennessee 37243-1534  
(615) 532-0625

To TDEC:

Director, Water Pollution Control  
Tennessee Department of Environment and Conservation  
ATTN: Paul E. Davis  
6<sup>th</sup> Floor, L&C Annex  
401 Church Street  
Nashville, Tennessee 37243-1534  
(615) 532-0625

To Memphis:

Dwan L. Gilliom, Director  
City of Memphis  
Public Works Division  
125 North Main, Room 608  
Memphis, TN 38103

City Attorney  
Attn: Herman Morris, Jr. and CC Drayton  
125 North Main Street, Room 336  
Memphis, Tennessee 38103-2079

To TCWN:

Stephanie Durman Matheny  
Tennessee Clean Water Network  
P.O. Box 1521  
Knoxville, Tennessee 37901

70. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above.

71. Notices submitted pursuant to this Section shall be deemed submitted upon mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

#### **XVI. EFFECTIVE DATE**

72. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket.

#### **XVII. RETENTION OF JURISDICTION**

73. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree or entering orders modifying this Decree, pursuant to Sections X and XVI, or effectuating or enforcing compliance with the terms of this Decree.

#### **XVIII. MODIFICATION**

74. The terms of this Consent Decree, including any attached appendices, may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Decree, it shall be effective only upon approval

by the Court. Non-material changes to this Consent Decree (including appendices) may be made by written agreement of the Parties without court approval, and the Parties may by mutual agreement determine whether a modification is non-material.

75. Any disputes among the Parties concerning modification of this Decree shall be resolved pursuant to Section XI of this Decree (Dispute Resolution), provided, however, that, instead of the burden of proof provided by Paragraph 51, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

#### **XIX. TERMINATION**

76. This Consent Decree may be terminated when the United States determines that Memphis has satisfactorily completed performance of its compliance obligations set forth in Section V of this Consent Decree to submit the Deliverables required in Subparagraphs 10.c. through g. and to complete the rehabilitation projects required in Paragraph 11; provided, however, Memphis has fulfilled all other obligations of this Consent Decree, *i.e.*, implementation of the Deliverables to date, payment of the civil penalty under Section VII of this Consent Decree and any accrued stipulated penalties as required by Section IX of this Consent Decree not waived or reduced by the United States. Memphis may serve upon the United States a Request for Termination, certifying that Memphis has satisfied those requirements, together with all necessary supporting documentation.

77. Following receipt by the United States of Memphis' Request for Termination, the United States and Memphis shall confer informally concerning the Request and any disagreement that they may have as to whether Memphis has satisfactorily complied with the requirements for

termination of this Consent Decree. If the United States, after consultation with the State and TCWN, agrees that the Decree may be terminated, the United States and Memphis shall submit, for the Court's approval, a joint stipulation terminating the Decree.

78. If the United States, after consultation with the State and TCWN, does not agree that the Decree may be terminated, Memphis may invoke Dispute Resolution under Section XI of this Decree. However, Memphis shall not seek Dispute Resolution of any dispute regarding termination, under Paragraph 49 of Section XI, until one hundred-twenty (120) Days after service of its Request for Termination.

#### **XX. PUBLIC PARTICIPATION**

79. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. Memphis, the State, and TCWN each consent to entry of this Consent Decree without further notice and agree not to withdraw from, or oppose entry of, this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified the Parties in writing that it no longer supports entry of the Decree.

#### **XXI. SIGNATORIES/SERVICE**

80. Each undersigned representative of Memphis, EPA, the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice, TDEC, the State, and TCWN certifies that he or she is fully authorized to enter into the terms and



conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

81. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis. Memphis agrees to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

#### **XXII. INTEGRATION**

82. This Consent Decree constitutes the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Decree and supersedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. Other than Deliverables that are subsequently submitted and approved pursuant to this Decree, no other document, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it represents, nor shall it be used in construing the terms of this Decree.

#### **XXIII. FINAL JUDGMENT**

83. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court as to the United States, the State, the TCWN, and Memphis. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

#### **XXIV. APPENDICES**

84. The following appendices are attached to and a part of this Consent Decree:

“Appendix A” is a chart of SSO trends.

“Appendix B” is Memphis’ SORP.

“Appendix C” is Memphis’ FOG Management Program.

“Appendix D” is a list of Memphis’ Lift Stations scheduled for SCADA installation.

“Appendix E” is a map of the portion of WCTS to be assessed in the first year of CSAP implementation.

“Appendix F” is a map of the Lick Creek portion of the WCTS.

“Appendix G” is a map of the portion of the WCTS to be rehabilitated pursuant to the Priority Area Project Report and the IRP.

“Appendix H” is a map of the portion of the WCTS to be rehabilitated pursuant to the Critical Area Project Report and the IRP.

“Appendix I” is the M.C. Stiles WWTP Foam Study and Outfall Improvements Work Plan.

“Appendix J” is the State Projects.

Dated and entered this \_\_ day of \_\_\_\_\_, \_\_\_\_.

---

SAMUEL H. MAYS, JR.  
UNITED STATES DISTRICT JUDGE  
Western District of Tennessee

WE HEREBY CONSENT to the entry of this Consent Decree, subject to the public notice and comment provisions of 28 C.F.R. § 50.7:

**FOR PLAINTIFF UNITED STATES OF AMERICA:**

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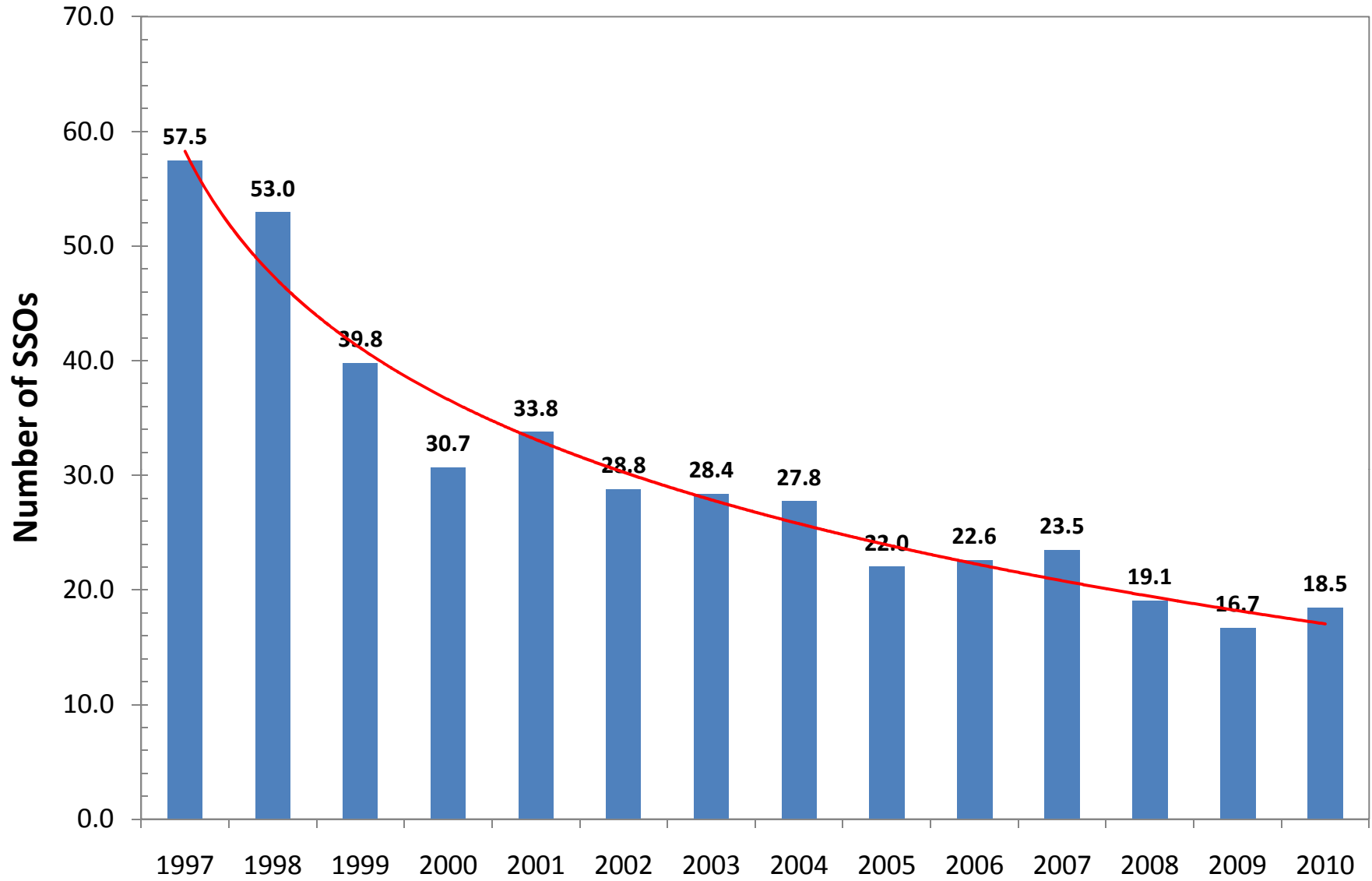
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# Appendix A

SSO Listing

1997 to 2010

# City of Memphis Historical Annual Number of SSOs/100 miles



## **Appendix B**

### Sanitary Sewer Overflow Response Plan

**City of Memphis**

**Sewer Overflow Response  
Plan**

March 2011



# Table of Contents

## Executive Summary

### Section 1 Introduction and Process Overview

1.1	General .....	1-1
1.2	Objectives.....	1-1
1.3	Process Overview .....	1-1
1.4	Need for Immediate Response.....	1-2
1.5	Critical Actions to Minimize the Impact of an SSO .....	1-3
1.6	Organization of SORP .....	1-3

### Section 2 Definitions

2.1	Definitions .....	2-1
2.2	General Definitions .....	2-1
2.3	Types of Overflows .....	2-4
2.3.1	Wet-weather Overflows.....	2-4
2.3.2	Dry-weather Overflows .....	2-4

### Section 3 System and Organizational Structure

3.0	Organizational Structure .....	3-1
3.1	Memphis Wastewater Collection System.....	3-1
3.2	Operational and Functional Structure .....	3-2
3.3	Customer Calls and Dispatching.....	3-4

### Section 4 Initial Response

4.0	Goals and Procedures .....	4-1
4.1	First Response .....	4-1
4.2	Confirm Sanitary Sewer Overflow .....	4-2
4.2.1	Manhole SSO .....	4-2
4.2.2	Lift Station SSO .....	4-3
4.3	Determine Whether Suspicious Substances May Be Present .....	4-3
4.4	Locate the Disruption and Assess the Impacted Area .....	4-3
4.5	Establish Control Zones (Public Property) .....	4-4
4.5.1	Location of Control Zones .....	4-4
4.5.2	Duration of Control Zones .....	4-4
4.6	Identify Resources and Technique Requirements .....	4-5
4.7	Isolate or Contain the SSO.....	4-5
4.7.1	Flow Retrieval and Diversion Techniques .....	4-6
4.8	Mitigation/Remediation Solutions .....	4-6
4.8.1	Abatement Resolution Techniques .....	4-7

4.9	SSO Clean-up (Public Property).....	4-7
4.9.1	Common Clean-up Practices.....	4-7
4.10	Conduct Follow-Up Inspection .....	4-8
4.11	Public Information.....	4-8
4.12	Water Quality Monitoring.....	4-8
4.13	Building/Private Property Backups .....	4-8
4.13.1	Measures to Eliminate Building/Private Property Backups.....	4-10
4.13.2	Public Information for Building/Private Property Backups.....	4-10
4.14	Regulatory Reporting.....	4-11
4.15	Sewer Overflow Tracking and Identification .....	4-11

**Section 5 Short-term Response**

5.0	Critical Response Actions.....	5-1
5.1	Sanitary Sewer Overflow Reporting.....	5-2
5.1.1	Time and Date Notification Received.....	5-2
5.1.2	Location.....	5-2
5.1.3	System Component .....	5-2
5.1.4	Suspected Cause of the Overflow .....	5-2
5.1.5	Description of Action Taken .....	5-2
5.1.6	Volume.....	5-2
5.1.7	Time SSO was Stopped.....	5-3
5.1.8	Stream Affiliation .....	5-3
5.1.9	Affected Human Contact Areas .....	5-3
5.1.10	Previous SSO Date.....	5-3
5.1.11	Follow-up Action.....	5-3
5.1.12	Public Notifications .....	5-3
5.2	Incident Review Process/Overflow Review Meeting.....	5-3
5.2.1	Overflow Corrective Action.....	5-4
5.3	Notification to the Public in Affected Areas.....	5-4

**Section 6 Long-term Response**

6.1	Reporting .....	6-1
-----	-----------------	-----

**Section 7 SORP Training Procedures**

7.0	Introduction.....	7-1
7.1	Plan Review, Approval, and Update.....	7-1
7.2	Safety Training for All Collection System Personnel .....	7-1
7.3	Training.....	7-2



## Appendices

<i>Appendix A</i>	Organizational Chart and Job Descriptions
<i>Appendix B</i>	Collection System Information Checklist
<i>Appendix C</i>	Initial Response Flow Chart
<i>Appendix D</i>	Equipment and Lift Station Inventory
<i>Appendix E</i>	SSO Maps
<i>Appendix F</i>	SSO Critical Locations
<i>Appendix G</i>	Lift Station Storage Volumes
<i>Appendix H</i>	SOPs
<i>Appendix I</i>	Short Term Response Flow Chart
<i>Appendix J</i>	TDEC Reporting Letter
<i>Appendix K</i>	San Diego SSO Volume Estimation Method
<i>Appendix L</i>	Long Term Response Flow Chart

# Executive Summary

This Sewer Overflow Response Plan (SORP) outlines the actions the City of Memphis (City) shall take to reduce the impact of sanitary sewer overflows (SSOs) on human health, customers, and the environment. The City's Public Works staff has developed this living document to assist with defining their standard operating procedures for SSO responses and training of their staff on the appropriate field and reporting practices. The key aspects of the SORP are defined specifically within the document and include the following key features.

## Staff Communications and Duties

To ensure the City is made aware of each SSO as expeditiously as possible, there are several methods by which SSOs are reported. The most common and effective notification comes from individuals who witness an event and call the City's Environmental Maintenance Dispatch at (901) 529-8025. Dispatchers take reports ranging from manhole overflows to sewage on private property and input the call into the management system for crew response. In addition, other City employees/field crews, city employees, police and/or fire, or other agencies also commonly report SSOs to the Environmental Maintenance Dispatch. The City is also investing in automated systems such as a supervisory control and data acquisition system (SCADA) at lift stations to assist with alerting lift station crews that an investigation is warranted. The processes by which SSOs are reported and the actions generated from a report of an overflow, as well as the responsibilities of the employees charged with responding to the SSOs, are detailed in Section 4.

## Prompt Response and Assessment of Cause and Impact of SSOs

The City has a goal to respond onsite to verify an SSO has occurred, on average, within 1-2 hours of receiving a SSO report, unless circumstances prevent a response in that time frame. The City expects that in no case more than 12 hours should be required to respond. This response time can vary widely and can be affected by holidays, weather conditions, after-hours calls, locations, and other factors that can cause this timeframe to fluctuate within the 12 hours range. The time to stop a SSO is discussed in Section 1.1. Once a response is initiated, the initial key first step is the identification of the cause of the SSO. The various causes shall determine the type of mitigation or remediation that is most appropriate. Dry-weather overflows result primarily from blockages caused by grease build up or roots, while wet-weather overflows can typically be caused by inflow and infiltration (I/I). SSOs occurring during rain events are not considered wet-weather events if they are considered to have occurred due to a dry weather blockage. Historically, the City has discovered that most overflows during wet weather events are typically caused by blockages that have occurred during dry weather events and are generally the result of existing dry-weather blockages within the system, as opposed to capacity concerns. When

evaluating the potential impact of an SSO on public health and the environment, sensitive factors shall be identified. These factors shall determine the level of public notification and cleanup activity required. These sensitive factors primarily include the proximity of the SSO to:

- Streams, creeks, and other natural waterways;
- Heavy pedestrian areas; and
- Special facilities including schools, public parks, walking trails, and other areas with high potential for human contact.

The process by which the City assesses whether an SSO has had any adverse impacts on human health or the environment is described in Section 4.

If a backup has occurred on private property, the City shall respond in accordance with the SORP. The response staff shall conduct an investigation to determine if the cause is problems in the City's collection system or a result of a failure on the customer's side. The process a property owner follows to dispute the determination that a building backup is caused by a failure in their private lateral and/or make additional damage claims is outlined in Section 4.

## **Elimination of Cause and Mitigation of Impact of SSO**

Once the cause of an SSO has been identified, the proper type of remediation can be chosen. This document summarizes common abatement resolution activities and repairs that can be used independently or in combination based on field conditions and television inspection. The resources, including personnel and equipment needed and available to perform these activities and repairs, are identified herein and included in the Appendix. When possible, flow diversion techniques provide an effective means of conveying the discharge back into the sewer system. This procedure reduces additional potential impacts on the immediate area and possible impacts downstream. Control zones shall be established for SSOs requiring control of the area surrounding the overflow to help prevent public access around the perimeter of the affected surface area. The City staff shall utilize appropriate signs and barricading practices to control access to these areas.

## **Cleanup of SSOs**

After an overflow has occurred, Memphis will clean the impacted area. General practices, depending on the individual situation, are outlined in Section 4. To minimize any further impact on human health or the environment, follow-up inspections and root cause analyses shall be performed to identify the specific cause of the overflow. Methods for determining the causes of SSOs may include television inspection, dyed water flooding, visual inspection, and follow-up site visits. If a building backup is found to be caused by a collection system failure or blockage, the

Environmental Maintenance staff shall dispatch an independent cleaning contractor to assist in cleaning.

## **Reporting to the Regulatory Agency**

Consistent with the City's NPDES permit, the City shall provide an initial notice to TDEC of an SSO within 24 hours of the time it becomes aware of an SSO that could cause a threat to a public drinking water supply or is a threat to human health or the environment. The complete reporting process that includes the oral and short-term reporting by which the City notifies TDEC is summarized in Sections 4 and 5. The City shall notify the public of SSOs on a case-by-case basis, based on severity and location of the overflow. Deliverable reports of SSOs required by the Consent Decree shall be included in the Public Repository and made available online.

# Section 1

## Introduction and Process Overview

### 1.1 General

The City believes that it provides an efficiently designed, maintained, and operated sanitary sewer system to safely collect and convey sewage to one of the two wastewater treatment plants for treatment and discharge.

An SSO occurs when sewage escapes from the sanitary sewer system at a location other than an approved discharge point. An SSO can result from flow restrictions or system disruptions, or it may result from excessive flows caused by elevated ground and surface water during significant rain events.

The City developed this SORP to reduce the impact of SSOs to human health and the environment. The document provides structured guidance for response to overflows, including a range of appropriate and effective field activities staff can choose from to meet the needs of each SSO situation.

The purpose of the SORP is to document the protocol to be followed in response to identified SSOs within the City's service area, while providing sufficient flexibility to address case-specific issues as appropriate. This protocol includes an initial mobilization response once an overflow notification is received; stoppage of the SSO within a reasonable time period; mitigating impacts from the overflow once cleared; and any other required follow up to further reduce the opportunity for any future occurrence. As a goal, the City generally shall take all measures to stop the SSO within 12 hours, on average, after verification of the SSO, depending on the circumstances or the nature or cause of the SSO. Additional time may be required in other situations to stop the SSO depending on access limitations (railroad access for example). In addition, monitoring and reporting procedures are included to comply with state and federal regulatory requirements. Finally, an assessment approach is included to take steps to prevent future SSO recurrence.

### 1.2 Objectives

The primary objective of the SORP is the protection of human health and the environment due to potential concerns associated with SSOs.

### 1.3 Process Overview

This SORP provides structured guidance for response to SSOs, including a range of appropriate and effective field activities that the City can choose from to meet the needs of each situation. The City shall use its discretion and best professional judgment to evaluate each event and choose the appropriate remediation tools.

Memphis is a steward of the environment, and the first priority at any overflow is containing the discharge to minimize possible harmful impacts to the environment

and public health. Early identification of an SSO is extremely important to reduce the quantity of raw sewage discharged, as well as limit the impact on the environment and the general public. The investigation process begins when a customer, City employee, or outside party reports a possible SSO. The City expects that visual indications of SSOs at 81 pump stations will be available through the City's SCADA system beginning in March of 2012.

This SORP contains the following procedures used for responding to SSOs that can minimize the environmental impacts and potential human health risk of the SSOs:

1. Procedures for immediate public notice of the SSO, as necessary.
2. Procedures for providing timely notification to the Tennessee Department of Environment and Conservation (TDEC) and local public health officials of SSOs, as warranted.
3. Procedures for minimizing the volume of untreated wastewater transmitted in the event of an SSO.
4. Procedures for providing relief to customers experiencing building/private property backups resulting from problems in the collection system.
5. Procedures for providing customers with the City's claims policy regarding clean up of building/private property backups.
6. A review of the available equipment necessary to respond to an SSO and implement the SORP.
7. Procedures for ensuring the preparedness, including responsiveness training, of necessary City employees and contractors for effective implementation of the SORP.
8. Identification of potential SSO locations within each lift station service area, prioritized by order of SSO in the event of a lift station failure.
9. Identification of available storage capacity at lift stations to minimize the volume of untreated wastewater entering the watershed, if a lift station failure should occur. This existing storage capacity allows for a response protocol based on available capacity and normal pumping capacity.

## **1.4 Need for Immediate Response**

Upon notification of an SSO event, the initial response of the City shall be undertaken to protect the general public and limit the impact on the environment. An initial response would also help in gathering information and correcting each overflow.

The key elements in the initial response are:

- Inspection and quantification of the SSO;
- Determination of the cause of the SSO;
- Initial attempt to correct the problem;
- Containment of the overflow, if not corrected immediately;
- Placement of barricades and/or warning signs, as necessary; and
- Public communication, as required.

After the initial response, the stoppage operators (first responders) shall report all available required information such that long-term solutions, proper reporting to the regulatory agencies, and timely notifications to all affected parties can be conducted. Further discussion of the initial response procedures are described in Section 4.

## 1.5 Critical Actions to Minimize the Impact of an SSO

The critical actions required to eliminate, reduce, and minimize the impact of an SSO are:

- Notification and Reporting – Identify and report all SSOs to the Repair and Stoppage Bureau, so a crew can be dispatched to determine the cause.
- Identification of cause – Determine the cause of the SSO and who needs to be notified.
- Initial/Short-term Response – Determine what procedures need to be completed to correct the problem and minimize the impact to the environment.
- Long-term Response – Take measures to eliminate or try to prevent the SSO from occurring in the future.
- Notification – Report SSOs to the appropriate regulatory agencies.

## 1.6 Organization of SORP

This SORP is organized into the following sections:

- **Section 1 – Introduction and Process Overview:** Provides background information, description of the problem, and general goals and guidelines of the report.
- **Section 2 – Definitions:** Provides definitions of commonly used terminology referenced in the document, including common terms and acronyms.

- **Section 3 – System and Organizational Structure:** Provides details of the organizational structure of the City’s Repair and Stoppage Bureau and the responsibilities of the staff that relate to responses to SSOs, resolution of SSOs, and reporting SSOs.
- **Section 4 – Initial Response:** Provides a detailed list of actions and personnel responsible for responding to SSO events.
- **Section 5 – Short-term Response:** Provides a list of actions and personnel responsible for reporting and reducing SSOs within 5 days of report. The list of actions includes follow-up reporting requirements, as well as necessary investigations to try to prevent future SSOs.
- **Section 6 – Long-term Response:** Provides a list of actions and personnel responsible for reporting SSOs to the regulatory agencies, investigations needed to prevent future SSOs, and possible long-term cost-effective solutions.
- **Section 7 – SORP Training Procedures:** Outlines training for responding to an SSO. The training procedures used include potential scenarios encountered during an SSO and exercises and drills to prepare staff for an emergency.



# Section 2

## Definitions

### 2.1 Definitions

This section is designed to help familiarize readers with common terms and acronyms used in this report. It includes basic definitions of a wastewater collection system and sanitary sewer overflows, for example, to assist readers with understanding the following sections.

### 2.2 General Definitions

**Building Backup** –A wastewater release or backup into a building or private property that is caused by blockages, flow conditions, or other malfunctions in the wastewater collection and transmission system. A wastewater backup or release that is caused by blockages, flow conditions, or other malfunctions of a private lateral is neither considered nor reported as a building backup.

**Closed-circuit Television (CCTV)** - Technology by which the City and its outside contractors use closed-circuit television to visually inspect the internal condition of pipes and sub-surface structures.

**Cleanout** - A vertical pipe with a removable cap extending from a private service lateral to the surface of the ground. It is used for access to the private service lateral for inspection and maintenance.

**Disruption of Service** - An interruption in customers' wastewater collection service due to various reasons, such as blockages, pipe failures, etc.

**Dry-weather Sanitary Sewer Overflow (SSO)** - A type of sanitary sewer overflow that is defined as one day or any portion of a day in which unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall occurs and is not directly related to a rainfall event. Discharges from more than one point within a 24-hour period shall be counted as separate overflows.

**Environmental Protection Agency (EPA)** - United States Environmental Protection Agency and any of its successor departments or agencies.

**Fats, Oils and Grease (FOG) Program:** "FOG" refers to fats, oils and grease, which are generated by residents and businesses processing or serving food and other products. A FOG program aims to prevent FOG accumulation in sewer systems by utilizing organized programs with proven effectiveness.

**First Responder:** Typically a designated Stoppage Operator, or any qualified Memphis employee, who assumes initial responsibility for an SSO event.

**Force Mains:** Any pipe that receives and conveys, under pressure, wastewater from the discharge side of a pump. A forcemain is intended to transmit wastewater under pressure.

**Gravity Sewer Line or Gravity Sewer:** Pipes that receive, contain, and convey wastewater not normally under pressure but are intended to flow unassisted under the influence of gravity.

**Inflow and Infiltration (I/I):** The total quantity of water from inflow, infiltration, and rainfall-induced infiltration without distinguishing the source.

**Infiltration:** Water other than wastewater that enters the wastewater collection and transmission system (WCTS), including sewer service connections and foundation drains, from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include inflow.

**Inflow:** Water, other than wastewater, that enters the WCTS (including sewer service connections) from sources such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, stormwater, surface runoff, street wash waters, or drainage. Inflow does not include infiltration.

**Lift Station:** A mechanical method of conveying wastewater to higher elevations within the collection system and eventually to the wastewater treatment plant (WWTP).

**Manhole or Junction Box:** A structure which provides a connection point for gravity lines, private service laterals, or force mains, as well as an access point for maintenance and repair activities.

**Memphis:** The City of Memphis, Tennessee, Public Works Division, and any successor thereto.

**Private Lateral:** The portion of the sanitary sewer conveyance pipe that extends from the wastewater main to the single-family, multi-family, apartment, or other dwelling unit or commercial or industrial structure to which wastewater service is provided.

**Sanitary Sewer Overflow (SSO):** An overflow, spill, or release of wastewater from the WCTS, including: (a) unpermitted discharges; (b) overflows, spills, or releases of wastewater that may not have reached waters of the United States or the State; and (c)

all building backups. For the purposes of this document and the Consent Decree, an SSO does not include exfiltration from the WCTS.

**Sanitary Sewer Overflow Response Plan (SORP):** The SORP provides structured guidance, including a range of field activities to choose from, for a generalized uniform response to overflows.

**Supervisory Control and Data Acquisition System (SCADA):** A system of automated sensory control equipment that monitors the operation of a portion of the lift stations within the collection system. The SCADA system will convey alarms when predetermined conditions occur. Monitoring parameters include but are not limited to power failures, high wetwell levels, and pump failures that could potentially cause overflows.

**Suspicious Substance:** Any material not normally found in a wastewater system.

**TDEC:** Tennessee Department of Environment and Conservation.

**Unpermitted Discharge:** A discharge of pollutants which reaches waters of the United States or the State from (a) the sewer system, (b) WWTPs through a point source not specified in a National Pollutant Discharge Elimination System (NPDES) Permit, or (c) WWTPs which constitutes a prohibited bypass.

**Wastewater Collection and Transmission System (WCTS):** The municipal wastewater collection, retention, and transmission system including all pipes, forcemains, gravity sewer lines, pump stations, pumps, manholes, and appurtenances thereto, which are owned or operated by the City of Memphis and service the City of Memphis and which flow to the M.C. Stiles and T.E. Maxson WWTPs.

**Wastewater Treatment Plant (WWTP):** Devices or systems used in the storage, treatment, recycling, and reclamation of municipal wastewater. For purposes of this SORP and the Consent Decree, this definition shall refer only to the following treatment facilities: M.C. Stiles WWTP located at 2303 N. 2nd St., Memphis, Tennessee, and the T.E. Maxson WWTP located at 2685 Plant Road, Memphis, Tennessee, and all components of such sewage treatment plants but does not include the WCTS.

**Waters of the State:** Waters of the State shall have the same meaning as “Waters” defined at TCA § 69-3-103.

**Wet-weather SSO:** A type of sanitary sewer overflow and is defined as an unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall that is directly related to a specific rainfall event. Discharges occurring from multiple locations within a single rainfall event are considered separate, wet-weather overflows.

## 2.3 Types of Overflows

*Sanitary sewer overflow* is an encompassing term to describe the discharge of wastewater from a wastewater collection system anywhere, except at a permitted discharge point. This SORP is developed to address the two fundamental types of SSOs:

### 2.3.1 Wet-weather Overflows

Wet-weather overflows are the result of excessive flows during significant rain events or elevated ground and surface water conditions. They can be attributed to a number of factors, including, but not limited to, the following:

- Infiltration and Inflow
- Flooding from the stormwater system
- Cross-connections (i.e. stormdrains, downspouts, and other illicit connections to the separate sanitary sewer system)

### 2.3.2 Dry-weather Overflows

Overflows during dry weather are most often caused by flow restrictions or system disruptions. Dry-weather SSOs can be attributed to a number of factors including, but not limited to, the following:

- Bottlenecks and/or blockages
- Grease
- Roots
- Debris
- Mechanical failures
- Sewer line/pipe breaks

The SORP discusses the type, location, destination, cause, impact, and containment and remediation requirements of SSOs, as well as prevention measures.

# Section 3

## System and Organizational Structure

### 3.0 Organizational Structure

Implementing an effective SORP requires coordination from several departments within the Public Works Division and other agencies and divisions within the City. The program is managed and housed within the Wastewater Collection Systems Department. The following core practices are necessary to ensure the plan is implemented effectively:

- Effective and timely communication.
- Trained and experienced Stoppage Operators and crew.
- Structured and concise response procedures, also known as standard operating procedures (SOPs).
- Accurate and comprehensive monitoring procedures.
- Regularly scheduled training of the staff on SORP protocol and safety practices.

This section outlines the organization and the distribution of responsibilities within the City's Public Works Division and Wastewater Collection Systems Department.

### 3.1 Memphis Wastewater Collection System

The City of Memphis' WCTS and treatment system serves a total area of 442 square miles, of which 314 square miles are within the City limits and 128 square miles are within suburban areas surrounding the City. The system is comprised of six major sewer basins – Loosahatchie, Wolf River, Front Street, President's Island, Nonconnah Creek, and Horn Lake Creek – each of which contains a WCTS comprised of main line sewers, trunk sewers and lift stations. The basins are served by two WWTPs: T.E. Maxson WWTP, which serves the Nonconnah Creek, Horn Lake Creek, and President's Island basins, and M.C. Stiles WWTP, which serves the Wolf River, Front Street, and Loosahatchie River basins.

The existing system serves more than 261,000 customers including over 200 significant and non-significant industrial users. The total system is comprised of the following infrastructure and assets:

- 2,400 miles of gravity sewers
- 39 miles of force mains
- 85,000 manholes

- 103 lift stations
- 2 wastewater treatment plants

## 3.2 Operational and Functional Structure

The City's Division of Public Works is a multifaceted organization with an organizational structure in place to provide operations and maintenance of the WCTS and treatment systems, as well as the streets, stormwater management and drainage, flood control, and solid waste systems of the City. An organizational chart of the Wastewater Collection Systems Department and the job descriptions for all key staff members is included in **Appendix A**.

The Wastewater Collection Systems Department, which is responsible for compliance with the regulatory requirements of the City's NPDES permits and the reduction of the impact of sanitary sewer overflows (SSOs) on the City's customers and surrounding environment, is directed on a day-to-day basis by the Administrator of Wastewater Collection Systems. The Administrator reports directly to the Administrator of Environmental Engineering, who oversees all services associated with the WCTS. The Administrator of Environmental Engineering reports directly to the Public Works Director, who oversees all activities within the Public Works Division for the City.

The Wastewater Collection Department includes professionals with backgrounds in engineering, wastewater operations and maintenance, administration, and communications. These individuals coordinate and communicate work and programs with other departments and divisions of the City government, including engineering, construction administration, wastewater treatment, and others to achieve the goals of the WCTS.

The operation of the collection system is a joint effort among the Inspection, Stoppage, and Repair Bureaus of the Wastewater Collection Systems Department. The Inspection Bureau evaluates the WCTS in an effort to prevent problems. These evaluations include manhole and mainline inspections, CCTV inspections, and dye and smoke testing. The Stoppage Crews are responsible for eliminating line stoppages and responding to and clearing SSOs and remediating their effects on the public and environment. The Repair Crews respond to calls to repair line and manhole issues reported by the Inspection and Stoppage Crews.

All of these activities fall under the direction of the Wastewater Collection Systems Department and, specifically, the Environmental Maintenance Bureau (EMB), which is responsible for alleviating stoppages reported by the public and for preventative maintenance of the WCTS. In addition, the EMB is responsible for repairing deficiencies reported by the inspection and stoppage crews. The Environmental

Maintenance Manager is the head of the EMB and is responsible for operations and maintenance of the WCTS. The EMB Manager reports directly to the Administrator of Wastewater Collection Systems and is responsible for coordinating the activities of staff engaged in repair and maintenance of the City's WCTS and coordinating and preparing reports for TDEC and EPA compliance. Currently there are seven shift supervisors, who report to the Environmental Maintenance Manager, are responsible for the day-to-day WCTS maintenance program. The shift supervisors oversee personnel providing training, work direction, and daily assignments of work orders, including dispatch of stoppage crews to correct sewer overflows. Currently there are 111 full-time equivalent (FTE) positions in the City's organizational structure for the Inspection/Stoppage and Repair Divisions of the Wastewater Collection Systems Department that maintain the WCTS, respond to SSOs, and perform other maintenance/construction activities.

The Lift Station Bureau currently operates and maintains the 103 wastewater lift stations located throughout the WCTS, including regular monitoring and maintenance of the pumping facilities. The Lift Station Manager, who reports to the Administrator of Wastewater Collection Systems, is responsible for operations and maintenance of the lift stations in the WCTS. Stationary engineers and maintenance workers/helpers report to the Lift Station Manager and are responsible for overseeing routine inspections and maintenance and repairs at the lift stations. SCADA monitoring shall be installed at 81 lift stations and shall be operational at all of the lift stations by March 2012. Once operational, information shall be transmitted to the lift station operators in the event of a system or lift station failure. In addition to continuous monitoring by SCADA, each station is inspected on a regular basis by the three lift station crews. The frequency of these inspections is based on several factors including the age of the facility, operating history, and size of the facility.

The key personnel responsible for implementing the SORP and the day-to-day activities of the Wastewater Collection Systems Department are described below.

The dispatcher and/or assigned data entry personnel are responsible for logging sewer overflow calls and reports into the information management system (IMS). Once the reported SSO is logged into the IMS, a work order is generated which results in appropriate staff being dispatched to the location of the SSO. In addition to the dispatchers, the schedule/planner and construction coordinator staff works under the manager and are responsible for scheduling work crews to handle sewer repairs and wastewater stoppages. The schedule/planner works hand-in-hand with the Dispatcher to reassign crews to handle SSOs and emergency repairs.

Once the call is logged into the IMS, the shift supervisors dispatch a stoppage operator, assisted by one or multiple crew persons, to the site of the complaint to remedy the cause of the SSO. They are responsible for assessing the SSO and collecting the information needed for the appropriate SSO response. From the initial

assessment, the effort needed to stop the SSO is determined. All findings are reported back to the shift supervisor. The stoppage operators work to maintain the WCTS lines in operation through clearing and removing stoppages, obstructions or restrictions through the operation of cleaning equipment including, but not limited to, a flusher, vactor, power rodder, and/or drag machine to clear the stoppage. Once the stoppage has been cleared, the crew shall clean and disinfect areas that were impacted by the stoppages as appropriate. The stoppage operator reports the location of the problem, cause of the overflow, the action taken, and current job status to the dispatcher and supervisor for documentation.

An environmental engineer receives the IMS work order and the stoppage operator's report on SSOs and maintains the database records on each SSO. The engineer is involved with the short- and long-term planning meetings based on SSOs that occur weekly and gives feedback to the administration as to SSOs that occurred within areas of recurring overflow issues. This information is used to prioritize preventative maintenance including, but not limited to, CCTV, additional cleaning and repair, and replacement or rehabilitation of existing infrastructure. The engineer is responsible for estimating the volume of each SSO from the information recorded on the SSO field notes and maintaining all pertinent information on all SSOs for internal record keeping and applicable reports to both TDEC and EPA.

The Administrator of Wastewater Collection Systems or his representative is responsible for reviewing and submitting a letter to TDEC, where required, within 5 days of the SSO occurrence and determining if potential health risks warrant notification to the general public. The administrator leads all discussions of the applicable short- and long-term responses to be taken based on the SSO occurrence.

### **3.3 Customer Calls and Dispatching**

The Wastewater Collections Systems dispatcher receives and initiates responses to customer calls and concerns ranging from SSOs to wastewater on private property. The center is currently staffed 16 hours a day, 7 days a week. Afterhours calls to the Wastewater Collections System Department dispatcher automatically rollover to the City's WWTP (operated 24 hours per day, 7 days per week). In addition, citizens may also call the Emergency Management Services (EMS) operator (operated 24 hours per day, 7 days per week). These afterhours' calls from both the EMS and the WWTP are then relayed to the Environmental Maintenance Manager and/or Lift Station Manager for response as appropriate. Business hour calls are immediately entered into the IMS which generates a work order. Afterhours calls are routed to the appropriate Manager for response, information is recorded by both the EMS and/or the WWTP staff and entered in the IMS the following business day by City staff.



# Section 4

## Initial Response

### 4.0 Goals and Procedures

The goal of the SORP is to document the Wastewater Collection Systems Department procedure for responding to SSOs and to ensure that all responses are effective and consistent. This document is intended to address all types of SSO events and ensure that appropriate efforts are made to reduce the impact on the environment and protect public health from potential health hazards associated with the overflow or backup. The City shall respond upon notification of a SSO event and use its discretion and best judgment to evaluate the occurrence and select the appropriate remediation techniques.

A timely response enables crews to gather important information concerning the cause of the SSO, potential health hazards, and potential environmental impacts. This information enables decisions to be made on a timely and educated basis regarding the correction of the SSO, the containment of the overflow, and notification of the general public, as necessary. In the event of an SSO, the initial response actions taken allow the Department to proceed according to an orderly and organized plan.

The following steps outline the basis for the City's initial response to an SSO occurrence, from the time the Dispatcher receives the call until the SSO is alleviated, contained, and remediated. An information checklist can be found in **Appendix B** for Dispatch and field crews to utilize to ensure all the pertinent information is collected for an SSO. Additional procedures regarding short- and long-term responses and required SSO regulatory reporting are discussed further in Sections 5 and 6.

### 4.1 First Response

The Environmental Maintenance staff receives reports of potential overflows from multiple sources. Most commonly, reports are made by individuals that witness the SSO occurring and report the situation to the Environmental Maintenance Dispatch Line at (901)529-8025, although calls and overflow response requests are also received from other City crews, employees and divisions, police and fire, or other agencies. During the 14-hour operational period, calls are routed through the Dispatcher and information is entered into the IMS. For each report of a potential sewer overflow, the Dispatcher collects the following information:

- Time and date of call
- Name of person reporting the incident
- Contact information for caller (address and phone number)
- Location of overflow

- Description of overflow
- Any additional observations such as odor, color, duration, etc.
- Any information that may help with response time, containment, and remediation

Calls made after hours to the Wastewater Collections Systems Department are routed to the WWTP, which notifies the Environmental Maintenance Manager for the appropriate SSO response. Calls made by citizens to the Memphis and Shelby County Emergency Management System (EMS) get relayed to the Environmental Maintenance Manager for response. Work performed in the field is tracked in the IMS by address, so the Dispatcher can quickly identify if previous work has been performed at a specific address. If an incoming call has been received previously for the same address, it is assigned the previous record number and becomes an additional report on that address. Any newly identified address is given a new record number in the IMS.

Once the information is entered into the IMS during the normal business hours, the Dispatcher notifies the appropriate crew so they can immediately respond to the location. Information is entered into the IMS the next business day for calls occurring afterhours, however appropriate response crews are initiated immediately after receiving notification of the SSO. The first responders to the location of the overflow consist of a Stoppage Operator and crew person(s). There are currently approximately 10 stoppage crews available to respond to overflow calls at any time.

When a call is received after the operating hours of the Dispatcher, the EMA routes all calls from citizens to the Environmental Maintenance Manager. The Environmental Maintenance Manager then follows the procedures outlined above and confirms the presence of a release from the system. If a SSO is confirmed, the appropriate crews are mobilized to the location.

The following is a description of the step-by-step procedures taken to resolve an overflow. A general flowchart is included in **Appendix C** that can also be used as a quick reference for the initial response to SSOs.

## **4.2 Confirm Sanitary Sewer Overflow**

### **4.2.1 Manhole SSO**

When a verified report is received that the occurrence of a wastewater release is potentially occurring, a Stoppage Operator responds to the scene to confirm whether or not there is a release. Stoppage Operators are the lead agents for the City's response and are typically experienced staff, familiar with the system and the SSO response protocol. Until field confirmation of an overflow occurrence is made by the Stoppage Operator, the site is not considered an SSO.

Once a visual confirmation or evidence of an overflow via field confirmation is made, the Operator takes a picture(s) of the overflow for documenting purposes. Next, the Stoppage Operator begins to try to ascertain the source and cause of the discharge or the origin of the flow. This determination may vary depending on the type of release.

#### **4.2.2 Lift Station SSO**

Alarms at the lift stations can be received 24 hours per day. Alarms are monitored at the Lift Station Shop during the normal business hours (Monday - Friday 7:00 a.m - 3:00 p.m) and by the Memphis and Shelby County EMS after hours. The appropriate Station Engineer responds to calls, regardless of location, and the responding crews are responsible for the investigation and correction of alarms. After hours, the EMS notifies the appropriate Lift Station Engineer using the designated call list. Service trucks are available to all crews at all times and are equipped to respond to calls. If a Lift Station Engineer cannot resolve a lift station issue, the Supervisor is notified, and additional action is taken.

### **4.3 Determine Whether Suspicious Substances May Be Present**

When arriving on the site of the SSO, the Stoppage Operators shall determine if there are any potential suspicious substances in the discharge. If there is an oily sheen to the liquid or a strange odor, for example, the Stoppage Operator shall notify Dispatch and the Environmental Maintenance Manager and advise that there may be a possibility of a hazardous or potentially dangerous material. The Stoppage Operator will wait for guidance regarding appropriate actions.

If directed, the Stoppage Operator shall establish a control zone and wait for a hazardous materials (HAZMAT) team or appropriate agency before proceeding. The Stoppage Operator shall take direction from the lead of the team until the area is deemed safe, at which time the crew shall proceed with containment and remediation.

### **4.4 Locate the Disruption and Assess the Impacted Area**

The Stoppage Operator shall have access to the appropriate map(s) of the WCTS upon arrival on the scene to determine the infrastructure configuration in the area of the overflow. The mapping shall define the investigation points to be evaluated, such as downstream manholes, to define the extents of the blockage. After locating the release and the location of the blockage, the Stoppage Operator and crew shall utilize their resources to clear the blockage and identify the root cause to the best of their abilities. Section 7 discusses the training available to Stoppage Operators and crews. The Stoppage Operators understand that a SSO can occur anywhere in the WCTS and that each SSO may therefore require a unique plan of action based on location and other circumstances. The crew should determine the resources necessary to remedy the blockage and provide the necessary jetting, vacuuming, rodding, or other technology necessary to clear the obstruction. If unusual situations exist, the Stoppage Operator

shall immediately call the Supervisor or Environmental Maintenance Supervisor to develop an appropriate plan of action.

After locating and clearing the disruption, the next step is to identify the total impacted area. The Stoppage Operator, or designated personnel, shall canvas the area to determine what potential impacts are present to the environment and/or the public and shall identify the appropriate steps to minimize/mitigate those potential impacts. Factors to be included in evaluating the impacted or potentially impacted area, include, but are not limited to, the proximity of the release to the following:

- Streams, reservoirs, wetlands, and other natural waterways;
- Stormwater infrastructure (inlets, curb and gutters, etc.);
- Public use areas; and
- Special facilities including schools, public parks, walking trails, etc.

## **4.5 Establish Control Zones (Public Property)**

When the area impacted by the overflow is identified, the next step of the initial release response stage is to develop and implement a control zone around the impacted area. The control zone will help prevent public access to the affected surface area using appropriate barricading practices. If the control zone includes roadways, then appropriate traffic control measures are taken to protect the public and department personnel. Barricades shall only be used if a manhole has been displaced in a street. The limits and duration of the most appropriate control zone plan will vary on a case-by-case situation.

### **4.5.1 Location of Control Zones**

Although the location of temporary signs and barricades will vary for each site, the goal shall always be to warn the public (if needed) to avoid contact until the completion of cleanup.

When possible, the control zone shall be posted:

- Just beyond the limits of the impacted surface area;
- Near high pedestrian and/or vehicular traffic areas; and
- At other appropriate locations.

### **4.5.2 Duration of Control Zones**

Signs and barricades shall be posted as soon as the overflow is confirmed and shall remain in place until cleanup activities are complete. The timeframe may vary, depending on the extent of the response activities, which, in extreme events, may

include significant mitigation and clean-up requirements. The control zones are in place to not only ensure the safety of the public but, also, of the crew responding and working on the clearing of the SSO.

## **4.6 Identify Resources and Technique Requirements**

The Department shall use all necessary response procedures and implement essential methods so that the goals of the SORP are met and the overflow is stopped and the flow contained and mitigated.

The following resources are available, as needed, and a complete listing of currently available equipment can be found in **Appendix D**:

- Skilled and trained personnel
- Excavation equipment
- Pump and haul equipment
- Portable generators
- Sewer cleaning equipment
- Closed-circuit television (CCTV) equipment
- Repair parts and materials
- Other material, such as sand bags, silt fences, signs, disinfectant, etc.

The Environmental Maintenance Manager or Shift Supervisor shall identify the necessary resources and techniques based on site accessibility, location of the disruption of service, size of the impacted area, and the opportunities to minimize any impacts to the environment and the public.

In an emergency situation, the Department can initiate special procurement or contractual processes to access additional resources from outside contractors as needed. Immediate procurement of services and equipment requires the Public Works Director to declare an emergency, along with the approval of the Chief Administrative Officer for the City.

## **4.7 Isolate or Contain the SSO**

Containing overflows is performed through the establishment of a physical barrier to control further dispersal of wastewater, thus reducing potential adverse impacts. The appropriate barriers and containment zones will vary, based on the site, and will be developed on a case-by-case basis. An appropriately developed and established containment plan will consolidate the wastewater into a defined area. Sand bagging or other constricting methods may be used when site and weather conditions allow,

and entry points into the storm water system may be obstructed using various methods including sand bags, inflatable plugs, or redirecting flow using construction equipment to “dam up” areas and temporarily pump the flow from a sump area.

When possible, flow retrieval and diversion techniques should provide an effective means of controlling the release and returning it back into the WCTS. This procedure reduces additional potential impact on the immediate area and the possible impact downstream.

#### **4.7.1 Flow Retrieval and Diversion Techniques**

The flow retrieval and diversion techniques employed by the Department when practical include, but are not limited to, the following:

- Pump and Haul Procedures - Pump and haul equipment provides an additional resource for the collection of discharged wastewater and its conveyance back to the WCTS system, beyond the location experiencing the service disruption. This equipment can be used in conjunction with other containment measures or independently. Typically, this would include a vacuum truck. This equipment may not be effective in wet-weather situations.
- Temporary Diversion - In extreme cases and where appropriate, the Department shall control the point of release such that the release is redirected to a less sensitive waterway or area using mechanical methods for dewatering.

Once the SSO is stopped, the stoppage operator shall provide notification to the Dispatcher (if during normal business hours), or to the Environmental Maintenance Manager (if during night hours), who shall enter and track this information in the IMS system.

#### **4.8 Mitigation/Remediation Solutions**

The type of mitigation and remediation will vary depending on the cause of the overflow. The timely use of flow restriction devices/practices is the most effective instrument to reduce any additional negative impact on the environment. Wet-weather SSOs are usually caused by significant amounts of infiltration and inflow (I/I). Mitigation is difficult in these situations, until the wet-weather event which triggered the release subsides, at which time the City shall implement practices to clean and disinfect the overflow site as necessary. Additional pumping capacity can assist in wet weather situations, if other problems are not created downstream or elsewhere in the sanitary sewer system.

Dry-weather events shall be addressed using several methods. Field personnel should identify the most effective method or combination of methods to return service to the system. Stoppage Operators typically wash/flush the line, first, to break the blockage. However, CCTV is also used, when necessary, to determine if there is a greater concern within the service disruption. CCTV inspections can identify the cause and

location of the problem and help identify the necessary techniques needed to eliminate it.

### **4.8.1 Abatement Resolution Techniques**

The following common abatement resolution techniques can be used independently or in combination, depending on field conditions:

- Pipeline Failure - An emergency pipe repair is required to replace the defective or collapsed pipe. Necessary containment and diversion procedures shall be in place until the appropriate repairs are completed.
- Grease/Roots/Other Blockages - Combination cleaner/flusher equipment is commonly used to remove any grease, roots, or other obstructions from the line. In specific situations, a root cutter attachment may be necessary to remove the obstruction.
- Pump Station Failure - Pump-and-haul methods and/or bypass pumping shall be used until the mechanical, electrical, instrumentation, or other needed repairs are completed at the lift station, unless there is adequate capacity in the wetwell or in-system storage to contain the wastewater flow into the station. In the event of lost electrical power service to a lift station, the Department has portable generators and portable diesel pumps available to provide temporary power to two lift stations in the system, as well as two stations (1525 Kimbrough and 2820 Harbor) that have stationary on-site emergency generators.

## **4.9 SSO Clean-up (Public Property)**

The extent of the clean-up and the methods for cleaning will vary depending on the exact nature of the clean-up. Methods to be used include vacuuming or other removal of spillage, use of disinfectant in isolated areas, flushing, and other measures to disinfect and/or remove the residual from the areas which are potentially contaminated by wastewater.

### **4.9.1 Common Clean-up Practices**

The Stoppage Operators employ common practices as appropriate to an individual clean-up situation, and include the following:

- **Manual Practices** - Manual clean-up techniques include the use of hand tools, such as rakes, shovels, brooms, etc., to remove and properly dispose of readily identifiable material (wastewater solids, papers, plastics, etc.) which originate from the WCTS.
- **Mechanical Practices** - Mechanical clean-up techniques utilize vacuum trucks and similar equipment to remove solids and remaining standing wastewater and properly dispose of them. Wastewater can be pumped back into the system;

however, this is evaluated on a case-by-case basis. Flushing trucks may be used to further clean areas, as needed. Flushing water is then vacuumed and removed.

- Disinfection Practices – Apply bleach, lime, or other disinfecting and deodorizing agents to isolated areas, as required, to protect public health.

## **4.10 Conduct Follow-Up Inspection**

After remediation, the City shall follow up with an inspection to ensure the SSO, determined to be the City's cause, has been adequately cleaned. The follow-up inspection should generally begin within 2 working days of the remediation. Follow-up action also includes an evaluation of further repair work or program scheduling, as necessary, to minimize or eliminate the occurrence in the future. In most cases, the City's contractor shall follow up on SSO locations and CCTV and clean the line for a specified distance determined by the Environmental Maintenance staff. If additional issues are determined during the follow-up exercises, they shall be reported to the Environmental Maintenance staff for further remediation or repair.

Additional short- and long-term responses are determined after the follow-up inspection and are discussed in Sections 5 and 6.

## **4.11 Public Information**

The Public Works Director or appropriate designee is responsible for contacting the media, the public, or other government entities at the City's discretion, or other communications outlets as needed based on the occurrence of an SSO that requires public notification. The Director or designated personnel shall answer questions from the public and/or the media about the Department's response to the SSO, when necessary.

Deliverable reports of SSOs required by the Consent Decree shall be included in the Public Repository and made available online.

## **4.12 Water Quality Monitoring**

Water quality monitoring shall be conducted after SSOs greater than 100,000 gallons have discharged into surface waters. Water quality sampling shall be conducted to determine the pH, dissolved oxygen, and *E. coli* concentration of the receiving stream to determine the effects of the SSO. Monitoring shall be conducted in compliance with water quality samples already collected within the City and sent to an outside laboratory for analysis.

## **4.13 Building/Private Property Backups**

Events causing backups into buildings or sewer overflows entering a private building require additional investigations to determine if the backup is a result of a problem in the City's system or the result of failure on the private customer's side. To determine responsibility for a backup, the Stoppage Operator will need to determine the location



of the cause of the backup. If the investigation process does not reveal a problem in the City's system, the Department shall advise the customer the overflow is their responsibility.

The Department addresses backups into buildings/private property as a result of a backup from the Department's WCTS by:

- Responding to the scene and evaluating the situation;
- Taking appropriate action to limit exposure of the public to the wastewater spill;
- Evaluating responsibility for system failure or backup;
- Making repairs and/or performing system maintenance in the Department's system, if the backup is the result of a problem in the City's WCTS.

The Stoppage Operator will initially inspect the customer's cleanout, if accessible, to determine if the stoppage is between the cleanout and the City's mainline based on the following steps:

- Step 1a. If the private service lateral is not retaining wastewater at the cleanout, then the cause of the disruption is most likely located within the private service lateral, but additional investigations shall be made to verify the initial assessment.
- Step 1b. If the private service lateral is retaining wastewater at the cleanout, then the cause of the disruption is between the cleanout and the main. Therefore, additional investigations are required to determine if the blockage is associated with the main or in the remaining portion of the private service lateral.
- Step 1c. If no cleanout is present, then the Stoppage Operator shall verify the proper operation of the main, via inspection, washing, etc., and request that the customer have a cleanout installed at the property line, so additional investigations can be performed.
- Step 2. The Stoppage Operator shall inspect water levels in the adjacent manholes to determine if the backup is caused by a blockage in the main. The next downstream manhole with respect to the blockage will be inspected for high wastewater levels. If no wastewater is flowing in the downstream manhole, or if a significant change in flow is observed in the downstream manhole, then the upstream line shall be flushed.

If the blockage is determined to be the City's responsibility, the Stoppage Operator shall advise the Owner and contact the

Environmental Maintenance Manager or supervisor to begin the clean-up process.

- Step 3. If the Stoppage Operator inspects the adjacent manholes and no evidence of a blockage is found in the main, then the Operator shall advise the customer that it is a private property issue and to contact a plumber to resolve the disruption.

If the property owner disputes the determination, the City will dig down at property line and install a cleanout, but cost must be paid by homeowner, if it is determined to be a private property issue (approximately \$1,300).

#### **4.13.1 Measures to Eliminate Building/Private Property Backups**

Wastewater backups that are a result of an on-going structural problem within the City's WCTS require an on-going cleaning program to prevent future private property backups, until some date in the future when the problem can be eliminated. These problem areas are identified and placed on a list for routine cleaning. Program supervisors are responsible for managing this list and shall schedule personnel to clean these areas on a planned basis. The typical method used by the Department in cleaning sewer lines with on-going problems on a regularly scheduled basis utilizes jet trucks, either operated by the City or its contractors.

#### **4.13.2 Public Information for Building/Private Property Backups**

The public can file a claim with the Department in the event the SSO occurs, causing a building backup within a residence, that is caused by the City's main. The claims procedure is posted on the City's website and outlines the following steps for residential customers regarding building/basement backups:

- STEP 1: Call the Environmental Maintenance (EM) Dispatcher at (901) 529-8025 immediately when a SSO is discovered in the home or basement.
- STEP 2: Provide the EM Dispatcher information such as name, address, phone number, and nature of the problem.
- STEP 3: Follow instructions provided by the EM Dispatcher, such as locating service line cleanout and removing its cap.
- STEP 4: EM crew will respond and take corrective action on the cause of the backup.
- STEP 5: EM staff will determine the type and location of the problem (i.e., roots in service line, grease in mainline, etc.)

- STEP 6: Based upon the evaluation above, EM may utilize a contractor for clean-up activities.
- STEP 7: For costs associated with damaged appliances, furniture, or clothing, a claim must be filed with the City's Claim Department.
- STEP 8: To initiate a claim, residents must contact the Claims Department via phone at (901) 636-6616.

The City uses an independent cleaning and restoration contractor to assist in cleaning, sanitizing, and repairing damages caused by SSOs that are directly attributed to blockages or structural failures within the WCTS. Restoration contractors are experienced in this type of cleaning and restoration work and are under contract with the City of Memphis. Any additional costs must be filed via a claim with the City's Claims Department.

## 4.14 Regulatory Reporting

Upon the occurrence of a SSO, the City of Memphis shall perform the appropriate notification per its existing NPDES permits. The Wastewater Collection Systems Administrator shall provide an oral report within 24-hours after the time a SSO is observed to be a threat to public drinking water supplies or to human health or the environment. The oral report shall include the location of the SSO and shall be given to:

Eddie Bouzeid  
Tennessee Department of Environment and Conservation  
Memphis Field Office  
(901) 371-3023

Notification of building backup remediation is not required by this SORP or the City's NPDES permit if the City can complete the remediation within 24 hours. A written report shall also be required within 5 days of the SSO and is discussed further in Section 5.

## 4.15 Sewer Overflow Tracking and Identification

SSOs are tracked through hard-copy sewer maps that divide the City into numerous sections, or map pages. These maps are kept current with each SSO that occurs within the City's WCTS. The maps are kept up to date within the Wastewater Collection Systems Department for staff viewing and are generally updated by a single person responsible for tracking overflow information. Requiring a single person to track the overflows ensures all the data is represented the same way and is kept in a central location. The occurrence of an SSO is coded using a variety of colored circles and squares which correspond to the year of the past SSOs within each map page. An example of a hardcopy map page used for SSO tracking can be seen in **Appendix E**.

SSOs are tracked on the sewer maps of the City which correspond to the map book pages associated with a square on the Excel tracking sheet that provides an overall historical look at the system's performance. An example of this tracking map can also be seen in **Appendix E**. Overflows are tracked from the beginning of the year to the present month, for the entire calendar year, and on a 5-year basis. Historical trending can be seen in the sheet tracking SSOs by the differing colors representing the quantity of overflows.

In addition to historical tracking, the Department is in the process of developing a list of locations within each sewer basin that have been recorded as overflowing more than once in a calendar year. These locations shall be monitored by Environmental Maintenance as prime potential candidates for overflows during a large storm event. In addition to potential inflow- and infiltration-induced overflows, the City has identified critical locations for all potential lift station failures with a pumping capacity greater than 1,000 gpm within the WCTS.

A preliminary listing of the anticipated areas where an SSO is most likely to occur from a lift station failure are listed in **Appendix F**. This list is a dynamic listing and shall be updated based on WCTS and lift station improvement projects, the gathering of additional SSO data, and continuous system maintenance. The 81 lift stations that shall be monitored at a central location via telemetry (i.e., SCADA) shall not be included within this listing. Memphis shall use this listing to conduct inspections after rain events for potential SSOs in locations where a lift station failure is observed through the SCADA monitoring system.

In order to estimate the impacts of lift station failure, calculations were performed for stations larger than 1,000 gpm to assess the amount of lift station wetwell storage to estimate the length of time that the station could be out of service until a potential overflow occurred. These results are presented in **Appendix G**. To determine these numbers, wetwell volumes and pump runtimes were correlated to determine the average storage time based on flows continuing to enter the lift station at the same average flow rates typically observed. The impacts of a lift station failure on any adjacent, smaller-diameter sewers were not analyzed in these calculations. Additionally, the need to hold the system hydraulic grade line lower, potentially to reduce the possibility of building and basement backups, was not analyzed. Therefore, backups into homes could occur more quickly if there are homes within the subbasin that have finished floor elevations lower than the fluid level in the wetwell. These particular aspects of the system may be analyzed individually on a case-by-case basis.

Storage times may be extended or shortened, depending on the flow rate into the stations. The City will be installing SCADA monitoring at each of the 81 lift stations by March 2012, limiting the amount of manual inspections required to locate overflows from lift station failures.

The City currently has a SOP for a Blockage/Flood Call (#3.2.1 SP) and for a Lift Station General Response to an Alarm (#3.5.1 CS). These SOPs, provided for reference in **Appendix H**, provide the stoppage operators with the necessary steps to address SSOs and minimize overflow volumes.

# Section 5

## Short-term Response

### 5.0 Critical Response Actions

The response actions to be completed within 5 days of a SSO event (short-term response) include verification that policies and procedures were followed, based on the SORP in regards to the response to the SSO and completion of the proper reporting procedures to TDEC. The actions to be completed within 5 days of an SSO provide information required for future reporting, monitoring, and taking steps to prevent SSOs from occurring in the same location in the future. The five important questions to be addressed, as shown in a general flow chart in **Appendix I**, are listed below:

1. Is the initial site cleanup adequate? If yes, no further action is required. If no, the cleanup must be completed. This applies for residential and public SSOs within the system.
2. Is additional corrective action needed? If yes, and the additional actions can be completed internally, the Environmental Maintenance Manager or supervisor shall dispatch crews. If the additional corrective actions cannot be handled internally, the Wastewater Collection Systems Administrator or Environmental Maintenance Manager notifies the on-call Contractor to schedule and complete. If no, no further action is required.
3. Was additional corrective action adequate to solve the basic cause of the overflow? If yes, no further action is required in the short term. Continue to monitor and schedule detailed field investigations to determine the basic cause and verify correction action is sufficient. If no, schedule detailed field investigation to determine the basic cause and to identify the necessary corrective action(s). If the SSO is still flowing, field crews shall continue to contain or direct the overflow to minimize the public health and environmental impact.
4. Is a Contractor required? If yes, a request for a contractor shall be initiated. If no, continue to use internal crews to complete the necessary additional corrective action.
5. Is the short-term corrective action taken with the assistance of a Contractor adequate to correct the basic problem and prevent future overflows? If yes, then no further actions are required other than verification. If no, determine the scope for a major contract to fully correct the underlying cause of the overflow. Complete the corrective work as part of the long-term response.

## **5.1 Sanitary Sewer Overflow Reporting**

To the extent required by the City's NPDES permit, a letter to the TDEC representative is written to record the information for the SSO within 5 days of the overflow event. A template for this letter can be seen in **Appendix J**. Information for this letter is relayed from the Stoppage Operators to the Dispatcher, who records this information for the Wastewater Collection Systems Administrator, who in turn completes this reporting form within 5 days of the overflow. The following subsections provide a detailed description of the required information for each field to be completed on the letter. Records of these notifications are kept for a minimum of 5 years from the date of the SSO.

### **5.1.1 Time and Date Notification Received**

This first field is the date the Wastewater Collection Systems Administrator or Environmental Maintenance Manager first notified the TDEC representative that an overflow had occurred. Where required, this call is typically after the overflow has been stopped but would be completed within 24 hours of the time an overflow was observed.

### **5.1.2 Location**

This field is the location of the overflow, identified by cross streets, manhole number, lift station, and/or latitude and longitude.

### **5.1.3 System Component**

This field records a description of the WCTS component from which the SSO was released (manhole, crack in pipe, lift station wetwell, or other).

### **5.1.4 Suspected Cause of the Overflow**

This field records the cause or suspected cause of the SSO (blockage, broken down, dried out, flooded, line break/forcemain/air release cause, grease, power outage, lift station failure, or other cause).

### **5.1.5 Description of Action Taken**

This field provides a brief description of the actions taken by the Stoppage Operators to minimize the volume from the SSO and steps taken to respond and clean up the SSO.

### **5.1.6 Volume**

This field is the estimated volume of the SSO. The volume estimation is completed using the San Diego Wastewater Collection Systems Division Manhole SSO Estimation method provided in **Appendix K**. This entails comparing the overflow to

the San Diego Reference Chart which is a method for estimating spills up to a volume of 275 gallons per minute.

### **5.1.7 Time SSO was Stopped**

This field allows the time and date the SSO was stopped, or the time and date when the SSO is anticipated to be stopped.

### **5.1.8 Stream Affiliation**

This field is a description of the receiving water the SSO discharged into, if applicable. The name of the stream should be listed, if known. Otherwise, list the stream as a tributary to a larger receiving water. If there are no stream affiliations, this information must still be provided indicating there were no impacted waterbodies.

### **5.1.9 Affected Human Contact Areas**

This field allows for a brief description of the known affected human contact areas near the SSO, if any.

### **5.1.10 Previous SSO Date**

This field uses the historical tracking of SSOs and determines when any previous SSOs have occurred at this location. Map books are consulted to complete this field. If this is the first time an SSO has occurred at this location within the previous 5 years, it should be stated in the letter.

### **5.1.11 Follow-up Action**

This field describes the follow-up additional action as determined from the weekly progress meetings held by the Department. Follow-up work typically performed by a Contractor should be included in this field and includes additional investigations, CCTV, preventive maintenance, and other additional preventative work completed.

### **5.1.12 Public Notifications**

This field describes the public notifications and notifications to other agencies or departments, should an SSO impact the public or the environment to the level of requiring public notification. This shall be determined on a case-by-case basis.

## **5.2 Incident Review Process/Overflow Review Meeting**

In the event of a critical system component failure, such as a lift station failure or a breakdown in response to a wastewater issue, the Wastewater Collection Systems Administrator shall initiate a WCTS incident review during the weekly Overflow Review Meeting.



The Overflow Response Program team generally meets twice a month to review the overflows that have occurred since the last meeting, identify the proper follow-up corrective action(s) that should be taken, discuss the results of the corrective action(s) that have been completed on past overflows since the previous meeting, and discuss the status of outstanding overflows for which appropriate corrective actions have not been completed. The information and notes from each meeting is summarized and captured in internal memoranda: one covering the newly discussed overflows from the most recent period, and one covering the outstanding overflows from the previous periods. The outstanding overflows continue to be tracked by the Overflow Response Program team until all members are satisfied that sufficient investigation and/or effective corrective actions have been undertaken and completed.

### **5.2.1 Overflow Corrective Action**

The corrective action approach determined from the above-mentioned meeting is selected based upon the recorded observations made by the Stoppage Operator during the initial cleaning of the blockage and the history of overflows at the location. The corrective action options usually evaluated include:

- Hydraulic washing and vactoring of the line by the contractor upstream of the overflow location and downstream of the location to the outfall;
- Confined space entry to remove debris, large foreign objects, and any other materials that cannot be recovered from the surface using a manual grabber or by vactoring;
- Chemical treatment to remove grease;
- Point repair;
- Excavation to remove objects (i.e., utility cross boring, etc.);
- Cleaning with a drag machine;
- Cleaning with a hydraulically driven root cutter;
- Placement on a preventive maintenance list; and/or
- Scheduling a grease trap inspection.

### **5.3 Notification to the Public in Affected Areas**

The Wastewater Collection Systems Administrator instructs staff to post notices at the affected areas that are readily visible to the general public, if the SSO poses a short-term health risk or environmental impact. Public access is limited with area barricades

and/or temporary signage. If the SSO poses a long-term impact or health hazard, the Administrator shall contact the local media outlets to post warnings to the general public, as well as provide instructions on what the public can do to limit their exposure and help eliminate the SSO. The Administrator shall also post a follow-up message to the general public appropriate to the nature of the event once the SSO has been corrected to inform the public what measures were taken, what will be done in the future to prevent the SSO, and to inform the general public on what they can do to help reduce/eliminate future SSOs. Public notification is determined on a case-by case basis by the Administrator and/or the Public Works Director.

## Section 6

# Long-term Response

Long-term actions are critical in order to prevent the recurrence of a SSO event at a specific location. There are three critical questions to be answered during the long-term response phase to prevent the recurrence of a sewer overflow, as shown in **Appendix L** and identified below:

1. Is a consultant required to evaluate the cause of the SSO and identify appropriate long-term corrective actions? If yes, the request is processed by the Wastewater Collection Systems Administrator. If no, the Environmental Maintenance Manager requires the location to be monitored for future overflows by internal staff.
2. Is the basic cause of the SSO capacity related? If yes, the Wastewater Collection Systems Administrator authorizes a capacity evaluation to determine the appropriate solution. If no, the modifications required to the collection system to eliminate the hydraulic restriction are determined, or the basic root cause of the blockages are defined and corrected.
3. Will more frequent cleaning eliminate the cause or prevent future overflows? If yes, the Administrator shortens time between cleanings and places the area on a regular preventative maintenance list. If no, the Administrator retains the cleaning schedule and monitors the location.

### 6.1 Reporting

Memphis shall maintain all SSO reporting records for a minimum of five years from the date of the SSO. All records documenting the steps taken to prevent the SSO from recurring, including work orders associated with the investigation and repair activities shall be maintained. The City shall also maintain a description of the complaints from customers or others regarding SSOs for a minimum 5-year period.

# **Section 7**

## **SORP Training Procedures**

### **7.0 Introduction**

This SORP is a living document to be updated as personnel, systems, and response and remediation protocol change. Equally important to the creation of the plan is training of personnel on the plan content and appropriate use. This section of the SORP describes the review, approval, and update process, and necessary training programs for the Department.

### **7.1 Plan Review, Approval, and Update**

This SORP shall be reviewed and approved periodically by the Environmental Maintenance Department of the Public Works Division at an average of once every two years and as other significant changes to the SORP protocols occur.

### **7.2 Safety Training for All Collection System Personnel**

The safety program is anchored with support from the Director of Public Works and includes providing sufficient resources, periodic review, and the establishment of safety-oriented goals.

The Safety Coordinator reports to the Administrator of Environmental Engineering and works closely with other administrators, managers, supervisors, and employees regarding various safety issues, programs, training, and record-keeping. A Safety Manual details the procedures for the various concerns, such as confined space entry. The Safety Manual is placed at each installation for reference by supervisors directly responsible for job planning to ensure safe work practices are followed.

The City of Memphis Public Works Division shall conduct training for the appropriate response crews and support staff to ensure their compliance with the SORP. Training sessions shall be organized based on the latest SORP, as well as other reference materials. These training sessions are important to reinforce the SORP protocol; however, the prime component of the training program shall be a practical hands-on field component to ensure all response personnel are prepared for all anticipated situations. In addition, the Environmental Maintenance Department shall conduct refresher sessions as significant changes are made to the substance of this SORP within 90 to 180 days after EPA approval, if applicable, to ensure department-wide compliance with the document. The Administrator of Environmental Maintenance oversees the SORP to ensure that the established procedures are being followed during implementation and field operation.

In addition to training on the SORP implementation, the Department also conducts safety training based on the day-to-day safety hazards associated with the

Departments work. Personnel that respond to a SSO call or perform minor sewer repairs and construction receive the following additional safety training:

**Confined Space Entry Safety Training** – This training is designed to instruct employees on proper procedures as defined in OSHA 29 CFR 1910.146. Safety equipment includes a confined space entry trailer with appropriate gear and air monitoring instruments. Air monitoring instruments are calibrated on a monthly basis utilizing an instrument docking station. Confined Space Entry Training includes the following:

- Hazardous Conditions
- Safety Devices
- General Safety Practices
- Reclassified Non-Permit Confined Spaces

A Confined Space Entry Program is in place in the Environmental Department. Under this program, all field employees are trained in confined space entry protocol and procedures. Permit spaces have been identified at all facilities and employees are required to complete a confined space entry permit prior to entry. Copies of the completed confined space entry permits are sent to the Safety Coordinator for filing.

A respiratory protection program is also in place in the Environmental Department. Employees who are required to wear a respirator undergo an initial medical evaluation and fit-testing prior to issuance of a respirator.

**External Training** – Employees are routinely sent to the National Utility Contractors Association (NUCA) certified training. Lift station crews are also sent to lift station schools offered by manufacturers and vendors to receive additional specific training on the equipment at the stations.

**Additional Routine Training** – The following are additional routine training courses provided to maintenance employees:

- Flagger
- Defensive Driving
- CPR/AED
- Miscellaneous Safety Training

## 7.3 Training

The Department shall provide training to ensure the SORP is effective in managing a SSO response. This training shall provide the means for those involved to acquire skills which shall fulfill their roles during an emergency. Training on the SORP can also help to determine the effective processes and what can be improved to better

respond to and repair the causes of the SSO, so that revisions to the plan can be made accordingly.

The types of training to be utilized are described above and include formal and hands-on, on-the-job training. The Department has identified personnel that shall receive training. In addition to the periodic training, training shall also be conducted when the following occurs:

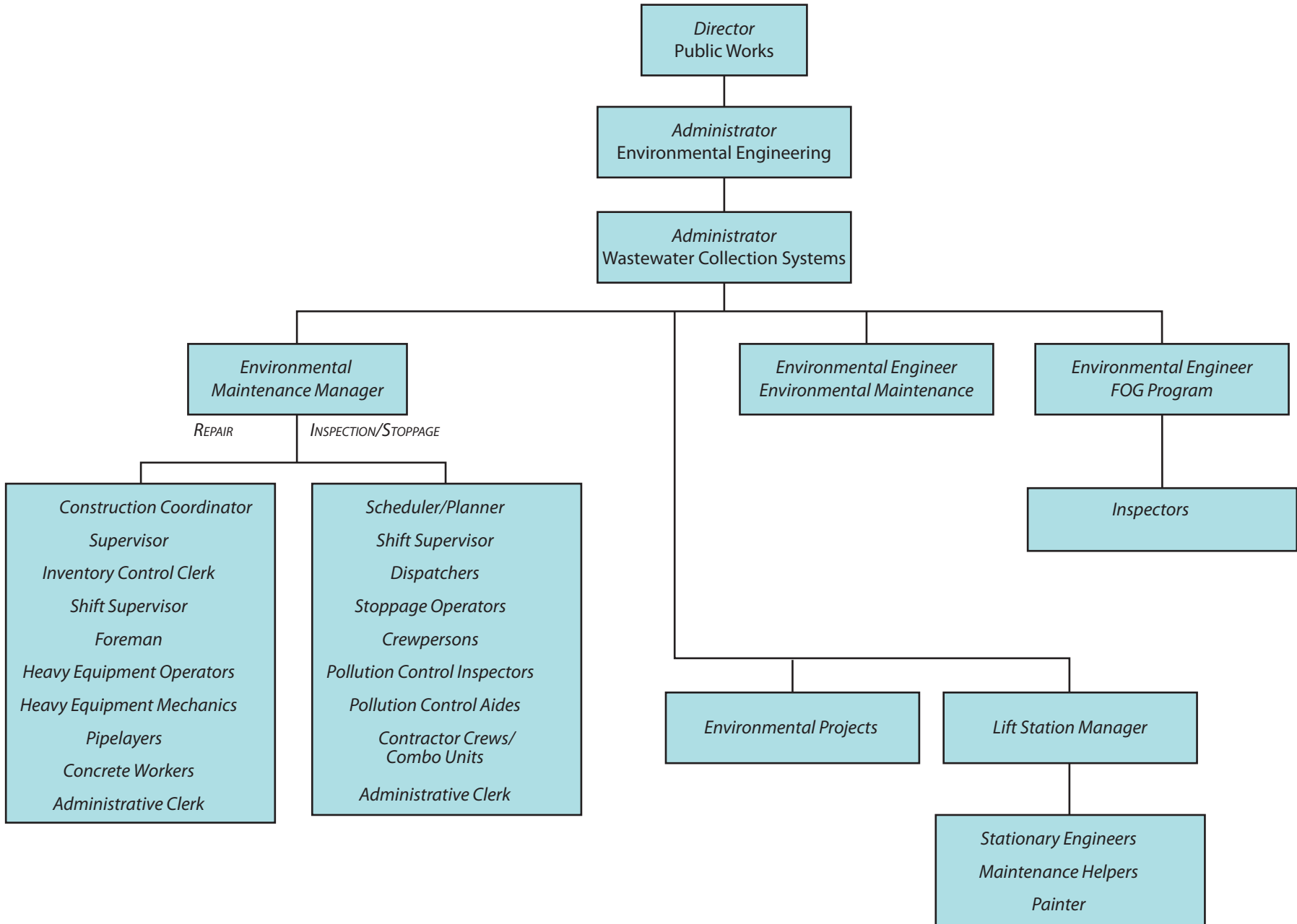
- New employees are hired who are responsible for implementing the plan.
- Special emergency assignments.
- Equipment or materials are introduced that could alter the response procedures.
- EPA approval of significant revision of substantive changes to the SORP, if applicable.

The orientation sessions should include basic instruction and explanation of the SORP procedures. Comprehension of training sessions is evaluated in the field by the Stoppage Operators.

# Appendix A

## Organizational Chart and Job Descriptions

# CITY OF MEMPHIS PUBLIC WORKS ORGANIZATIONAL CHART





**JOB TITLE:** Environmental Engineer  
**DIVISION:** Public Works  
**SERVICE CTR:** Environmental Mnt.(CMOM program)  
**FLSA:** Exempt

**JCC#:** F052EV  
**DATE:** 6/5/2002

**ESSENTIAL JOB FUNCTIONS:** Works under the direction of the Manager of Environmental Maintenance to manage and provide technical support for major programs and projects in Environmental Maintenance such as the Capacity, Management, Operation, and Maintenance (CMOM) program. Supervises and evaluates a staff responsible for inspecting and maintaining the City's sewer lines including ensuring compliance with all OSHA/safety program regulations and guidelines; and directs and reviews the work of outside contractors. Manages programs to maintain compliance with all Federal Environmental Protection Agency and State of Tennessee regulations and requirements. Interprets and analyzes field data and reviews plans; performs detailed engineering calculations; maintains related data and prepares reports required by the EPA and the State of Tennessee. Responds to inquires and communicates on a regular basis with professionals and the general public regarding sewer problems. Researches and employs new developments in engineering techniques, methods, and materials in the operation of the wastewater collection system. Prepares budget estimates, specifications, and monitors daily expenditures.

**OTHER FUNCTIONS:**

1. Performs additional functions (essential or otherwise) which may be assigned.

**TYPICAL PHYSICAL DEMANDS:** Must be able to communicate clearly verbally and in writing with management, staff, and the public. Requires visual acuity to read pipeline schematics and inspect designated areas related to sanitary sewers, traversing uneven woods, weeded areas, and flood lands, and some lifting and carrying objects such as engineering equipment weighing up to 25 lbs. Requires the ability to operate general office equipment such as a personal computer and telephone and specialized engineering equipment. Requires frequent use of an automobile to make on-site inspections.

**TYPICAL WORKING CONDITIONS:** Work is performed in an office and at sewer construction/repair sites throughout the City including exposure to sewer fumes and gases and changing weather conditions and temperatures.

**MINIMUM QUALIFICATIONS:** Bachelor's degree in Civil Engineering and four (4) years experience in environmental engineering and enforcement programs with at least two (2) of the four (4) years in a supervisory/lead capacity; or any combination of experience and training which enables one to perform the essential job functions. Must possess a license to practice engineering in the State of Tennessee or a state that has reciprocity with Tennessee. Before the end of 24 months of employment must take and pass written examination for State of Tennessee Class II Wastewater Collection License as condition of continued employment. Must possess a valid Tennessee driver's license.

\*\*\*\*\*

Eric P. Jahn 6/5/02  
WRITTEN BY: DATE:

Clyfford L. Smith 6/6/02  
EEO REVIEW: DATE:

REVIEWED FOR ADA: R2B  
6-6-02

Ken Call 6/12/02  
DIVISION APPROVAL: DATE:



EMPLOYMENT SERVICE CENTER

CITY OF MEMPHIS

SEPTEMBER 22, 1993

Applications will be accepted from 8:00 A.M. until 5:00 P.M. in the Employment Office, Room 1B-33, City Hall, 125 North Main until

OCTOBER 01, 1993

THE CITY CHARTER REQUIRES THAT CITY EMPLOYEES MUST ESTABLISH RESIDENCE WITHIN SHELBY COUNTY, TENNESSEE WITHIN SIX (6) MONTHS FROM DATE OF EMPLOYMENT.

**\*\* THIS POSITION IS PROMOTIONAL ONLY \*\***

**POSITION: ADMINISTRATOR - WASTE COLLECTION FACILITIES - (1 Opening)**  
Public Works/Environmental/Administration - J.O. #93-151 - GRADE 00

**ESSENTIAL JOB FUNCTIONS:** Works under the general direction of an assigned supervisor. Plans, coordinates, and directs activities concerned with maintenance and inspection of the physical sewer system, flood control, operation and maintenance of sewer lift stations, and storm water management; Analyzes trends, such as population and industrial growth of area being served to determine adequacy of current facilities and to project demands for future facilities; develops plans to meet expanded demands and requests engineering staff to design and prepare specifications for extended facilities and capacity; directs activities of designated employees who oversee water and sewage facilities; seeks consultants to perform special studies for the department, reviews bids, and makes recommendation for selection; confers with consultants and management personnel to discuss alternatives and to choose most suitable plan on basis of efficiency and cost-effectiveness; communicates with regulatory agencies to resolve any problems and to coordinate projects; inspects field projects to confirm conformance to specifications and government regulations; researches and evaluates new developments in materials, tools, and equipment and recommends or denies purchase; prepares various reports including monthly EPA report; and prepares department budget.

**OTHER FUNCTIONS:**

1. Performs additional functions (essential or otherwise) which may be assigned from time to time.

**TYPICAL PHYSICAL DEMANDS:** Requires ability to inspect work area which may involve walking, sometimes across ditches, along river banks, or in wooded areas. Requires ability to communicate with staff, management, public government agencies, consultants, private contractors, and other City officials.

**TYPICAL WORKING CONDITIONS:** Work is performed in an office environment and outdoors to inspect field projects and to demonstrate new products.

**MINIMUM QUALIFICATIONS:** A Bachelor's Degree in Environmental Engineering, Civil Engineering, or related engineering degree, and five (5) years administrative experience in the field of wastewater treatment and/or collection; or any combination of training and experience which enables one to perform the essential job functions. Must possess a valid Tennessee Driver's License. **PROOF OF EDUCATION REQUIRED. (PHOTOCOPY OF LICENSE MUST BE ATTACHED TO APPLICATION).**

**SPECIAL REQUIREMENTS:** Must possess a current valid State of Tennessee Class II Wastewater Collection License or be able to obtain before the end of 24 months of employment as an Administrator of Waste Collection Facilities.

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EQUAL OPPORTUNITY EMPLOYER

JOB TITLE: Manager - Environmental Mnt.  
DIVISION: Public Works  
BUREAU: Environmental Mnt.  
FLSA: Exempt

JCC#: F101EN  
DATE: 04-13-93

**ESSENTIAL JOB FUNCTIONS:** Works under the direction of the Administrator of Collection System. Directs and coordinates, through subordinate supervisory personnel, activities of workers engaged in repair and maintenance of the City's sanitary sewer system: Reviews and analyzes reports and records and confers with supervisory personnel to obtain data required for planning department activities and to address future needs; gives work direction, resolves problems such as disgruntled property owners, and sets deadlines necessary to meet work objectives; evaluates current procedures and practices and develops and implements alternate methods to improve operations; researches and evaluates new developments in material, tools, and equipment to recommend or deny purchase; reviews new land development projects to evaluate additions and modifications to sewer system; coordinates department activities with inter-related activities of other City departments and representatives of utilities to insure optimum efficiency; prepares various reports for Management, State and EPA; prepares and monitors budget; prepares bid specifications and contracts necessary to requisition tools, equipment, and supplies; inspects work sites to evaluate work requirements; and directs clerical personnel in typing reports and record keeping activities.

**OTHER FUNCTIONS:**

1. Performs additional functions (essential or otherwise) which may be assigned from time to time.

**TYPICAL PHYSICAL DEMANDS:** Requires ability to inspect work area which may involve walking in wooded and river swamp areas, climbing, and stooping. Requires ability to communicate with staff, public, utility representatives, other City departments managers, etc.

**TYPICAL WORKING CONDITIONS:** Majority of work is performed in an office environment but outdoor work is required to inspect work site, new development sites, and to meet with the public.

**MINIMUM QUALIFICATIONS:** High school graduate with eight (8) years experience in the maintenance and repair of sanitary sewer lines with five (5) of the eight years in a supervisory capacity; or any combination of experience and training which enables one to perform essential job functions.

**SPECIAL REQUIREMENTS:** Must possess a current valid State of Tennessee Wastewater Collection License and a valid Tennessee Driver's License.

\*\*\*\*\*

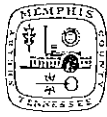
Mary Dennis  
WRITTEN BY:

4-26-93  
DATE:

Tom Miles  
EEO REVIEW:

4-26-93  
DATE:

REVIEWED FOR ADA: RGH 4/28/93



## CITY OF MEMPHIS

MARCH 01, 2006

**EQUAL OPPORTUNITY EMPLOYER**

Applications will be accepted from 8:00 A.M. until 5:00 P.M. in the Employment Office, Room 1B-33, City Hall, 125 North Main until or visit our Satellite Office at 4225 Riverdale

MARCH 10, 2006

For a complete listing of job openings please visit web site at [www.memphistn.gov](http://www.memphistn.gov)

**THE CITY CHARTER REQUIRES THAT CITY EMPLOYEES MUST ESTABLISH RESIDENCE WITHIN THE MEMPHIS CITY LIMITS WITHIN SIX (6) MONTHS FROM DATE OF EMPLOYMENT**

**POSITION: SHIFT SUPERVISOR/PUBLIC WORKS - (1 Opening) MINIMUM SALARY: \$4,710.41 Mo**  
Public Works/Environmental Maintenance - J.O. #06-014 GRADE 12 SM1

**ESSENTIAL JOB FUNCTIONS:** Works under the general supervision of the Supervisor of Environmental Maintenance. Directs and coordinates through subordinate personnel activities of workers engaged in the maintenance, repair, and/or replacement of the City's sanitary sewer lines, connections, and manholes; oversees personnel providing training, work direction, and evaluation of work performance; evaluates work demands and makes daily assignments; adjusts work schedules to meet work demands and shortage of staff; makes field inspections to review work and to evaluate work requirements such as type of equipment needed; inspects equipment daily, substitutes equipment needing repairs and prepares work order for maintenance required; completes daily activity reports; interprets personnel policies and contract memorandums and conveys to workers; takes disciplinary action according to established practices; confers with workers' representatives to attempt to resolve grievances; and investigates and resolves citizen complaints and requests.

**OTHER FUNCTIONS:**

1. Performs additional functions (essential or otherwise) which may be assigned.

**TYPICAL PHYSICAL DEMANDS:** Requires ability to inspect work area which may involve walking in wooded and river swamp areas, climbing, and stooping. Requires ability to communicate with staff, management, public, Health Department officials and other City department supervisors.

**TYPICAL WORKING CONDITIONS:** Majority of work is performed outdoors to inspect work activities, to evaluate work requirements, and to respond to problem situations. Twenty-four hour, seven-day week operation. Must work assigned shift.

**MINIMUM QUALIFICATIONS:** High school graduate and six (6) years experience in sewer line maintenance with one (1) of the six (6) years in a supervisory/lead capacity; or any combination of training and experience which enables one to perform essential job functions. Must be on call 24 hours a day for emergencies and possess a valid Tennessee Driver's License. **(PROOF OF DRIVER'S LICENSE REQUIRED)**

**JOB TITLE:** Stoppage Operator/Sewer  
**DIVISION:** Public Works  
**SERVICE CTR:** Environmental Inspection  
**FLSA:** Non-exempt

**JCC#:** F556SO  
**DATE:** 12/16/98

**ESSENTIAL JOB FUNCTIONS:** Works under the general supervision of a Zone Supervisor to maintain sewer lines through clearing and removing stoppages, obstructions, or restrictions; inspects sewer lines and manholes and performs dye tests/smoke tests, if necessary, to locate the stoppage; drives and operates sewer cleaning equipment such as a flusher, vactor, power rodder, drag machine, etc. to clear the stoppage and applies chemical solvents to aid in clearing the obstruction; enters confined spaces to remove debris from manholes; cleans and disinfects areas such as basements and yards flooded as a result of sewer stoppages; performs routine washing of sewer lines, manholes, and siphons; and directs the tasks of a Semi-skilled Crewperson assigned to assist in these duties. Reports the location of the problem, action taken, and current job status to a dispatcher or supervisor using a mobile radio. Prepares a daily summary report on all activities performed and documents any special job site conditions. Performs light preventative maintenance of vehicles and equipment such as fluid levels, pre-trip inspections, filters, etc.

**OTHER FUNCTIONS:**

1. Performs additional functions (essential or otherwise) which may be assigned.

**TYPICAL PHYSICAL DEMANDS:** Must be able to communicate clearly both verbally and in writing. Requires the ability to traverse uneven ground, lift and carry objects such as tools and power equipment weighing up to 50 lbs., and maneuver including stooping, bending, reaching (including above head), pushing, pulling, and climbing into and out of manholes. Requires the ability to drive and operate specialized sewer equipment such as a wash truck and power rodder.

**TYPICAL WORKING CONDITIONS:** Majority of work is performed in an outdoor environment. Performing job requires exposure to sewage fumes and odors, insects, weeds and poisonous plants, emulsifiers, bacteria, insecticides, sewer solvents, traffic, noise, heat and all types of weather conditions. Must be able to enter confined spaces such as a manhole/sewer line. Requires some contact with the general public.

**MINIMUM QUALIFICATIONS:** High School graduate and two (2) years experience in sewer line maintenance; or any combination of experience and training which enables one to perform the essential job functions. Must have a valid class "B" Tennessee driver's license with endorsement (C or N) for tanks 1,000 gallons or greater. Must comply with Federal Department of Transportation (DOT) Alcohol and Drug testing rules.

\*\*\*\*\*

*Eric A. Sabatin* 12/16/98  
WRITTEN BY: DATE:

*Tom Miley* 12/17/98  
EEO REVIEW: DATE:

REVIEWED FOR ADA: *R203*  
12-16-98

*[Signature]* 12/21/98  
DIVISION APPROVAL: DATE:

JOB TITLE: Scheduler-Planner  
DIVISION: Public Works  
SERV. CENTER: Environmental  
FLSA: Exempt

REVISED DATE: 5/6/1993

**ESSENTIAL JOB FUNCTIONS:** Works under the supervision of the Manager of Environmental: Responsible for scheduling work crews to handle sewer repairs and/or sewer stoppages; and directs the work activities of designated staff; receives calls or complaints regarding sewer repairs, and obtains information from dispatchers on sewer stoppages; transfers information to complaint cards and enters detailed data into the computer; runs reports daily to analyze data by using specialized software to determine which repairs should be made priority; reassigns crews to handle emergency repairs; monitors status of repairs to ensure problems are corrected. Provides information or requests MLGW, telephone or cable companies to locate cable/lines; informs private contractors and plumbers of the location of sewer lines, pulls sewer maps or documents, and determines appropriate location by accurately calculating dimensions of sewer location. May occasionally go to job sites to locate sewer lines. Prepares special reports, regarding sewer repairs and maintenance, for administrative personnel in City and County departments, the State, and the EPA agency; maintains maps on sewer line locations. Interacts with the Mayor's Citizen Service Center regarding complaints received, and the City Attorney's office regarding claims filed due to sewer damages. Maintains files and utilizes data to schedule preventive maintenance for sewer systems.

**OTHER FUNCTIONS:**

1. Acts as supervisor in his/her absence to supervise daily work operations of other areas.
2. Performs additional functions (essential or otherwise) which may be assigned from time to time.

**TYPICAL PHYSICAL DEMANDS:** Requires the use of equipment, such as computer terminal, specialized software programs, radio transmitters, and telephones. Requires the ability to exercise independent judgment in assigning work crews to handle repairs. Involves constant contact with crews and staff to provide information or to reassign crews. Requires the ability to communicate with the public on sewer repair requests or complaints, plus utilities, private contractors, and plumbers regarding sewer repairs where tactfulness and persuasiveness is required. May occasionally operate sewer locator tools when locating sewer lines.

**TYPICAL WORKING CONDITIONS:** Work is performed in an office environment, and may occasionally be required to visit work sites to locate sewer lines.

**MINIMUM QUALIFICATIONS:** High School education and six years experience in planning and scheduling job projects, recordkeeping, and dealing with the public with two of the six years experience in working with computers preferred, or any combination of experience and training which enables one to perform the essential job functions.

Phyllis H. Gillispie / RLB  
Written By:

5-7-93  
Date:

Chris Reed  
Reviewed:

5-7-93  
Date:

REVIEWED FOR ADA

RLB

JOB TITLE: Dispatcher  
DIVISION: Public Works  
SERVICE CENTER: Environmental Inspection  
FLSA: Non-exempt

JCC#: F264DP  
DATE: 12-8-93

ESSENTIAL JOB FUNCTIONS: Works under the general supervision of an assigned supervisor in the Environmental Inspection area of the Public Works Division. Receives and processes citizen complaints and requests regarding sewer maintenance needs; Answers telephone and obtains necessary information; relays information to crew assigned to area in which problem occurs, using two-way radio; inputs and retrieves complaint/request information such as time, location, nature of call and action taken, maintains follow up status, and generates reports based on data; and refers non-sewer maintenance calls to appropriate department or agency.

OTHER FUNCTIONS:

1. Performs additional functions (essential or otherwise) which may be assigned from time to time.

TYPICAL PHYSICAL DEMANDS: Requires the ability to operate personal computer, telephone and two-way radio. Must be able to communicate with the public and staff.

TYPICAL WORKING CONDITIONS: Work is performed in an office environment and involves contact with citizens and staff.

MINIMUM QUALIFICATIONS: High school graduation and four (4) years clerical experience; or any combination of experience and training which enables one to perform the essential job functions. One (1) year experience and/or education in operating personal computers with some experience in operating two-way radio preferred.

\*\*\*\*\*

Mary Dennis  
WRITTEN BY:

12-9-93  
DATE:

Ch. R. O.  
EEO REVIEW:

12-9-93  
DATE:

REVIEWED FOR ADA: (RAB) 12/9/93

**JOB TITLE:** Sewer Lift Stations Maintenance Manager    **JCC#:** F102LS  
**DIVISION:** Public Works    **DATE:** 04-22-98  
**SERVICE CTR:** Lift Stations  
**FLSA:** Exempt

**ESSENTIAL JOB FUNCTIONS:** Works under the direction of the Administrator of Wastewater Collection Systems. Plans and directs the maintenance of Flood Control Pumping Stations and Sewer Lift Stations. Trains, directs, and evaluates the performance of maintenance personnel in adherence to following proper operation and maintenance procedures; develops and implements maintenance procedures, including a preventive maintenance program; inspects pump stations and equipment for malfunctions and needed repairs; oversees the installation and testing of new or rebuilt equipment and the inspection of contracted maintenance work; ensures that proper records of maintenance, preventative maintenance and equipment manuals, etc. are maintained; prepares contracts, evaluates bids, and prepares the budget for flood control and sewer lift maintenance; and coordinates maintenance work with the operating personnel. Utilizes various PC programs to generate reports, inventory lists, and correspondence.

**OTHER FUNCTIONS:**

1. Performs additional functions (essential or otherwise) which may be assigned from time to time.

**TYPICAL PHYSICAL DEMANDS:** Requires the ability to operate a personal computer. Requires the ability to perform routine inspections of the facilities which involves climbing/descending on ladders. May have to assist with manual labor during emergency situations. Requires the ability to operate an automobile to drive to various City facilities for inspections and offices for meetings.

**TYPICAL WORKING CONDITIONS:** Majority of work is performed in an office environment, but must make inspections of facility which requires being outdoors. May be exposed to various weather conditions, fumes, odors, dust, and noise. May be required to be on-call, twenty-four (24) hours a day, seven (7) days a week for emergencies.

**MINIMUM QUALIFICATIONS:** High school diploma and seven (7) years experience in the field of mechanical engineering with three (3) of the seven (7) years in a supervisory capacity; or any combination of experience or training which enables one to perform the essential job functions. Must have a valid Tennessee driver's license.

**SPECIAL REQUIREMENTS:** Must successfully pass written examination and obtain State of Tennessee Wastewater Collection License (grade II) within twenty-four (24) months of employment as a condition of continued employment.

\*\*\*\*\*

*Denise Nelson* 4-23-98  
 WRITTEN BY: \_\_\_\_\_ DATE: \_\_\_\_\_

*Tom White* 5/7/98  
 EEO REVIEW: \_\_\_\_\_ DATE: \_\_\_\_\_

REVIEWED FOR ADA: *R203*  
 \_\_\_\_\_  
 4-23-98

*[Signature]* 5/5/98  
 DIVISION APPROVAL: \_\_\_\_\_ DATE: \_\_\_\_\_



JOB TITLE: Stationary Engineer  
DIVISION: Public Works  
BUREAU:  
FLSA: Non-exempt

JCC#: F551SE  
DATE: 1-29-93

JOB SUMMARY: Works under the direction of an assigned supervisor at the pumping stations in the Public Works Division. Performs more complex task in operating, maintaining, and repairing stationary and mechanical equipment used in and around a flood control pumping station and sewer lift station: Reads and monitors meters and gages to verify operating conditions; adjusts manual controls or overrides automatic controls to regulate equipment according to water levels and prescribed operating ranges; directs crew in the technical maintenance and repair of equipment such as air compressors, pumps, motors, valves, fork lifts, etc.; fabricates equipment and parts using a variety of welding equipment; inspects equipment to detect malfunctions and to perform preventative maintenance; examines and repairs flood walls and levees by repairing and rebuilding broken and weakened sections; and interprets blueprints and operation manuals to determine location, size and type of parts. Operates with appreciable latitude for unreviewed action or decision.

OTHER FUNCTIONS:

1. Performs additional functions (essential or otherwise) which may be assigned from time to time.

TYPICAL PHYSICAL DEMANDS: Must be able to read blueprints and manufacturer's manuals. Requires visual and physical inspections of mechanical systems, and have ability to detect unusual characteristics. Requires walking and the ability to climb ladders and stairs. Requires heavy lifting (approx. 100 lbs.), stooping, balancing, crouching and reaching.

TYPICAL WORKING CONDITIONS: Majority of work is performed in a machine shop environment. Some work is performed outdoors. May be exposed to dust, noise, high voltages, confined spaces, and hot and cold temperatures.

MINIMUM QUALIFICATIONS: High school graduate or equivalent and five (5) years experience in industrial plant maintenance or similar work; or any combination of experience and training which enables one to perform job functions. Some supervisory experience preferred.

\*\*\*\*\*

Mary Dennison  
WRITTEN BY:

1-29-93  
DATE:

Cliff P. R. J.  
EEO REVIEW

1-29-93  
DATE:

REVIEWED FOR ADA RAY 1/29/93

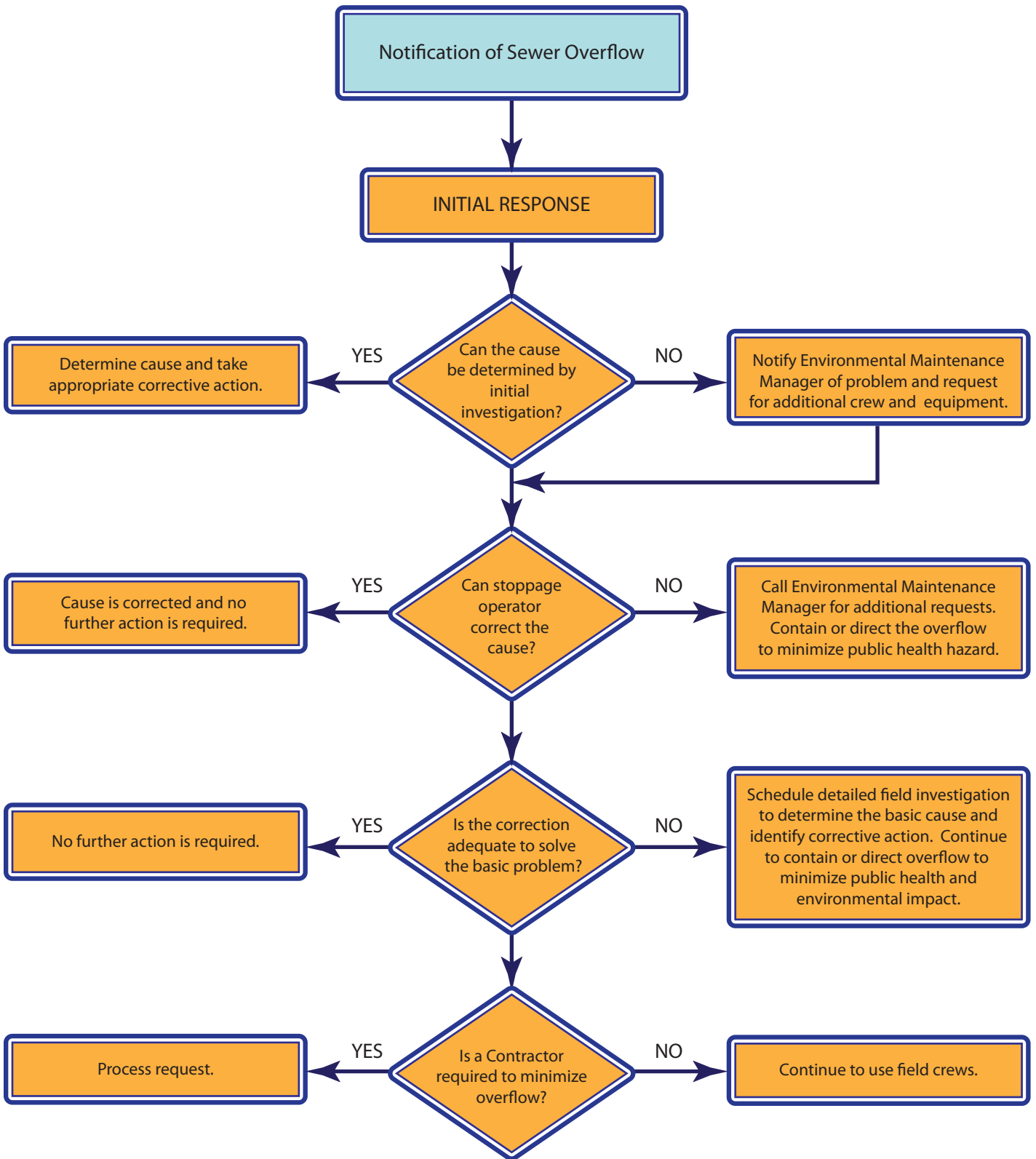
# Appendix B

## Collection System Information Checklist



# Appendix C

## Initial Response Flow Chart



# Appendix D

## Current Equipment Listing

## EQUIPMENT RESOURCES

EQUIP DESCRIPTION.	MAKE/MODEL	QUANTITY
<b>SEWER INSPECTION/STOPPAGE</b>		
CCTV TRUCKS	CUES	2
EASEMENT MACHINES	FORD/SCRUGGS	2
JET RODDER	VACTOR	1
WASH TRUCKS	VACTOR	6
COMBINATION JET/VACUUM	VACTOR	2
CABLE TRUCKS	GMC	2
VACTOR TRUCK	VACTOR	1
<b>SEWER REPAIR</b>		
CREW CAB TRUCKS	INTERNATIONAL/FREIGHTLINER	7
TANDEM DUMPS	INTERNATIONAL/FREIGHTLINER	13
BACKHOES	CASE/HYNDUI/FORD/DEERE	7
PORTABLE AIR COMPRESSOR	INGERSOL/SULLAIR	6
HYDRAULIC EXCAVATORS	CAT/ HYUNDAI	2
LOADERS	CAT/ HYUNDAI	2
PICK UP TRUCKS	FORD/DODGE/GMC	22
<b>SUPPORT SERVICES</b>		
REPAIR/MAINTENANCE TRUCKS	MAINTANIER/FORD/	2
CRANE TRUCK	MAINTAINER	1
SEWER BUCKET MACHINES	SRECO	2
TRUCK/TRACTOR W/LOWBOY	INTERNATIONAL	2
TRUCK/TRAILER	INTERNATIONAL/INTERSTATE	1

## EQUIPMENT RESOURCES

EQUIP DESCRIPTION.	MAKE/MODEL	QUANTITY
<b>SEWER INSPECTION/STOPPAGE</b>		
CCTV TRUCKS	CUES	2
EASEMENT MACHINES	FORD/SCRUGGS	2
JET RODDER	VACTOR	1
WASH TRUCKS	VACTOR	6
COMBINATION JET/VACUUM	VACTOR	2
CABLE TRUCKS	GMC	2
VACTOR TRUCK	VACTOR	1
<b>SEWER REPAIR</b>		
CREW CAB TRUCKS	INTERNATIONAL/FREIGHTLINER	7
TANDEM DUMPS	INTERNATIONAL/FREIGHTLINER	13
BACKHOES	CASE/HYNDUI/FORD/DEERE	7
PORTABLE AIR COMPRESSOR	INGERSOL/SULLAIR	6
HYDRAULIC EXCAVATORS	CAT/ HYUNDAI	2
LOADERS	CAT/ HYUNDAI	2
PICK UP TRUCKS	FORD/DODGE/GMC	22
<b>SUPPORT SERVICES</b>		
REPAIR/MAINTENANCE TRUCKS	MAINTANIER/FORD/	2
CRANE TRUCK	MAINTAINER	1
SEWER BUCKET MACHINES	SRECO	2
TRUCK/TRACTOR W/LOWBOY	INTERNATIONAL	2
TRUCK/TRAILER	INTERNATIONAL/INTERSTATE	1



## LIFT STATION INVENTORY

### PORTABLE PUMPS

FOUR (4)	-	12" DRI PRIME
TWO (2)	-	8" DRI PRIME
TWO (2)	-	6" DRI PRIME
TWO (2)	-	4" HYDRAULIC
ONE (1)	-	6" HYDRAULIC

### PORTABLE GENERATORS

ONE (1)	-	125 KW SKID MOUNTED
ONE (1)	-	125 KW TRAILER MOUNTED

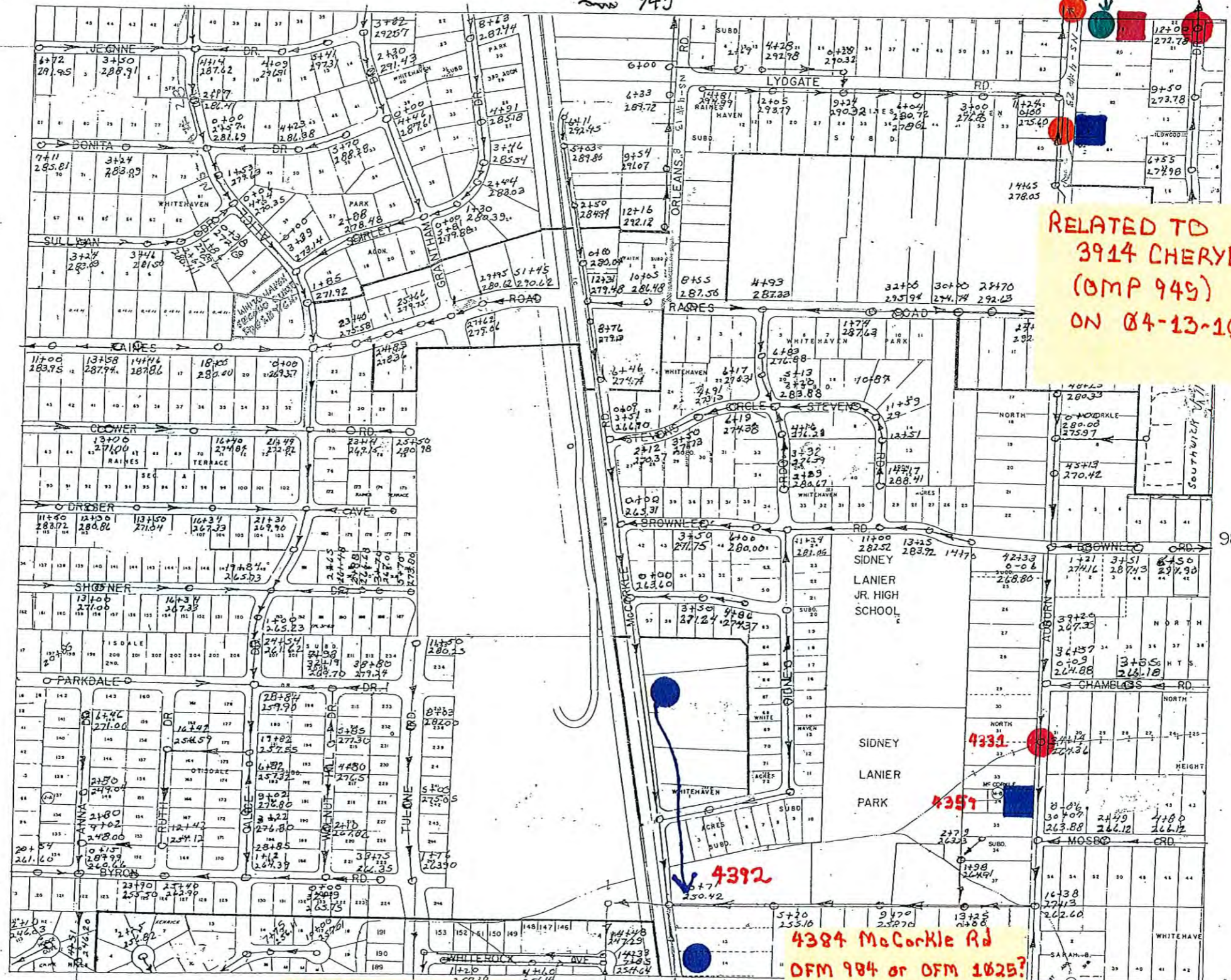
### STATIONARY GENERATORS

ONE (1)	-	350 KW @ 1525 KIMBROUGH
ONE (1)	-	600 KW @ 2820 HARBOR

# Appendix E

## SSO Maps





3941 Cheryl Drive  
Actually on  
OFM 945

RELATED TO  
3914 CHERYL  
(OMP 949)  
ON 04-13-10.

4034 Auburn Rd.  
PM 90 ≈ 500' U (S)  
= 4074 Auburn

03-29-10  
+ 8 ≤ 06-14-08  
OFs: 09-10-07  
09-26-06

4074 Auburn Rd.  
PM 90

01-13-09  
08-31-08 (PM)  
+ 14 ≤ 05-11-08 (9 PM)  
OF 11-10-06

4331 Auburn Road  
12/12-14/05  
04-17-06

4359 Auburn Rd.

11-24-09

983

985

984

ANNUAL REVISIONS The following schedule correctly reflects all of zoning map amendments that have been adopted by the Council of the City of Memphis during the calendar year indicated.

Year	Director of Planning	Year	Director of Planning
1983	...	1984	...
1985	...	1986	...
1987	...	1988	...
1989	...	1990	...
1991	...	1992	...
1993	...	1994	...
1995	...	1996	...
1997	...	1998	...
1999	...	2000	...
2001	...	2002	...
2003	...	2004	...
2005	...	2006	...
2007	...	2008	...
2009	...	2010	...
2011	...	2012	...
2013	...	2014	...
2015	...	2016	...
2017	...	2018	...
2019	...	2020	...

4438 McCorkle Rd.  
(Possibly on OFM 1025)  
PM 90 ~ 2U = Hale x  
McCorkle  
PM 90 ~ 4U = Kassel x  
McCorkle

05-16-08

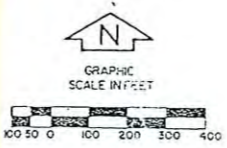
4384 McCorkle Rd  
OFM 984 or OFM 1025?

OFM 984 = Address is  
not consistent with  
OFM 1025 = Cleared  
Location (Hale x McCorkle)  
Hale x McCorkle ≈  
500' U From 1,250'  
D of Address. PMs 90  
Hale x McCorkle +  
Kassel x McCorkle (+ 2U)

07-11-09

NO!  
See  
Map

MAP



Prepared  
MEMPHIS AND SHE  
OFFICE OF PLANNING A















## **Appendix C**

### **Fats, Oils, and Grease Management Program**

# **City of Memphis**

## **Fats, Oils, and Grease (FOG) Plan**

March 2011





# Contents

## Section 1 Introduction

- 1.1 Purpose ..... 1-1
- 1.2 History..... 1-1

## Section 2 FOG Program Management

- 2.1 FOG Program Department..... 2-1
  - 2.1.1 Organization..... 2-1
  - 2.1.2 Training..... 2-1
  - 2.1.3 Communications..... 2-1
- 2.2 Data Records ..... 2-3
  - 2.2.1 FOG Documents ..... 2-3
  - 2.2.2 GIS..... 2-3
- 2.3 Related Documents ..... 2-5
- 2.4 Quarterly Report..... 2-5

## Section 3 Food Establishments

- 3.1 Food Establishment Permits ..... 3-1
  - 3.1.1 Permit Acquisition..... 3-1
  - 3.1.2 GRE Design ..... 3-1
  - 3.1.3 Permit Requirements..... 3-3
- 3.2 GRE Inspection ..... 3-3
  - 3.2.1 Inspection Procedure ..... 3-4
  - 3.2.2 Notice of Violation..... 3-4
  - 3.2.3 Civil Penalty ..... 3-4
- 3.3 Hauled Waste..... 3-4

## Section 4 Public Education

- 4.1 Apartment Complexes ..... 4-1
- 4.2 Can the Grease ..... 4-1
- 4.3 Grease Collection Tote ..... 4-2
- 4.3 Other Programs..... 4-2

## Definitions and Acronyms

## Figures

- Figure 2-1: Organization Chart..... 2-2
- Figure 2-2: GIS Data ..... 2-4
- Figure 3-1: GRE Application Process..... 3-2

## **Appendices**

- Appendix A – Memphis City Codes Chapter 33-112: Food Establishment Wastewater*
- Appendix B - Quarterly Report*
- Appendix C – Food Establishment Application*
- Appendix D – Food Establishment Permit*
- Appendix E – Food Establishment Denial Letter*
- Appendix F – GRE Maintenance Log*
- Appendix G – Inspection Checklist/NOV*
- Appendix H – Approved Waste Haulers*
- Appendix I – Waste Hauling Permit*
- Appendix J – Liquid Waste Manifest*
- Appendix K – Waste Log*
- Appendix L - Door Hanger*
- Appendix M - FOG Pamphlets*
- Appendix N - FOG Press Release*

# Section 1

## Introduction

FOG is one of the primary causes of sanitary sewer blockages in wastewater collection systems across the United States. “FOG” refers to fats, oils and grease, which are commonly found in such things as meats, sauces, gravy, dressings, deep-fried foods, baked goods, cheeses, butter, and other manufactured food and non-food items.

FOG wastes are generated by residents and businesses processing or serving food and other products. Businesses include eating and drinking establishments, caterers, hospitals, nursing homes, day care centers, schools and grocery stores, and will be collectively referred to as “food establishments.”

In addition, many industries also produce a waste stream that may contain varying levels of FOG by-products from their manufacturing process.

FOG waste is often washed into the plumbing and drainage system and on to the wastewater collection system, usually through a kitchen sink or process of floor drain. Grease hardens to the insides of sewer pipes and, over time, the buildup can block the entire pipe.

When sewer pipelines become blocked with grease, sewage has the potential to flow out of manholes. Sewer overflows pose a threat to public health, adversely affect aquatic life, and often are expensive to clean up.

### 1.1 Purpose

The prevention of FOG accumulation in sewer systems requires organized programs with proven effectiveness. This document outlines the programs utilized by the City of Memphis – both historically effective programs and new expanded programs, intended for further improvement. This is a working document and should be reviewed and updated as deemed appropriate, at a minimum of once annually.

### 1.2 History

FOG has long been identified as a major cause of sewer overflows in the City of Memphis (City), and grease from food establishments and local residents has been recognized as the primary contributor of FOG waste.

As part of the City’s FOG Control Program, the City Division of Public Works took over control of the Food Establishment Waste Discharge (FEWD) Program from the City Health Department in 1997. The existing Sewer Use Ordinance at that time gave authority to Codes to require all new food establishments to install grease traps, or grease removal equipment (GRE). This transfer of responsibility allowed the City to take a proactive role and approach to the requirements of the FEWD applicants and to the overall inspection program of these facilities.

The City adopted into its Code of Ordinances a grease control program, outlined in the Sewer Use Ordinance in Section 33-112 which allows the City to permit, regulate, fine and control the FEWD program. Chapter 33-112: Food Establishment Wastewater is included in *Appendix A*.

Since the program's inception, approximately 3,200 food establishments have been fitted with grease traps, or grease removal equipment (GRE), either retroactively or as new establishments. The number of SSOs has been reduced 67 percent. The existing FEWD Program is presented more thoroughly in Section 3.

In May 2004, the City submitted a Grease Management, Operation, and Maintenance Plan (GMOM) to the Tennessee Department of Environment and Conservation (TDEC) outlining the further development of a FOG control program. TDEC approved the GMOM program in a letter dated October 31, 2005.

Since the October 2005 approval of the GMOM by TDEC, the City has continually made improvements in the control of FOG in the collection system. This FOG plan supersedes prior submissions and outlines the existing programs and protocol for public education, permitting, inspection, and issuance of civil penalties, as well as further expansion and improvements of the FOG program.

# Section 2

## FOG Program Management

### 2.1 FOG Program Department

#### 2.1.1 Organization

The Public Works Division is responsible for the implementation of the City wide Fats, Oils, and Grease (FOG) Program. Specifically, the Wastewater Collection Division Systems oversees the program implementation by the Environmental Engineer and staff responsible for its implementation. An organization chart illustrating the current overall organization is included in Figure 2-1.

The personnel within the Environmental Engineering FOG Program include an Environmental Engineer and Inspectors, with plans to hire additional Inspectors and an Administrative Clerk. These hires will be made by approximately July 1, 2011. At that time, the FOG staff will be comprised of an Environmental Engineer, an Administrative Clerk, and four Inspectors. If additional assistance is needed to support these inspectors, staff from Environmental Maintenance is cross-trained and can assist with the regular inspections of facilities. The Environmental Engineer, who reports to the Administrator of Wastewater Collection Systems, is responsible for overseeing the inspection schedule, issuing permits, and maintaining data and records. The Administrative Clerk performs typical administrative duties including managing records and filing permits, inspection schedules, and forms. The inspectors perform the grease removal equipment (GRE) inspections and meet with citizens and food establishments as required for educational and training purposes.

#### 2.1.2 Training

New inspectors shall be provided a manual containing FOG inspection forms (including instructions), SOPs and examples of properly completed inspection checklists. Staff shall provide one-on-one training to the employee to ensure competence. The inspector will be provided a variety of reference resources as an introduction to the FOG program. Emphasis will be placed on the fundamentals of grease management and its relation to the wastewater collection system. On the job training will be provided to familiarize the employee with inspection techniques, administrative review procedures, customer relations, grease removal equipment, variety of FEWD establishments and enforcement protocol.

Conferences and seminars will be utilized as appropriate to keep employees abreast of up to date technology and FOG management trends.

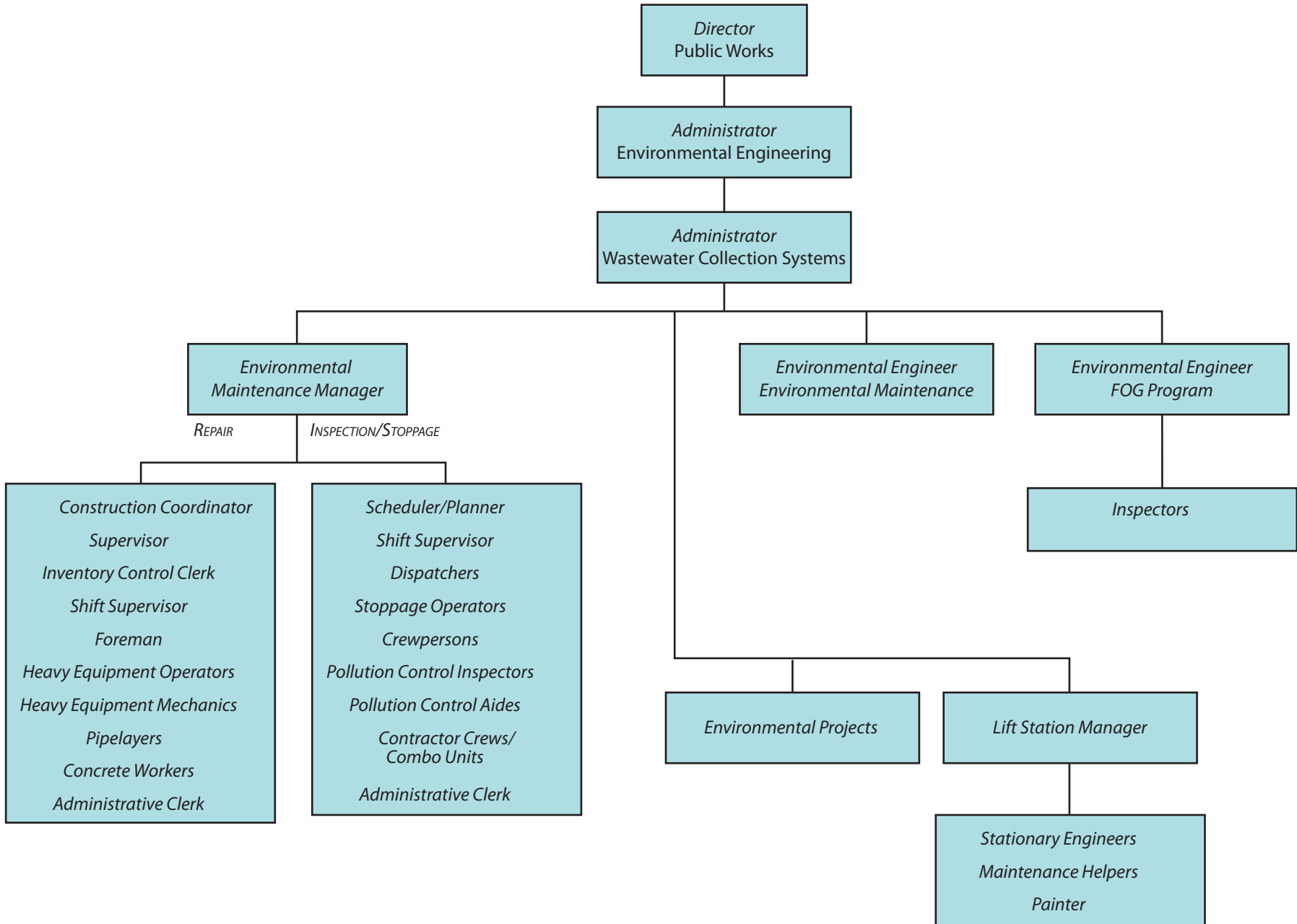
#### 2.1.3 Communications

In order for the FOG Program to work effectively throughout the Public Works Division, communication between members of the Wastewater Collection Systems Department is vital to its overall success. In order to achieve this level of communications, the FOG manager attends SSO meetings held within the

Environmental Maintenance Department, and in fact, has recently relocated its staff and office space to the Environmental Maintenance facility to allow for better coordination and communication of duties and work. The attendance at SSO review meetings allows for better coordination of the recently occurred SSOs and the prioritization of food establishment inspections within the City service area. In addition, as indicated Environmental Maintenance staff may assist FOG staff as needed with inspections and public education efforts. Based on this need, cross-training and education programs occur between multiple Departments within the Public Works Division.

Figure 2-1

# CITY OF MEMPHIS PUBLIC WORKS ORGANIZATIONAL CHART



The FOG program works in conjunction with the Memphis and Shelby County Department of Construction Code Enforcement (Codes) to issue permits, as discussed more in Section 3. These two departments have periodic meetings to discuss GRE and related permitting issues.

## **2.2 Data Records**

### **2.2.1 FOG documents**

The FOG program uses multiple documents to record information from their inspections. These documents include permits, records, and forms as discussed in the following sections. Food establishments maintain their own inspections records, GRE maintenance, and permits. The City maintains all paperwork for food establishments and hauled waste to the Stiles WWTP.

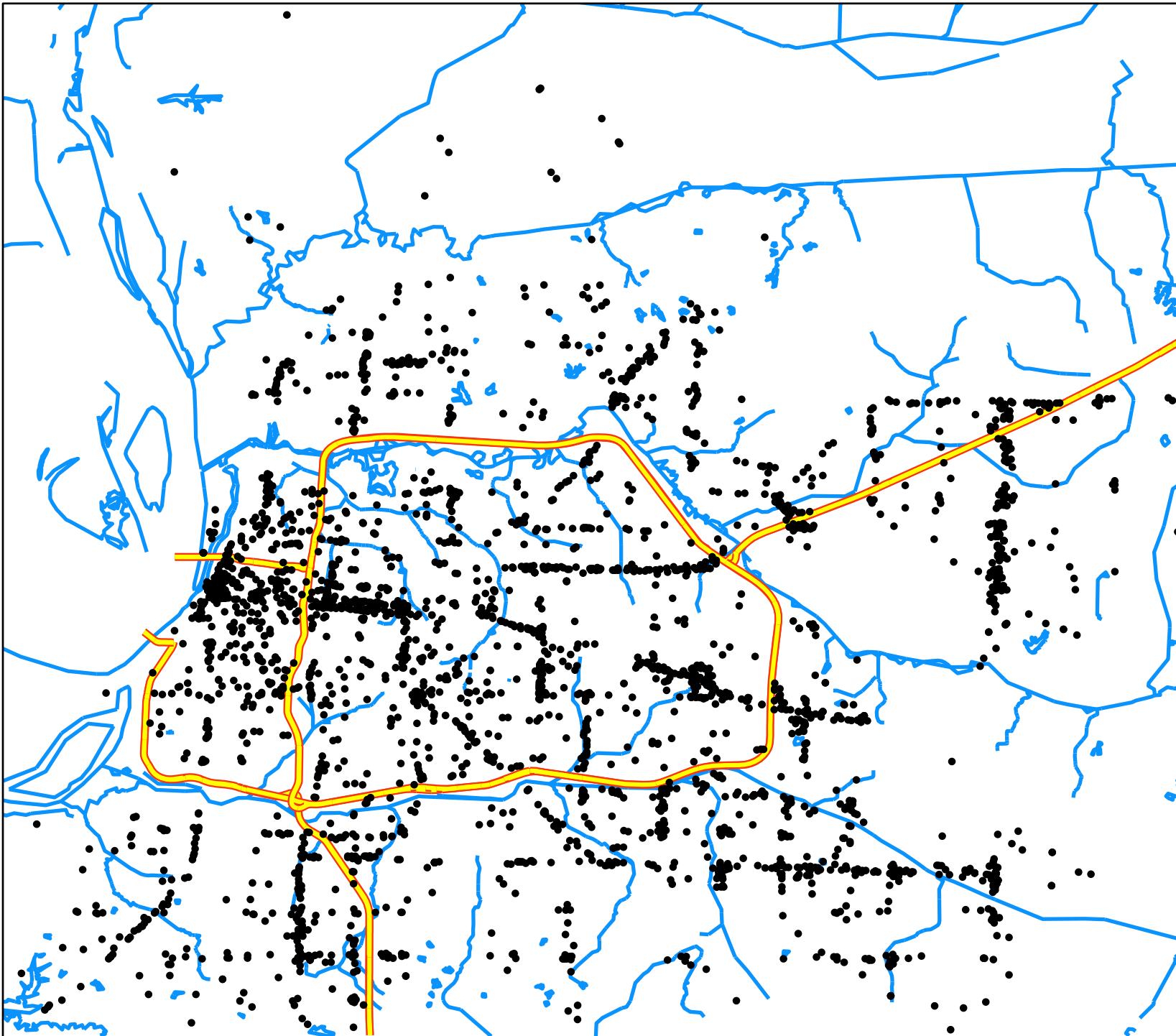
### **2.2.2 GIS**

Although the City does not maintain a comprehensive sewer mapping system on a Geographic Information System (GIS) platform, the City keeps records of each SSO in a GIS database to spatially evaluate the location of an SSO. Currently, the City has data from the year 2005 to the present, which includes the following:

- Date
- Time
- Volume
- Cause of the SSO
- Call number and dispatch number
- Complaint issued, if called in

Every restaurant in the city is also maintained in a GIS database. This data aids the Food Establishment program described in Section 3. Figure 2-2 shows the GIS data utilized by the FOG program. This GIS database is maintained by the Environmental Engineering Manager and is kept up-to-date as new facilities are permitted. This information is used to better coordinate the inspection of grease facilities due to prioritization based on SSO activity.





**Legend**

- Restaurants
- Interstate
- Streams

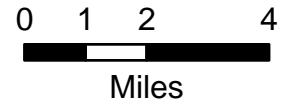


Figure 2-2:  
GIS data

## 2.3 Related Documents

As indicated in the Public Works Division organization chart (Figure 2-1), the FOG Program is closely interrelated and aligned to other programs within the Wastewater Collection Systems Department. The following list shows some of the “cross-over” documents related to the FOG program.

**City of Memphis Sewer Use Ordinance.** As mentioned in other Sections of this document, the Sewer Use Ordinance is part of The City of Memphis’ Code of Ordinances. Section 33-112 outlines the requirements of Food Establishments.

**SORP.** The Sewer Overflow Response Plan describes the protocol in the event of a SSO. If the SSO is caused by grease, the public notification protocol overlaps with the FOG public education program.

**Standard Operating Procedure for the Collection System.** Standard operating procedures (SOPs) for sewer cleaning procedures are outlined for FOG accumulation within the collection system. Reactive and preventative maintenance cleaning will help prevent SSOs as the result of FOG.

## 2.4 Quarterly Reports

The City submits a quarterly report to the TDEC detailing the updated FEWD program and data about inspections performed for the current quarter. An example of a quarterly report is included in *Appendix B*.

In order to ascertain the effectiveness of the FOG program, performance measures have been established for multiple phases of the overall program. The following are determined and reported in the quarterly report to assess the overall program:

- Number of Notice of Violations (NOV) per year and per 100 total food establishments (see Section 3)
- Number of FOG and “Can the Grease” door hangers distributed (see Section 4)
- Number of can lids distributed as part of the “Can the Grease” program (see Section 4)
- Number of food establishment (GRE) inspections (see Section 3)
- Number of follow-up inspections (see Section 3)
- Number of grease related SSOs

# Section 3

## Food Establishments

As one of the largest identified contributors of grease to the sewer system, food establishments are required to have a Food Establishment Wastewater Discharge (FEWD) permit and to comply with the program as outlined in this section.

### 3.1 Food Establishment Permits

Chapter 33-112 of the City's Ordinances (*Appendix A*) outlines the requirements of a FEWD.

#### 3.1.1 Permit Acquisition

The Environmental Engineer, who manages the FOG program, works in conjunction with the Memphis and Shelby County Department of Construction Code Enforcement (Codes) when permitting new food establishments. Figure 3-1 highlights a flowchart demonstrating the process of a new food establishment in obtaining a permit from the City of Memphis.

To receive a permit, a new food establishment applicant must first apply to Codes, who then refers the applicant to the FOG program. The Engineer will process, review, and evaluate the GRE for its adequacy based on specifications, size requirement, sewer capacity, and other required factors. *Appendix C* includes a copy of the application form.

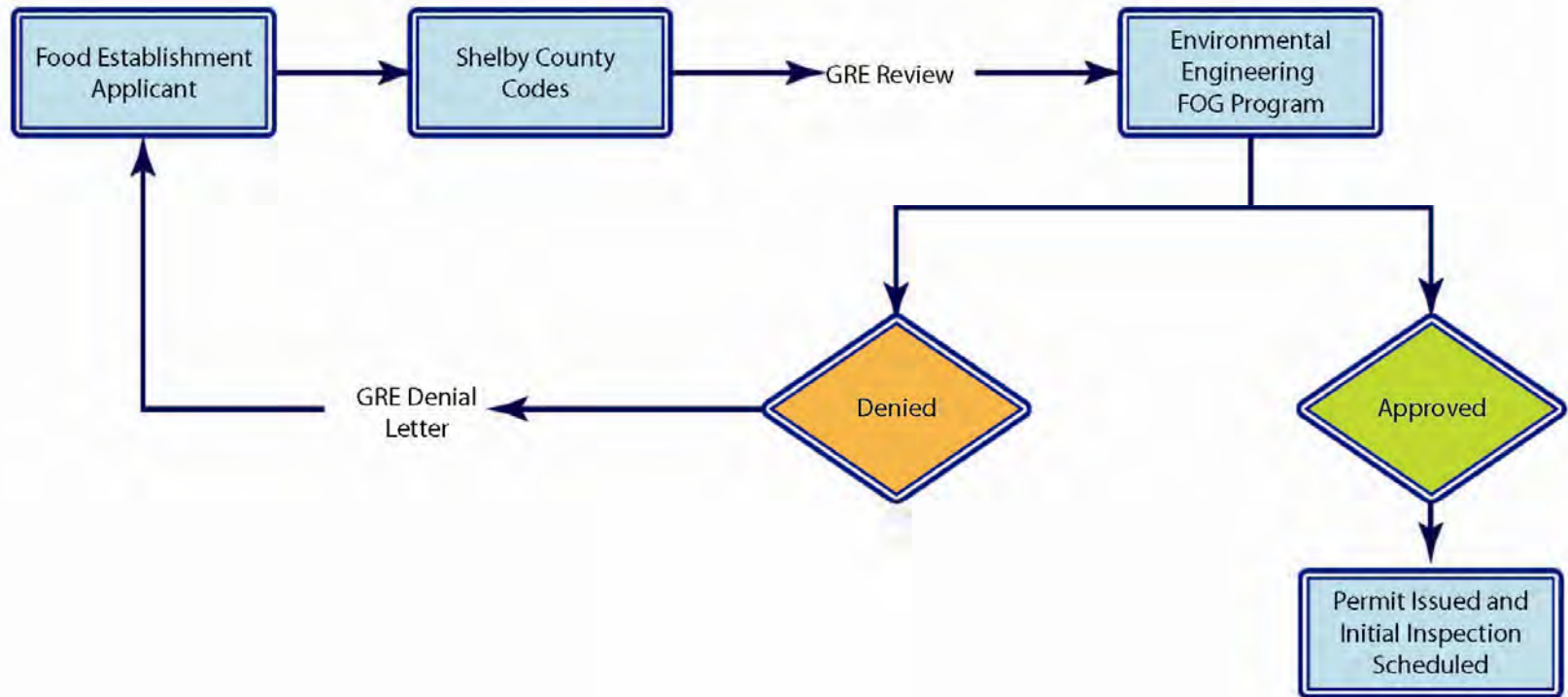
Once the GRE is approved ("green sticker"), the applicant receives a discharge permit, and the initial GRE inspection is scheduled. An example of the Food Establishment Wastewater Discharge Program Permit is included in *Appendix D*.

If the GRE is denied ("red sticker"), a denial letter explaining the GRE requirements is sent to the applicant. An example of a denial letter is included in *Appendix E*. The applicant must correct the proposed GRE application and submit again through Codes for approval.

#### 3.1.2 GRE design

Standard GRE designs approved by both Engineer and Codes are available to the applicant for reference. In general, these designs will be approved, provided the size of the GRE has been selected in accordance with the size of the food establishment. New technologies or nonstandard GRE may be evaluated on a case-by-case basis.

Standard design criteria for GRE is included in Section 33-112-01, A of the City of Memphis Sewer Use Ordinance, which states that the GRE tank must be 15 gallons per seating capacity, with a minimum of 750 gallons and maximum of 3000 gallons. Multiple tanks may be used as needed at each establishment.



**Figure 3-1: GRE Application Process**

### 3.1.3 Permit Requirements

A food establishment with a permitted Wastewater Discharge must comply with the following:

FEWD permit must be kept on file at the local establishment for review by Inspector

GRE Maintenance log and records must be kept on-site for a period of 2 years (an example maintenance log is included in *Appendix F*).

Minimum cleaning frequency of the GRE must be followed by the establishment owner as stated on the permit and must be available for review by inspectors

Food establishments are also responsible for educating employees and training them on the proper disposal of FOG. Restaurants receiving reissued permits will be required, to the extent allowed by law, to maintain documentation of training on site for review during routine FOG inspections.

## 3.2 GRE Inspection

There are two categories of GRE inspections at food establishments:

- 1) Periodic scheduled inspection (e.g. annual)
- 2) Follow-up inspection due to a violation

Regularly scheduled inspections occur for each permitted establishment. If the food establishment passes this initial inspection, the next regularly scheduled inspection will usually occur approximately a year later. The FOG Program staff has the right to schedule additional inspections if an establishment is located in areas with frequent SSOs resulting from FOG or has recurring violations.

The GRE Inspectors have a checklist for guidance regarding any undefined issues with the GRE. An example of the Inspection Checklist/Notice of Violation form is included in *Appendix G*.

Potential causes of inspection failures include:

Permit unavailable on-site

Maintenance log unavailable or incomplete

Food Establishment Sold, Transferred, or Re-assigned

Inspector denied reasonable access

Violation of location specific permit conditions.

The standard operating procedure (SOP) for GRE inspection is as follows.

### **3.2.1 Inspection Procedure**

Inspectors verify that the food establishment has the required documentation to verify compliance with the following permit requirements:

1. The FEWD permit must be maintained at the FEWD and available for review by the inspector.
2. The GRE maintenance log and manifest records must be maintained at the FEWD for a period of two years and readily available for review.
3. The records should verify cleaning frequency of the GRE complies with the cleaning requirements stipulated in the FEWD permit.

A visual and physical inspection of the GRE will be conducted to determine if compliance with applicable operating standards. Failure to comply with permit requirements may result in enforcement action.

### **3.2.2 Notice of Violation (NOV)**

Unless good cause exists, a first NOV (*Appendix G*) will be issued for failure to comply with the FEWD permit requiring corrective action within seven calendar days of issuance of the NOV. A follow up inspection will be conducted to determine if noted violations have been adequately corrected. An inspection form will be completed for each inspection documenting findings.

### **3.2.3 Civil Penalty**

FEWDs issued a second NOV within a 24 month period may be assessed a civil penalty. A follow up inspection will be conducted to verify compliance. Failure to comply may result in revocation of the FEWD permit as well as further enforcement action.

## **3.3 Hauled Waste**

Upon receipt of a permit to discharge wastewater, a food establishment is provided with a list of the City of Memphis' Permitted Waste Haulers. An example of the list is included in *Appendix H*, but is subject to change. Each of these waste haulers have been approved and permitted by the City of Memphis Public Works Department to haul waste from septic tanks, car wash traps, and portable toilets, as well as GRE waste. The City of Memphis charges the waste haulers per gallon of waste. An example of the permit for waste haulers is included in *Appendix I*, but is subject to change.

It is the responsibility of the food establishment to contract with one of the permitted waste haulers and to maintain the proper GRE cleaning frequency. A Liquid Waste Hauler Manifest form must be completed each time the GRE is pumped. The manifest

must be completed and signed by the food establishment, waste hauler, and the City wastewater plant representative authorizing the disposal by the hauler. A copy of the manifest must be retained by each party. Manifest records are kept by the Industrial Monitoring Department for three years and are accessible by the FOG program. In addition, a daily log is kept at the wastewater plant of all waste haulers authorized for a truck disposal. A copy of the manifest is included in *Appendix J* and the waste log in *Appendix K*.

The City is also considering updating the current manifest system to include the “cradle to grave” concept used by other cities, which puts more responsibility for the ultimate disposal on the owner/generator. This evaluation is on-going and any changes to this manifest system will be documented in the annual update to the FOG plan.

## **Section 4**

### **Public Education**

Other than food establishments, private residents are another large contributor to FOG in the City sewer system. The most effective way to reach private residents is through public education, and this section outlines the programs used.

The intent of public education on FOG is to discourage residents from discarding cooking oils and other FOG in the sewer system. The public is informed that FOG will collect and clog up the sewer pipes, possibly contributing to a future SSO.

#### **4.1 Apartment Complexes**

Residential apartment complexes can be pinpointed as contributing a large portion of FOG. The inspectors and other FOG program staff talk with complex managers and encourage them to educate their residences on the effects of FOG in sewer systems.

The City will discuss effective measures with large complexes to determine the best programs. These programs may include distribution of grease lids to all new tenants, or the periodic distribution of flyers to residents. Any programs selected will be included in the annual update to the FOG Plan.

#### **4.2 Can the Grease**

Memphis' "Can the Grease" program consists of proactive and retroactive components. Unless good cause exists (e.g. door hangers were recently distributed in the same area) following a SSO event, door hangers will be distributed to residents in proximity of the SSO. The door hangers inform the resident that a recent SSO occurred as a result of FOG in the sewer, and asks the resident to help prevent future SSOs. Attached to the door hanger is a lid designed to fit several sizes of food cans. Instructions inform the user to collect cooking oils or other grease in an empty food can and seal it with the reusable lid. The grease may be hardened in the freezer, then the lid removed and the can discarded. Examples of the door hanger, which is printed in English and Spanish, and lid are included in *Appendix L*.

The proactive measure of the "Can the Grease" program is the distribution of the lids independently from a SSO. The lids are distributed at no charge throughout the city at select grocery stores and at public events and festivals.



### **4.3 Grease Collection Tote**

The City is planning to place a tote at the Shelby County Household Hazardous Waste Center for collection of residential/cooking grease to be dropped off by the public. There will be one tote with volume of approximately 200 gallons that will be emptied by an outside contractor. The tote will be measured for volume collected each time it is emptied and recorded for tracking. Procurement of the contract is underway by the City and is anticipated to be put in service by 2012.

### **4.4 Other Programs**

Memphis distributes the “Fat-Free Sewers” brochures in English and Spanish at multiple local public events. An example of each of these brochures is included in *Appendix M*.

In addition, the FOG program has historically advertised both individually and jointly with the City of Memphis NPDES stormwater program to further the message related to residential dumping of FOG products. Information is also periodically included in the City’s monthly wastewater utility bills which are produced and distributed by MLGW. In addition, the City has put up two large billboards and signs at several bus stops about FOG issues that have been rotated through various locations in the City for a period of at least nine (9) months.

Press releases are commonly distributed to area radio stations, television stations, and newspapers for advertising and print. The press release defined FOG and give tips to residents on how to prevent FOG from entering the sewer system. An example of a press release from December 2009 and list of recipients is included in *Appendix N*.

All of the public information distributed has the FOG program phone number to allow residents and businesses to call for any additional questions or information. In addition to these opportunities, the manager of the FOG program is urged to continually look for new methods of public education. The programs used for public education will be reviewed for the annual update to the FOG Plan. Confirmation of these programs, and the dates public education events occur, will be documented in the Annual Report.

# Definitions and Acronyms

City	City of Memphis
CMOM	Capacity, Management, Operation and Maintenance
Codes	Memphis and Shelby County Department of Construction Codes
FEWD	Food Establishment Wastewater Discharge
FOG	Fats, Oils, and Grease
GMOM	Grease Management, Operation and Maintenance
GRE	Grease removal equipment
MLGW	Memphis Light, Gas, and Water
NOV	Notice of Violation
SORP	Sewer Overflow Response Plan
SSO	Sanitary Sewer Overflow
SUO	Sewer Use Ordinance
TDEC	Tennessee Department of Environment and Conservation
WWTP	Wastewater Treatment Plant

# **Appendix A**

## **Memphis City Codes Chapter 33-112: Food Establishment Wastewater**

**a) Violations and Enforcement Actions.**

A violation of any of the foregoing shall result in enforcement actions which may include administrative fines, withdrawal of the privilege to use the City of Memphis wastewater system, and suspension of the existing waste hauler permit and/or prohibition from obtaining a new waste hauler permit.

Any person who willfully and negligently violates permit conditions shall be subject to criminal penalties imposed by the State of Tennessee and/or the United States.

**b) Specific Charge for Hauled Waste Transported for Disposal at the Discharge Point Designated by the City of Memphis.**

The disposal fee charge for hauled wastewater originated from residential household septic tanks, restaurant grease traps, drive through car washes, portable toilets, and industrial wastewater and sludges generated in the City of Memphis sewer service area shall be a flat rate based upon the volume of the truck (tank capacity). All customers will be charged on a volumetric charge based on rate in cents per gallon of wastewater multiplied by the capacity in gallons of the truck hauling the wastewater. The rate will be reviewed and adjusted if necessary annually by the Division of Public Works. The disposal fee will be determined on a case-by-case basis for industrial wastewaters and sludges from outside the City of Memphis sewer service area.

**Sec. 33-112. Food Establishment Wastewater.**

**33-112-01. Waste Disposal – Construction Plans Approval and Permit Required.**

A. Grease Trap Required: All food service establishments discharging wastewater to the City's wastewater facilities shall install, operate, and maintain a sufficiently sized oil and grease, water and solids separator (hereinafter called grease trap) necessary to prevent the accumulation of oil and grease in the sewer collection system. Approval of the City of Memphis, Division of Public Works, shall be required during the construction plans approval process.

B. Design Criteria: All grease traps used in conjunction with food service establishments shall have the capacity of 15 gallons per seat of dining capacity, except that no single grease trap shall be smaller than 750 gallons or larger than 3,000 gallons. In certain cases, multiple grease traps may be utilized. Alternative treatment technologies shall be considered on a case-by-case basis for food establishments that are to be located in an existing building where a large grease trap is not feasible.

C. General Permit to Discharge: All food establishments shall obtain a permit to discharge to the wastewater system from the Approving Authority. This permit shall be posted on the premises and renewed as needed.

**33-112-02. Subject to Industrial Wastewater Limitations.**

Wastewater discharged into public sewers from facilities engaged in preparing food for consumption by the public shall be subject to the limitations set forth in Sections 33-103 and 104 of this ordinance and such other conditions and requirements as are set forth in Section 33-112-03. The Permit for Food Establishment Wastewater Discharge shall be subject to all provisions of this ordinance and all other regulations, user charges, and fees established from time to time by resolution of the Council of the City of Memphis.

**33-112-03. Permit for Food Establishment Wastewater Discharge.**

The Permit for Food Establishment Wastewater Discharge may require pretreatment of wastewater before discharge, restriction of peak flow discharges, discharge of certain wastewater only to specified sewers of the City, relocation of point of discharge, prohibition of discharge of certain wastewater components, restriction of discharge to certain hours of the day, payment of additional charges to defray increased costs of the City created by the wastewater discharge, and such other conditions as may be required.

**33-112-04. Permit Application.**

Persons seeking a Food Establishment Wastewater Discharge Permit shall complete and file with the Approving Authority, an application in the form prescribed by the Approving Authority. The applicant may be required to submit, in units and terms appropriate for evaluation, the following information:

Name and address of applicant.

Volume of wastewater to be discharged.

Time of daily food preparation operations.

Description of food preparation, dining room capacity by seats, number of employees, and size of kitchen.

Any other information as may be deemed by the Approving Authority to be necessary to evaluate the permit application.

The Approving Authority will evaluate the data furnished by the applicant and may require additional information. After evaluation and acceptance of the data furnished, an on-site inspection of the waste discharge system, treatment systems or other systems relating to the waste discharge may be required. The Approving Authority may then issue a Food Establishment Wastewater Discharge Permit subject to the terms and conditions provided herein.

**33-112-05. Duration of Permits.**

Permits shall be issued for a specified time period, not to exceed five (5) years. A permit may be issued for a period less than a year or may be stated to expire on a specific date. If the permittee is not notified by the City thirty (30) days prior to the expiration of the permit, the permit shall be extended one additional year. The terms and conditions of the permit may be subject to modification and change by the City during the life of the permit as limitations or requirements as identified in Sections 33-103 and 104 are modified and changed. The permittee shall be informed of any proposed changes in his permit at least thirty (30) days prior to the effective date of change. Any changes or new conditions in the permit shall include a reasonable time schedule for compliance.

**33-112-06. Transfer of Permit.**

Food Establishment Wastewater Discharge Permits shall be issued only for specific use for a specific operation. Any sale, lease, transfer, or assignment of the premises or operation for which the permit was issued shall require a new permit to be issued. Any new or changed conditions of operation shall require a new permit to be issued.

**33-112-07. Revocation of Food Establishment Wastewater Permit.**

The Approving Authority may revoke the permit of any permittee who is found to be in violation of this ordinance or who:

- Fails to install grease pretreatment devices as required by permit;
- Fails to fulfill reporting requirements or pretreatment maintenance as required by permit;
- Refuses reasonable access to the permittee's premise for the purpose of inspection or monitoring; or
- Violates conditions of the permit.

**33-112-08. Grease Pretreatment Required.**

Permittee shall make wastewater acceptable under the limitations established herein before discharging to any public sewer. All permittees shall be required to install an approved type grease pretreatment device in the waste line leading from the food preparation area, or from sinks, drains, appliances, and other fixtures or equipment used in food preparation or cleanup where grease may be introduced into the sewerage system. Such grease pretreatment devices shall be installed to remove grease from wastewater and shall be maintained in efficient operating conditions by periodic removal of the accumulated grease. No such collected grease shall be introduced into any drainage piping or public sewer.

Each permittee shall also be required to provide a collection drum or container for the purpose of physically segregating oils, greases, and greasy solids. Permittees shall

establish procedures for personnel to practice maximum segregation of oils, greases, and greasy solids to the collection drum or container prior to washing and other water cleaning, which goes into sewers. The permittee shall be responsible for the proper removal and disposal by appropriate means of the material captured from either grease pretreatment devices on wastewater lines or the collection drum for segregating oils, grease, and greasy solids.

**33-112-09. Maintenance Reports.**

The Approving Authority shall require the permittee to keep records of grease pretreatment device cleaning, maintenance and grease removal on site. The Approving Authority may require the permittee to provide results of periodic measurements of its discharge, which is to include chemical analysis of oil and grease content. Permittees shall allow the City or its representative ready access at all reasonable times to all parts of the premises for purposes of sampling and inspections.

**33-112-10. Penalty for Violation and Civil Liability.**

Any person(s) discharging wastewater in violation of the Food Establishment Wastewater Discharge Permit is subject to fines, penalties, cost recovery, injunction, termination of sewer service, permit revocation, and/or such other remedies as are available to the Approving Authority under section 33-173 of the Sewer Use Ordinance.

Sec. 33-113—33-125 Reserved

**Appendix B**  
**Quarterly Report**



# City of Memphis



Division of Public Works, Environmental  
Food Establishment Wastewater Discharge Program  
2303 North Second Street, Tennessee 38127-7500  
Telephone: (901) 576-4301 Fax: (901) 636-4325

TENNESSEE

July 12, 2010

Mr. Phillip M. Simmons, P.E.  
State of Tennessee, Department of Environment and Conservation  
Division of Water Pollution Control  
Municipal Facilities Section  
401 Church Street  
L&C Annex, Sixth Floor  
Nashville, TN 37243-1534

RE: State Requirement #16 Reporting Requirement for CMOM, Second Quarter 2010

Mr. Simmons:

In compliance with the reporting requirements set forth by the State of Tennessee, the following summary is submitted. This summarizes the activities of the City of Memphis Food Establishment Wastewater Discharge Program for the period of April 1, 2010 through June 30, 2010. Any facility listed twice has multiple grease traps.

Currently there are 3188 total food establishments in our database. At the present time, 106 of these are closed (out of business), leaving 3082 active establishments.

- Total Facilities inspected.....538
- Total New Facilities added.....23
- Total NOV's issued.....24
- Total Civil Penalties issued.....1
- Total Permits issued.....35
- Total Active Facilities Permitted as of June 30, 2010 ..... 2936

Any questions may be directed to me at 901-636-4301.

Sincerely,

A handwritten signature in cursive script that reads 'James Greenlee'.

James Greenlee  
Environmental Engineer

c. Paul Patterson  
Donald Hudgins  
Terry Templeton

# Second Quarterly Report 2010 (April 1, 2010 through June 30, 2010)

## Total Inspections Completed During Quarter

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
4 /1 /2010	Black Diamond	153 Beale Street	38103	34 - D	10 Pound
4 /1 /2010	Fedex Forum - Flip Sid	191 Beale Street	38103	34 - D	40 Pound
4 /1 /2010	Fedex Forum - High No	191 Beale Street	38103	34 - D	40 Pound
4 /1 /2010	Fedex Forum - In Seat	191 Beale Street	38103	34 - D	40 Pound
4 /1 /2010	Fedex Forum - Lexus L	191 Beale Street	38103	34 - D	0
4 /1 /2010	Fedex Forum - Lucille's	191 Beale Street	38103	34 - D	40 Pound
4 /1 /2010	Fedex Forum - Media P	191 Beale Street	38103	34 - D	30 Pound
4 /1 /2010	Fedex Forum - Metrodo	191 Beale Street	38103	34 - D	40 Pound
4 /1 /2010	Fedex Forum - Old No.	191 Beale Street	38103	34 - D	0
4 /1 /2010	Hard Rock Cafe	315 Beale Street	38103	35 - A	1000 Gallons
4 /1 /2010	Omni-New Daisy	330 Beale Street	38103	35 - A	0
4 /1 /2010	Peoples Billiards Club	323 Beale Street	38103	34 - D	0
4 /1 /2010	Super Z Market	4215 Hacks Cross Road	38125	150-P	100 Pound
4 /1 /2010	Wet Willie's	209 Beale Street	38103	35 - A	200 Gallons
4 /2 /2010	Fedex Forum - 4/4 Grill	191 Beale Street	38103	34 - D	40 Pound
4 /2 /2010	Fedex Forum - Beale St	191 Beale Street	38103	34 - D	30 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
4 /2 /2010	Fedex Forum - Opus Ki	191 Beale Street	38103	34 - D	0
4 /2 /2010	Fedex Forum - Re-Mix	191 Beale Street	38103	34 - D	40 Pound
4 /2 /2010	Fedex Forum - Rock A	191 Beale Street	38103	34 - D	40 Pound
4 /2 /2010	Fedex Forum - Up Tem	191 Beale Street	38103	34 - D	40 Pound
4 /6 /2010	Burger King	1027 Union Avenue	38104	35 - C	1000 Gallons
4 /6 /2010	Coyote Ugly	326 Beale Street	38103	34 - D	50 Pound
4 /6 /2010	Fusion	380 Beale Street	38103	35 - A	75 Pound
4 /6 /2010	Hunan Palace Pacifica	9915 Highway 64	38018	158 - C	1000 Gallons
4 /6 /2010	Hunt Phelan	533 Beale Street	38103	35 - B	30 Pound
4 /6 /2010	Hunt Phelan	533 Beale Street	38103	35 - B	50 Pound
4 /6 /2010	Low Cash Deli	608 E. Trigg Avenue	38106	42-F	100 Pound
4 /6 /2010	Maggie Moo's	150 Peabody Place	38103	34 - D	0
4 /6 /2010	MIFA-Venson Center	439 Beale Street	38103	35 - A	50 Pound
4 /6 /2010	Orchid Club, The	642 Beale Street	38103	35 - B	74 Pound
4 /7 /2010	Alcenia's Desserts and	317 N. Main Street	38103	28 - E	10 Pound
4 /7 /2010	BP - Fill-n-Go	2864 Thomas	38127	13-C	50 Pound
4 /7 /2010	Memphis Convention C	255 Main Street	38103	28 - J	1000 Gallons
4 /7 /2010	Precious Cargo	381 Main Street	38103	28 - J	0
4 /7 /2010	Subway	464 Main Street	38103	28 - E	75 Pound
4 /7 /2010	TJ Mulligans (Pinch)	362 Main Street	38103	28 - E	200 Gallons

<b>Inspection Date</b>	<b>Facility Name</b>	<b>Address</b>	<b>Zip Code</b>	<b>Map Book</b>	<b>GRE</b>
4 / 7 / 2010	Westly's	346 Main Street	38103	28 - E	25 Pound
4 / 8 / 2010	Aramark (Federal Rese	200 N. Main Street	38103	28-J	25 Pound
4 / 8 / 2010	Leonard's BBQ Buffet	103 N. Main Street	38103	27 - M	50 Pound
4 / 8 / 2010	Memphis Marriott/Magn	250 N. Main Street	38103	28 - J	4200 Gallons
4 / 8 / 2010	Royal Jasmine Chinese	125 Main Street	38103	27 - M	100 Pound
4 / 8 / 2010	Sidi Bou Cafe	111 Main Street	38103	27 - M	10 Pound
4 / 9 / 2010	Cafe Napoleon	86 N. Main Street	38103	27 - R	50 Pound
4 / 9 / 2010	Easy Way	80 Main Street	38103	27 - R	250 Gallons
4 / 9 / 2010	Lam's	100 N. Main Street	38103	27 - M	0
4 / 9 / 2010	Rubins's Diner	208 Brooks Road	38109	62 - F	100 Pound
4 / 9 / 2010	Sam's Hamburgers and	94 Main Street	38103	27 - R	25 Pound
4 / 9 / 2010	Smooth Moves Juice B	94 Main Street	38103	27 - R	40 Pound
4 / 9 / 2010	Subway	85 Main Street	38103	27 - R	50 Pound
4 / 12 / 2010	Blue Plate Café	113 S. Court Square	38103	27 - R	50 Pound
4 / 12 / 2010	Blue Plate Café	113 S. Court Square	38103	27 - R	400 Gallons
4 / 12 / 2010	Court House Deli	22 S. Main Street	38103	27 - R	50 Pound
4 / 12 / 2010	Jerusalem Market	4794 Summer Avenue	38122	32 - O	80 Gallons
4 / 12 / 2010	NYC Deli	40 Main Street	38103	28 - J	40 Pound
4 / 12 / 2010	Peanut Shoppe, The	24 Main Street	38103	27 - R	0
4 / 12 / 2010	Sam's Hamburgers and	3 S. Main Street	38103	27 - R	15 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	CRE
4 /12/2010	Stella's Basement	39 Main Street	38103	27 - R	40 Pound
4 /12/2010	T & J Sundry	1770 Farrington	38109	41 - O	30 Pound
4 /12/2010	Vietnamese Bistro	153 N. Cleveland	38104	36 - A	200 Gallons
4 /13/2010	Circa by John Bragg	119 S. Main Street	38103	34 - D	50 Pound
4 /13/2010	Majestic Grille	145 Main Street	38103	34 - D	1000 Gallons
4 /13/2010	On The River Seafood	51 Main Street	38103	27 - R	25 Pound
4 /13/2010	Orpheum Theatre	203 Main Street	38103	34 - D	0
4 /13/2010	Sauces Restaurant	95 Main Street	38103	27 - R	100 Gallons
4 /13/2010	Unisource Business Se	220 Main Street	38103	34 - D	20 Pound
4 /13/2010	Wok & Roll	3659 N. Watkins Road	38127	8-B	750 Pound
4 /14/2010	Picos Mexican Grill	2235 Covington Pike	38134	24 - C	30 Pound
4 /15/2010	Exxon	1369 Sycamore View Road	38134	33 - C	200 Gallons
4 /15/2010	Fairfield Inn	6010 Macon Cove	38134	33 - C	0
4 /15/2010	Genghis Grill	2362 N. Germantown Pkwy.	38016	136 - D	750 Gallons
4 /15/2010	Goodtime Charlie's	1664 Sycamore View Road	38134	25 - N	0
4 /16/2010	Big Hong Kong	3312 Jackson Avenue	38122	23 - N	750 Gallons
4 /16/2010	County Line	2838 Coleman Road	38128	17 - E	100 Pound
4 /16/2010	Kinder Care	4984 Raleigh LaGrange Rd.	38134	17 - L	0
4 /16/2010	PJ's Sport Bar	5070 Raleigh LaGrange Rd.	38134	17 - P	0
4 /19/2010	Arcade, The	540 S. Main Street	38103	34 - M	20 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
4 /19/2010	Bluff City Coffee	505 Main Street	38103	34 - M	40 Pound
4 /19/2010	Café Soul	492 S. Main Street	38103	34 - H	30 Pound
4 /19/2010	El Padrino	3650 Ridgeway Road	38115	77 - H	250 Pound
4 /19/2010	Pearl's Oyster House	299 Main Street	38103	34 - D	80 Pound
4 /19/2010	Scales Café	2801 Kirby Road	38115	146 - E	100 Pound
4 /19/2010	Spindini Restaurant	383 Main Street	38103	34 - H	70 Pound
4 /19/2010	Sycamore View Church	1910 Sycamore View Road	38134	25 - K	0
4 /19/2010	Tropical Nut & Fruit	5222 Pleasant View Rd	38134	24 - M	0
4 /20/2010	Blue Fin	135 S. Main Street	38103	34 - D	20 Pound
4 /20/2010	Cafe Napoleon	86 N. Main Street	38103	27 - R	50 Pound
4 /20/2010	Memphis Marriott/Magn	250 N. Main Street	38103	28 - J	4200 Gallons
4 /20/2010	Starbucks Coffee	2698 Germantown Parkway	38133	134 - G	20 Gallons
4 /20/2010	Wangs Bistro	113 Main Street	38103	34 - D	750 Gallons
4 /20/2010	Westy's	346 Main Street	38103	28 - E	25 Pound
4 /21/2010	B.B. King's Blues Club	139 Beale Street	38103	34 - D	500 Gallons
4 /21/2010	Center for Southern Fol	119 S. Main Street	38103	34 - D	30 Pound
4 /21/2010	Heavenly Hoagie	1428 Union Avenue	38112	36 - E	20 Gallons
4 /21/2010	Jubilee Express	6105 Summer Avenue	38120	25 - H	
4 /21/2010	Memphis Coffee Excha	152 Madison Avenue	38103	28 - N	0
4 /21/2010	Onix	412 Main Street	38103	34 - H	40 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
4 /21/2010	Rum Boogie Cafe	182 Beale Street	38103	34 - D	500 Gallons
4 /21/2010	Steak & Shake	8477 Highway 64	38133	134 - H	300 Gallons
4 /21/2010	Subway	2760 Germantown Parkway	38133	134 - M	50 Pound
4 /21/2010	T & J Sundry	1770 Farrington	38109	41 - O	30 Pound
4 /21/2010	TGI Friday's	8325 Highway 64	38133	134 - H	1200 Gallons
4 /22/2010	Bharat International Ma	3675 Southwind Park Cove	38125	151 - G	100 Pound
4 /22/2010	Cheese Cake Corner, T	113 G. E. Patterson	38103	34 - G	0
4 /22/2010	El Rancherito	5070 Raleigh LaGrange Rd.	38134	17 - P	0
4 /22/2010	Green Beetle	325 S. Main Street	38103	34 - H	10 Pound
4 /22/2010	Makeda's Homemade	5729 Raleigh LaGrange Rd.	38134	25 - F	20 Pound
4 /22/2010	Mesquite Chop Shop	88 Union Avenue	38103	27 - R	10 Gallons
4 /22/2010	Peabody - Capriccio's	149 Union Avenue	38103	27 - R	0 Pound
4 /22/2010	Peabody, The (Chez P	149 Union Avenue	38103	27 - R	0
4 /22/2010	Peabody, The (main kit	149 Union Avenue	38103	27 - R	800 Gallons
4 /22/2010	Peabody, The (pastry s	149 Union Avenue	38103	27 - R	0
4 /22/2010	Rumba Room	303 Main Street	38103		40 Pound
4 /22/2010	STCC (Gourmet Servic	5983 Macon Cove	38134	33 - C	700 Gallons
4 /22/2010	Wendy's #28	6156 Macon Road	38134	33 - D	120 Gallons
4 /22/2010	Xamdi's Place	5145 Raleigh LaGrange Rd.	38134	17 - R	50 Pound
4 /23/2010	Daylight Donuts	5735 Raleigh LaGrange Rd.	38134	25 - F	60 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
4 /23/2010	Double Tree Hotel/TGI	185 Union Avenue	38103	27 - R	1000 Gallons
4 /23/2010	El Taquito	5721 Raleigh LaGrange Rd.	38134	25 - F	30 Pound
4 /23/2010	Fifteen Floor Kitchen	160 Union Avenue	38103	27 - R	50 Pound
4 /23/2010	Harry's Detour South M	106 Bishop G.E. Patterson	38103	34 - H	10 Gallons
4 /23/2010	Holiday Inn Downtown	160 Union Avenue	38103	27 - R	30 Gallons
4 /23/2010	Holiday Inn Downtown	160 Union Avenue	38103	27 - R	15 Gallons
4 /23/2010	LaQuinta Inn	6069 Macon Cove	38134	33-C	0
4 /23/2010	Minit Stop	1779 Bartlett	38134	25 - N	50 Pound
4 /23/2010	Russwood Bar & Grill	160 Union Avenue	38103	27 - R	20 Pound
4 /23/2010	Russwood Bar & Grill	160 Union Avenue	38103	27 - R	50 Pound
4 /23/2010	Sekisui Downtown Rest	160 Union Avenue	38103	27 - R	
4 /23/2010	TGI Fridays	149 Union Avenue	38103	27 - R	3000 Gallons
4 /26/2010	BP	695 Union Avenue	38103	35 - B	40 Pound
4 /26/2010	Denny's	164 Union Avenue	38103	27 - R	200 Gallons
4 /26/2010	Dinstuhl's	5280 Pleasant View Rd	38134	24 - M	500 Gallons
4 /26/2010	Domino's	686 Union Avenue	38103	35 - B	25 Pound
4 /26/2010	Drury Inn	1556 Sycamore View Road	38134	25 - P	40 Pound
4 /26/2010	GLI Food/Greyhound	203 Union Avenue	38103	35 - A	200 Gallons
4 /26/2010	KFC Y063226	5849 Summer Avenue	38134	25 - O	1000 Gallons
4 /26/2010	McDonalds	905 Union Avenue	38103	35 - C	500 Gallons



Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
4 /26/2010	Quezai Coffee Shop / I	664 Union Avenue	38103	35 - B	30 Gallons
4 /26/2010	Rubins's Diner	208 Brooks Road	38109	62 - F	100 Pound
4 /26/2010	Stop 345	345 Madison Avenue	38103	28 - N	10 Pound
4 /26/2010	Subway	495 Union Avenue	38103	35 - A	50 Pound
4 /26/2010	T & J Sundry	1770 Farrington	38109	41 - O	30 Pound
4 /26/2010	Tasty Sub	911 Union Avenue	38103	35 - C	300 Gallons
4 /26/2010	Trafalgar Village Baptist	6161 Summer Avenue	38134	25 - H	350 Gallons
4 /27/2010	First Tennessee Headq	165 Madison Avenue	38103	28 - N	30 Pound
4 /27/2010	King of Wings	143 Madison Avenue	38103	28 - N	20 Pound
4 /27/2010	Madison Ave. Café	143 Madison Avenue	38103	28 - N	10 Pound
4 /27/2010	Madison Hotel, The	79 Madison Avenue	38103	28 - N	300 Gallons
4 /27/2010	Smitty's Place	149 Madison Avenue	38103	27 - R	20 Pound
4 /28/2010	Bluff City Bayou	694 Madison Avenue	38103	35 - B	30 Pound
4 /28/2010	Crave		38103	28 - O	50 Pound
4 /28/2010	Crave Catering	662 Madison Avenue	38103	35 - B	50 Pound
4 /28/2010	Euphoria	704 Madison Avenue	38103	35 - B	50 Pound
4 /28/2010	Lenny's Sub Shop	22 S. Front St.	38103	27 - R	10 Pound
4 /28/2010	Madison Cafe	920 Madison Avenue	38103	35 - C	100 Pound
4 /28/2010	Mondo Subs	920 Madison Avenue	38103	35 - C	100 Pound
4 /28/2010	Tucker's	920 Madison Avenue	38103	35 - C	50 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
4 /28/2010	University of Tennessee	800 Madison Avenue	38103	35 - C	1000 Gallons
4 /29/2010	Butcher Shop, The	101 S. Front St.	38103	27 - R	50 Pound
4 /29/2010	Cayenne Moon	94 S. Front St.	38103	27 - R	40 Pound
4 /29/2010	Front St. Deli	77 S. Front St.	38103	27 - R	10 Pound
4 /29/2010	Grade Pizza	60 S. Front St.	38103	27-R	50 Pound
4 /29/2010	Kroger	2130 Exeter	38134	59 - F	1500 Gallons
4 /30/2010	Blue Monkey	513 S. Front St.	38103	34-G	50 Pound
4 /30/2010	Blue Monkey	513 S. Front St.	38103	34-G	200 Gallons
4 /30/2010	Extreme Events Caterin	280 Mud Island	38103	20 - A	500 Gallons
4 /30/2010	Fairground's Concessio	400 S. Hollywood	38104	44 - A	750 Gallons
4 /30/2010	Gulf Port Grill, The	280 N. Mud Island Drive	38103	27 - M	1000 Gallons
4 /30/2010	Gus' World Famous Ch	310 S. Front St.	38103	34 - G	10 Pound
4 /30/2010	Memphis Queen Line	45 Riverside Dr.	38103	27 - R	0
4 /30/2010	River Center Deli, The	280 N. Mud Island Drive	38103	27 - M	15 Pound
4 /30/2010	River Terrace Restaura	282 N. Mud Island Drive	38103	27 - M	600 Gallons
5 /3 /2010	Currents	50 Harbor Town	38103	27 - D	750 Gallons
5 /3 /2010	Dominos Pizza	5784 Raleigh LaGrange Rd.	38134	25 - F	20 Pound
5 /3 /2010	Harbor Town Coffee	111 Harbor Town Square	38103		50 Pound
5 /3 /2010	January Services	5550 Pleasant View Rd	38134	25 - J	50 Pound
5 /3 /2010	Miss Cordelia's	737 Harbor Bend	38103	202 - R	250 Gallons

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRI
5 /3 /2010	Movie & Pizza Co.	110 Harbor Town Square	38103	202 - R	30 Pound
5 /3 /2010	Sam's Donuts	2235 Whitten Road	38134	26 - B	50 Pound
5 /3 /2010	Tug's	51 Harbor Town	38103	27 - D	750 Gallons
5 /3 /2010	Variety Club	1648 Sycamore View Road	38134	25 - P	25 Pound
5 /4 /2010	Calvary Episcopal Chur	102 N. Second Street	38103	28 - N	200 Gallons
5 /4 /2010	Donnie's Corner Market	2098 Covington Pike	38134	24 - C	20 Pound
5 /4 /2010	Elliot's Restaurant	16 S. Second St.	38103	27 - R	5 Pound
5 /4 /2010	First Methodist Church	204 N. Second Street	38103	28 - J	250 Gallons
5 /4 /2010	Lucky 7 Food & Fuel	6224 Macon Road	38134	33 - D	150 Gallons
5 /4 /2010	Mapco/Blimpie Express	6215 Macon Road	38134	33 - D	300 Gallons
5 /4 /2010	Restaurant Iris	2146 Monroe Avenue	38104	36 - H	100 Pound
5 /4 /2010	Sauces Restaurant	95 Main Street	38103	27 - R	100 Gallons
5 /4 /2010	Shelby Market	6882 Macon Road	38134	138 - B	300 Gallons
5 /4 /2010	Side St. Grill	35 Florence	38104	36 - H	10 Pound
5 /4 /2010	Side St. Grill	35 Florence	38104	36 - H	750 Gallons
5 /4 /2010	TCBY	1708 Union Avenue	38104	36-F	750 Gallons
5 /5 /2010	Asian Palace	5266 Summer Avenue	38122	32 - M	1250 Gallons
5 /5 /2010	Automatic Slim's	83 S. Second St.	38103	27 - R	200 Gallons
5 /5 /2010	Café 61	85 S. Second St.	38103	27 - R	70 Pound
5 /5 /2010	East End Grill	7547 Highway 64	38134	134 - E	250 Gallons

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
5 /5 /2010	Flying Fish	105 S. Second St.	38103	34 - D	100 Pound
5 /5 /2010	Huey's	77 S. Second St.	38103	27 - R	30 Pound
5 /5 /2010	Krispy Kreme	4244 Elvis Presley Blvd.	38116	72 - P	500 Gallons
5 /5 /2010	Memphis Healthcare &	1150 Dovecrest	38134	33 - H	500 Gallons
5 /5 /2010	Pancho's	87 S. Second St.	38103	27 - R	20 Pound
5 /5 /2010	Rendezvous, The	52 S. Second St.	38103	27 - R	200 Gallons
5 /5 /2010	Rendezvous, The	52 S. Second St.	38103	27 - R	5 Pound
5 /5 /2010	Second Street Shopper	99 S. Second St.	38103	27 - R	0
5 /5 /2010	VGM - Charley Biggs	6195 Macon Road	38134		50 Pound
5 /5 /2010	Wyndham Hotel	300 N. Second Street	38103	28 - J	500 Gallons
5 /6 /2010	Asian Palace	5266 Summer Avenue	38122	32 - M	1250 Gallons
5 /6 /2010	Kinder Care	5740 Pleasant View Rd	38134	25 - K	30 Pound
5 /6 /2010	Quality Inn	6068 Macon Cove	38134	33 - C	0
5 /7 /2010	Autozone Park/Memphi	175 Toyota Plaza	38103	27 - R	2000 Gallons
5 /7 /2010	Canteen Catering	1965 Shelby Oaks Drive	38134	25 - M	150 Gallons
5 /7 /2010	Chris' Corner	2886 Walnut Grove Road	38111	36 - G	100 Pound
5 /7 /2010	Draper's Catering of Me	6110 Macon Road	38134	33 - C	400 Gallons
5 /7 /2010	Draper's Catering of Me	6110 Macon Road	38134	33 - C	1500 Gallons
5 /7 /2010	George's Coffee Shop	50 N. Third Street	38103	27 - R	10 Gallons
5 /7 /2010	Local, The	2800 Whitten Road	38134	19 - F	10 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
5 /7 /2010	Memphis Sounds Loun	22 N. Third Street	38103		30 Pound
5 /7 /2010	Mi Tierra Columbia Res	5883 Summer Avenue	38134	25 - L	750 Gallons
5 /7 /2010	Putt Putt Golf & Games	5484 Summer Avenue	38134	33 - E	500 Gallons
5 /7 /2010	Sleep Inn	2855 Old Austin Peay Highw	38134	16 - H	0
5 /10/2010	BK's Bites	200 Jefferson Avenue	38103	27 - R	0
5 /10/2010	China Restaurant	150 Jefferson Avenue	38103	28 - N	200 Gallons
5 /10/2010	Dawg Gone Good Deli	461 E. Shelby Drive	38109	81 - J	100 Pound
5 /10/2010	Dixie Meat	239 Jefferson Avenue	38103	28 - O	250 Gallons
5 /10/2010	Jalisco's Restaurant	6343 Summer Avenue	38134	25 - D	30 Pound
5 /10/2010	MCS Grizzlies Academ	168 Jefferson Avenue	38103	28 - N	200 Gallons
5 /10/2010	MCS - Shelby Oaks ES	6053 Summer Avenue	38134	25 - G	750 Gallons
5 /10/2010	Pier Restaurant, The	100 Wagner Place	38103	35 - C	250 Gallons
5 /10/2010	Simply for Me	151 Jefferson Avenue	38103	28 - N	80 Pound
5 /10/2010	Simply for Me	151 Jefferson Avenue	38103	28 - N	250 Gallons
5 /10/2010	Yogurite	5030 Poplar Avenue	38117	46 - G	100 Pound
5 /11/2010	Bardog Tavern	73 Monroe Avenue	38103	27-R	70 Pound
5 /11/2010	Bogie's Deli Downtown	80 Monroe Avenue	38103	27 - R	40 Pound
5 /11/2010	Felecia Suzanne's	80 Monroe Avenue	38103	27 - R	40 Pound
5 /11/2010	Holiday Inn Downtown	160 Union Avenue	38103	27 - R	15 Gallons
5 /11/2010	Holiday Inn Downtown	160 Union Avenue	38103	27 - R	30 Gallons

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
5 /11/2010	Little Tea Shop, The	69 Monroe Avenue	38103	28 - N	200 Gallons
5 /11/2010	McDonalds	1610 Sycamore View Road	38134	25 - P	250 Gallons
5 /11/2010	Playita Mexicana	6194 Macon Road	38134	33 - D	200 Gallons
5 /11/2010	Subway	6188 Macon Road	38134	33 - D	50 Pound
5 /11/2010	Waffle House 317	1550 Sycamore View Road	38134	25 - P	150 Gallons
5 /11/2010	Zoe's	80 Monroe Avenue	38103	27 - R	75 Pound
5 /12/2010	Colletta's Italian Restau	2850 Appling Road	38134	134 - E	500 Gallons
5 /12/2010	Ramada Inn	1585 Sycamore View Road	38134	25 - P	0
5 /12/2010	Subway	6415 Summer Avenue	38134	26 - A	50 Pound
5 /12/2010	Tug's	51 Harbor Town	38103	27 - D	750 Gallons
5 /13/2010	Beignet Cafe	124 G. E. Patterson	38103		100 Pound
5 /13/2010	Bon Ton Restaurant	150 Monroe Avenue	38103	27 - R	875 Gallons
5 /13/2010	Cadre	149 Monroe Avenue	38103	27 - R	74 Pound
5 /13/2010	Lolo's Table	128 Monroe Avenue	38103	27 - R	40 Pound
5 /13/2010	McEwen's on Monroe	122 Monroe Avenue	38103	28 - N	30 Pound
5 /13/2010	McEwen's on Monroe	122 Monroe Avenue	38103	28 - N	20 Pound
5 /13/2010	Partners	5070 Raleigh LaGrange Rd.	38134	17 - P	350 Gallons
5 /13/2010	Pizza Hut	6168 Macon Road	38134	33 - D	40 Gallons
5 /13/2010	Starbucks Coffee	1615 Sycamore View Road	38134	25 - N	100 Pound
5 /13/2010	Westy's	346 Main Street	38103	28 - E	25 Pound

<u>Inspection Date</u>	<u>Facility Name</u>	<u>Address</u>	<u>Zip Code</u>	<u>Map Book</u>	<u>GRE</u>
5 /14/2010	Barakats Market	5782 Raleigh LaGrange Rd.	38134	25 - F	50 Pound
5 /14/2010	Court Manor Nursing C	1414 Court Avenue	38103	36 - A	750 Gallons
5 /14/2010	Ealery, The	201 Poplar Avenue	38103	28 - O	20 Pound
5 /14/2010	First Presbyterian - FD	166 Poplar Avenue	38103	28 - J	20 Pound
5 /14/2010	Flash Back B&G	5707 Raleigh LaGrange Rd.	38134	25 - F	250 Gallons
5 /14/2010	Kudzu's Lounge	603 Monroe Avenue	38103	35 - B	25 Pound
5 /14/2010	Lenny's Sub Shop #61	1664 Sycamore View Road	38134	25 - P	30 Pound
5 /14/2010	Memphis Cook Conven	74 Poplar Avenue	38103	28 - J	100 Gallons
5 /14/2010	Memphis Cook Conven	74 Poplar Avenue	38103	28 - J	700 Gallons
5 /14/2010	Ruby Tuesday	1653 Sycamore View Road	38134	25 - P	500 Gallons
5 /14/2010	'Simply Fabulous	300 Court Avenue	38103	28 - O	200 Gallons
5 /17/2010	Friendly Quick Stop	5510 Stage Road	38134	18 - E	15 Pound
5 /17/2010	M & A Quick Stop Proje	569 Poplar Avenue	38103	28 - O	75 Pound
5 /17/2010	Mapco/Blimpie Express	2214 Whitten Road	38134	26 - B	0
5 /17/2010	Memphis Union Mission	383 Poplar Avenue	38103	28 - O	200 Gallons
5 /17/2010	Poplar Cafe	200 Poplar Avenue	38103	28 - J	30 Pound
5 /17/2010	Subway	308 Poplar Avenue	38103	28 - O	50 Pound
5 /17/2010	Tops BBQ	6130 Macon Road	38134	33 - D	700 Gallons
5 /17/2010	Yum's	795 Poplar Avenue	38103	28 - P	20 Pound
5 /18/2010	Café Loraine	450 Mulberry	38103	34 - H	0

<b>Inspection Date</b>	<b>Facility Name</b>	<b>Address</b>	<b>Zip Code</b>	<b>Map Book</b>	<b>GRE</b>
5 /18/2010	Church's Fried Chicken	925 Poplar Avenue	38103	28 - R	200 Gallons
5 /18/2010	D'Bo's	5727 Raleigh LaGrange Rd.	38134	25 - F	30 Pound
5 /18/2010	Girls Inc.	686 N. Seventh Avenue	38103	28 - B	40 Pound
5 /18/2010	High Point Café	111 Jackson Avenue	38103	28 - E	15 Gallons
5 /18/2010	Marmalade Restaurant	153 G. E. Patterson	38103	34 - G	10 Gallons
5 /18/2010	MCS - Downtown Scho	10 S. Fourth St.	38103	28 - N	300 Gallons
5 /18/2010	Memphis Downtown Di	116 S. Fourth St.	38103	27 - R	200 Gallons
5 /18/2010	Memphis Plaza	6101 Shelby Oaks Drive	38134	25 - R	1100 Gallons
5 /18/2010	Memphis Plaza	6101 Shelby Oaks Drive	38134	25 - R	250 Gallons
5 /18/2010	Memphis Plaza	6101 Shelby Oaks Drive	38134	25 - R	150 Gallons
5 /18/2010	Pfizer Cafeteria	1855 Shelby Oaks Drive	38134	25 - M	30 Pound
5 /19/2010	Da Burrito Factory	2477 Poplar Avenue	38112	37 - A	100 Pound
5 /19/2010	Gibson Showcase Loun	145 Lt. George W. Lee	38103	34 - D	200 Gallons
5 /19/2010	Ground Zero	158 George W. Lee	38103	34 - D	1000 Gallons
5 /19/2010	Jim's Place East	5560 Shelby Oaks Drive	38134	33 - A	100 Gallons
5 /19/2010	Lo Yo Yogurt	559 Erin Dr.	38117	46 - G	100 Pound
5 /19/2010	Red Rooster	140 George W. Lee	38103	34 - D	1000 Gallons
5 /19/2010	Red Rooster	140 George W. Lee	38103	34 - D	40 Pound
5 /19/2010	Southern Avenue Chart	2221 Democrat Rd.	38132	65 - H	100 Pound
5 /19/2010	Spot, The	616 Marshall	38103	35 - B	10 Pound



Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
5 /19/2010	Starbucks Coffee	170 G. W. Lee	38103	34 - D	1000 Gallons
5 /19/2010	Wendy's	315 Washington	38111	45 - E	250 Gallons
5 /19/2010	Westin Hotel & Daily Gr	170 Lt. George W. Lee	38103	34 - D	1000 Gallons
5 /19/2010	Wingmen Express	3409 Raleigh Springs Mall	38134	11 - K	20 Pound
5 /20/2010	Da Burrito Factory	2477 Poplar Avenue	38112	37 - A	100 Pound
5 /20/2010	Dawg Gone Good Deli	461 E. Shelby Drive	38109	81 - J	100 Pound
5 /20/2010	Krystal	1688 Sycamore View Road	38134	25 - P	500 Gallons
5 /20/2010	Lo Yo Yogurt	559 Erin Dr.	38117	46 - G	100 Pound
5 /20/2010	Pyramids Grill and Buff	6090 Macon Cove	38134	33 - D	350 Gallons
5 /20/2010	Shoney's #313	5829 Summer Avenue	38134	25 - P	500 Gallons
5 /20/2010	Southern Avenue Chart	2221 Democrat Rd.	38132	65 - H	100 Pound
5 /21/2010	Cracker Barrel	6081 Shelby Oaks Drive	38134	25 - P	500 Gallons
5 /21/2010	Foreign Language Imm	650 Harbor Edge	38103	27 - D	0
5 /21/2010	MCS - Brownsville Rd.	5292 Banbury Ave.	38135	12 - E	250 Gallons
5 /21/2010	Perkins Restaurant	1571 Sycamore View Road	38134	25 - P	350 Gallons
5 /21/2010	Spaghetti Warehouse	40 Huling	38103	34 - H	200 Gallons
5 /21/2010	Taco Bell #2547	1740 Sycamore View Road	38134	25 - O	250 Gallons
5 /21/2010	TCBY	1708 Union Avenue	38104	36-F	750 Gallons
5 /24/2010	Burger King	1027 Union Avenue	38104	35 - C	1000 Gallons
5 /24/2010	China Restaurant	150 Jefferson Avenue	38103	28 - N	200 Gallons

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
5 /24/2010	Church's Fried Chicken	2237 Frayser Blvd.	38127	8 - M	500 Gallons
5 /24/2010	Exxon	1003 Union Avenue	38104	35 - C	200 Gallons
5 /24/2010	Kids World	2341 Frayser Blvd.	38127	9 - J	5 Gallons
5 /24/2010	M.A.S.E. Cafeteria	20 Dudley	38103	35 - C	0
5 /24/2010	MCS Grizzlies Academ	168 Jefferson Avenue	38103	28 - N	200 Gallons
5 /24/2010	Shoney's South, Inc.	3081 Covington Pike	38128	17 - C	600 Gallons
5 /24/2010	St. Jude Hospital (Kay	262 Danny Thomas	38103	28 - J	1500 Gallons
5 /24/2010	Starbuck's Coffee / St.	262 Danny Thomas	38103	28 - J	100 Pound
5 /24/2010	Union Grove	2285 Frayser Blvd.	38127	8 - M	300 Gallons
5 /25/2010	Blue Fin	135 S. Main Street	38103	34 - D	20 Pound
5 /25/2010	Bluff City Coffee	505 Main Street	38103	34 - M	40 Pound
5 /25/2010	BP	695 Union Avenue	38103	35 - B	40 Pound
5 /25/2010	Domino's	686 Union Avenue	38103	35 - B	25 Pound
5 /25/2010	Felecia Suzanne's	80 Monroe Avenue	38103	27 - R	40 Pound
5 /25/2010	Leonard's BBQ Buffet	103 N. Main Street	38103	27 - M	50 Pound
5 /25/2010	Madison Ave. Café	143 Madison Avenue	38103	28-N	10 Pound
5 /25/2010	Madison Cafe	920 Madison Avenue	38103	35 - C	100 Pound
5 /25/2010	Madison Hotel, The	79 Madison Avenue	38103	28 - N	300 Gallons
5 /25/2010	McDonalds	905 Union Avenue	38103	35 - C	500 Gallons
5 /25/2010	Quetzal Coffee Shop / I	664 Union Avenue	38103	35 - B	30 Gallons

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
5 /25/2010	Russwood Bar & Grill	160 Union Avenue	38103	27 - R	20 Pound
5 /25/2010	Russwood Bar & Grill	160 Union Avenue	38103	27 - R	50 Pound
5 /25/2010	Sekisui Downtown Rest	160 Union Avenue	38103	27 - R	
5 /26/2010	Burger King	2205 Frayser Blvd.	38127	8 - M	750 Gallons
5 /26/2010	Currents	50 Harbor Town	38103	27 - D	750 Gallons
5 /26/2010	El Paisano	6195 Macon Road	38134	33 - D	50 Pound
5 /26/2010	Flying Fish	105 S. Second St.	38103	34 - D	100 Pound
5 /26/2010	Gus' World Famous Ch	310 S. Front St.	38103	34 - G	10 Pound
5 /26/2010	Huey's	77 S. Second St.	38103	27 - R	30 Pound
5 /26/2010	Krystal	2153 Frayser Blvd.	38127	20 - B	1000 Gallons
5 /26/2010	Lenny's Sub Shop	22 S. Front St.	38103	27 - R	10 Pound
5 /26/2010	Madison Cafe	920 Madison Avenue	38103	35 - C	100 Pound
5 /26/2010	Memphis Sounds Loun	22 N. Third Street	38103		30 Pound
5 /26/2010	Mondo Subs	920 Madison Avenue	38103	35 - C	100 Pound
5 /26/2010	Mrs. Winnérs	5856 Summer Avenue	38134	25 - O	500 Gallons
5 /26/2010	Rendezvous, The	52 S. Second St.	38103	27 - R	200 Gallons
5 /26/2010	Rendezvous, The	52 S. Second St.	38103	27 - R	5 Pound
5 /26/2010	Starbucks Coffee - St.	5959 Park Avenue	38119	57 - C	0
5 /26/2010	Taco Bell #613	2183 Frayser Blvd.	38127	8 - M	750 Gallons
5 /26/2010	University of Tennessee	800 Madison Avenue	38103	35 - C	1000 Gallons

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
5 /27/2010	Exline's Best Pizza In T	2801 Kirby Parkway	38119	146 - F	50 Pound
5 /27/2010	McAlister's Deli	2857 Kirby Parkway	38119	146 - J	1000 Gallons
5 /27/2010	MCS - Oak Forest ES	7447 Nonconnah View Cv.	38119	147 - N	400 Gallons
5 /28/2010	Aldo's Pizza Pies	64 S. Main Street	38103	27 - R	100 Gallons
5 /28/2010	Captain D's	3057 Covington Pike	38128	17 - C	500 Gallons
5 /28/2010	Eatery, The	201 Poplar Avenue	38103	28 - O	20 Pound
5 /28/2010	MCS - Craigmont HS	3333 Covington Pike	38128	11 - M	500 Gallons
5 /28/2010	MCS - Craigmont MS	3455 Covington Pike	38128	11 - M	500 Gallons
5 /28/2010	Taco Bell #1684	3045 Covington Pike	38128	17 - C	120 Gallons
5 /28/2010	Wendy's	2221 Frayser Blvd.	38127	8 - M	500 Gallons
5 /31/2010	Chef's DOWNTOWN Wing	200 Poplar Avenue	38103	28-O	30 Pound
6 /1 /2010	Asian Palace	2920 Covington Pike	38128	17 - C	250 Gallons
6 /1 /2010	La Espiga	3024	38128		30 Gallons
6 /1 /2010	Los Reyes Mexican Re	3024 Covington Pike	38128	17 - C	250 Gallons
6 /1 /2010	Lutheran Village	3589 Covington Pike	38128	11 - H	350 Gallons
6 /1 /2010	Methodist Hospital Nort	3960 Covington Pike	38128	11 - H	2000 Gallons
6 /1 /2010	Subway	2938 Covington Pike	38128	17 - G	50 Pound
6 /1 /2010	Wendy's #53	3979 Covington Pike	38128	11 - D	500 Gallons
6 /2 /2010	Circle K	1923 Poplar Avenue	38104	36 - C	0
6 /2 /2010	DISH	948 Cooper	38104	43 - D	200 Gallons

<b>Inspection Date</b>	<b>Facility Name</b>	<b>Address</b>	<b>Zip Code</b>	<b>Map Book</b>	<b>GRE</b>
6 /2 /2010	Kroger	2632 Frayser Blvd.	38127	9 - F	540 Gallons
6 /2 /2010	Kroger	2632 Frayser Blvd.	38127	9 - F	11 Gallons
6 /2 /2010	Kwik Shop	6 Cooper	38104	36 - H	0
6 /2 /2010	Playhouse on the Squa	51 Cooper	38104	36 - H	0
6 /3 /2010	BP Shop	630 S. Third Street	38126	34 - M	250 Gallons
6 /3 /2010	Burger King	3951 New Covington Pike	38128	5 - P	250 Gallons
6 /3 /2010	Galloway United Metho	1015 S. Cooper	38104	43 - D	100 Gallons
6 /3 /2010	Gayhawk Restaurant	685 Danny Thomas	38126	35 - J	200 Gallons
6 /3 /2010	Luster's Sundry & Grill	470 E. Georgia Ave.	38126	35 - K	20 Pound
6 /3 /2010	McDonalds #6467	2062 Frayser Blvd.	38127	8 - I	110 Gallons
6 /3 /2010	MCS - Georgia ES	690 Georgia Avenue	38126	35 - K	500 Gallons
6 /3 /2010	Red Robin's Academy	1000 Cooper	38104	43 - D	8 Pound
6 /3 /2010	Red Robin's Academy	1000 Cooper	38104	43 - D	5 Pound
6 /3 /2010	Renee's Sandwiches	202 Bishop G.E. Patterson	38126	34 - H	74 Pound
6 /3 /2010	Square Foods	937 Cooper	38104	43 - D	100 Pound
6 /3 /2010	Starbucks Coffee	1850 Union Avenue	38104	36 - G	20 Pound
6 /4 /2010	Bari Restaurant	22 S. Cooper	38104	36 - D	50 Pound
6 /4 /2010	Burger King	3344 Austin Peay Highway	38128	11 - J	500 Gallons
6 /4 /2010	China Wok	3850 Austin Peay Highway	38128	11 - B	40 Pound
6 /4 /2010	Dixie Queen	3331 Overton Crossing	38127	8 - M	20 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
6 /4 /2010	Don Don's Hot Wings	3620 Austin Peay Highway	38128	11 - F	20 Pound
6 /4 /2010	Kroger	3860 Austin Peay Highway	38128	11 - C	11 Gallons
6 /4 /2010	Kroger	3860 Austin Peay Highway	38128	11 - C	960 Gallons
6 /4 /2010	Kroger	3860 Austin Peay Highway	38128	11 - C	840 Gallons
6 /4 /2010	Krystal	3330 Austin Peay Highway	38128	11 - J	750 Gallons
6 /4 /2010	Malco Theatre	3384 Austin Peay Highway	38128	11 - J	30 Pound
6 /4 /2010	MCS - Peabody ES	2086 Young Avenue	38104	43 - C	750 Gallons
6 /4 /2010	Popeyes	3660 Austin Peay Highway	38128	11 - F	1000 Gallons
6 /4 /2010	Renee's Sandwiches	202 Bishop G.E. Patterson	38126	34 - H	74 Pound
6 /4 /2010	Young Ave. Deli	2119 Young Avenue	38104	43 - D	250 Gallons
6 /7 /2010	Bangkok Alley	715 W. Brookhaven Circle	38117	46 - H	50 Pound
6 /7 /2010	Dish Catering	1068 Cooper	38104	43 - D	40 Pound
6 /7 /2010	Easy Way Produce	596 Cooper	38104	36 - M	0
6 /7 /2010	McDonalds #15054	3950 Austin Peay Highway	38128	11 - C	50 Pound
6 /7 /2010	MCS - Airways Middle	2601 Ketchum	38114	54 - N	250 Gallons
6 /7 /2010	Pizza Hut	4030 Singleton Pkwy.	38128	5 - P	1000 Gallons
6 /7 /2010	Starbucks Coffee	3388 Poptar Avenue	38111	38 - J	150 Gallons
6 /7 /2010	Starbucks Coffee	2698 Germantown Parkway	38133	134 - G	20 Gallons
6 /9 /2010	Burger King	2205 Frayser Blvd.	38127	8 - M	750 Gallons
6 /9 /2010	Dixie Queen	3141 Austin Peay Highway	38128	16 - D	200 Gallons

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
6 /9 /2010	Havem's Pizza & Wings	4510 Millbranch Road	38116	82 - E	100 Pound
6 /9 /2010	Krystal	2153 Frayser Blvd.	38127	20 - B	1000 Gallons
6 /9 /2010	M & A Grocery	271 W. Person	38109	41 - O	50 Pound
6 /9 /2010	Papa Johns Pizza	3275 Austin Peay Highway	38128	11 - N	20 Pound
6 /9 /2010	Taco Bell #613	2183 Frayser Blvd.	38127	8 - M	750 Gallons
6 /9 /2010	Teavana	2760 N. Germantown	38133	134 - M	50 Pound
6 /9 /2010	Tony's Bar & Grill	3443	38128	11 - J	60 Pound
6 /9 /2010	Yum's	3283 Austin Peay Highway	38128	11 - N	50 Pound
6 /10 /2010	CK's Coffee Shop	1698 Poplar Avenue	38104	36 - B	250 Gallons
6 /10 /2010	Hill's Supermarket	2954 Overton Crossing	38127	8 - P	5 Gallons
6 /10 /2010	Jim's Corner Grill	2978 Overton Crossing	38127	8 - P	0
6 /10 /2010	McDonalds #2174	3363 Austin Peay Highway	38128	11 - J	1000 Gallons
6 /10 /2010	MCS - Georgian Hills E	3930 Leweir	38127	2 - P	200 Gallons
6 /10 /2010	MCS - Grandview Heig	2342 Clifton Ave.	38127	14 - D	205 Gallons
6 /10 /2010	Midtown Market	836 Cooper	38104	36 - R	0
6 /10 /2010	On Time Nite Club	2956 Overton Crossing	38127	14 - C	0
6 /10 /2010	Otherlands	639 Cooper	38104	36 - M	0
6 /10 /2010	Quizno's	1691 Poplar Avenue	38104	36 - B	1000 Gallons
6 /10 /2010	Sammen Food Market	4210 Overton Crossing	38127	2 - M	20 Pound
6 /10 /2010	Save-A-Lot	3465 Austin Peay Highway	38128		50 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
6 /10/2010	Smart Mart #2	4284 Overton Crossing	38127	2 - H	30 Pound
6 /10/2010	Thessalonians Academ	4095 Overton Crossing	38127	2 - M	0
6 /11/2010	B.B.'s Daycare	1073 S. Cooper	38104	43 - D	0
6 /11/2010	Blue Coast Burrito	3546 Walker Avenue	38111	45 - E	750 Gallons
6 /11/2010	Brushmark Restaurant,	1934 Poplar Avenue	38104	36 - C	500 Gallons
6 /11/2010	Cooper Cottage	845 S. Cooper	38104	36 - R	0
6 /11/2010	Dixie Queen	782 Highland	38111	45 - J	50 Gallons
6 /11/2010	Humdingers	1134 Germantown Parkway	38106	139 - L	750 Gallons
6 /11/2010	MCS - Delano ES	1716 Delano Ave.	38127	14 - F	5 Gallons
6 /11/2010	MCS - Egypt ES	4160 Karen Rd.	38128	4 - L	250 Gallons
6 /11/2010	MCS - Keystone ES	4301 Old Allen Rd.	38128	4 - J	750 Gallons
6 /11/2010	MCS - Raleigh Egypt H	3970 Vollintine Avenue	38128	4 - L	1200 Gallons
6 /11/2010	MCS - Scenic Hills ES	3450 Scenic Highway	38128	16 - E	30 Pound
6 /11/2010	New Hope Christian Ac	3000 University Drive	38127	14 - D	300 Gallons
6 /14/2010	Days Inn	2889 Austin Peay Highway	38128	16 - H	0
6 /14/2010	Exline's Best Pizza In T	2935 Old Austin Peay Highw	38128	16 - D	50 Pound
6 /14/2010	Jack Pirtles Chicken	1370 Poplar Avenue	38104	29 - N	750 Gallons
6 /14/2010	Kroger	1366 Poplar Avenue	38104	29 - N	600 Gallons
6 /14/2010	Kroger	1366 Poplar Avenue	38104	29 - N	75 Gallons
6 /14/2010	Kroger	1366 Poplar Avenue	38104	29 - N	11 Gallons



Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
6 /14/2010	MCS - Corning ES	1662 Dabbs	38127	8 - B	250 Gallons
6 /14/2010	MCS - Frayser ES	1602 Dellwood	38127	8 - O	300 Gallons
6 /14/2010	MCS - Frayser HS	1530 Dellwood	38127	8 - N	250 Gallons
6 /14/2010	MCS - Westside Middle	3389 Dawn Dr.	38127	7 - K	100 Gallons
6 /14/2010	Memphis Mental Health	865 Poplar Avenue	38104	28 - P	500 Gallons
6 /15/2010	Big Star	3384 N. Thomas St.	38127	7 - L	500 Gallons
6 /15/2010	Hibachi Steak House	2809 Kirby Parkway	38119	146 - F	1000 Gallons
6 /15/2010	Kroger	3226 Thomas	38127	7 - L	11 Gallons
6 /15/2010	Kroger	3226 Thomas	38127	7 - L	400 Gallons
6 /15/2010	MCS - Whitney ES	1219 Whitney Avenue	38127	13 - D	500 Gallons
6 /15/2010	Penny Pantry	4991 Breckenwood	38127	118 - L	5 Gallons
6 /15/2010	SCS - Northaven ES	5157 N. Circle Rd.	38127	118 - F	300 Gallons
6 /15/2010	Starbucks Coffee	2801 Kirby Parkway	38119	146 - F	40 Pound
6 /15/2010	Subway	2809 Kirby Parkway	38119	146 - F	20 Gallons
6 /15/2010	VFW Post 4916	847 Whitney Avenue	38127	7 - P	0
6 /15/2010	VJ's BBQ & Pub	3174 Thomas	38127	7 - P	15 Gallons
6 /16/2010	Circle K	4010 Austin Peay Highway	38128	11 - J	20 Pound
6 /16/2010	Dixie Queen	782 Highland	38111	45 - J	50 Gallons
6 /16/2010	Exxon	2905 Kirby Parkway	38119	146 - E	200 Gallons
6 /16/2010	Gold Club, The	777 White Station	38122	32 - M	100 Pound

Inspection Date	Facility Name	Address	Zip Code	Map Book	GPE
6/16/2010	Lenny's Sub Shop #49	12 S. Cooper	38104	36 - H	40 Pound
6/16/2010	MCS - Balmoral ES	5905 Grosvenor Ave.	38119	57 - P	250 Gallons
6/16/2010	Parkview Retirement H	1914 Poplar Avenue	38104	36 - C	70 Pound
6/16/2010	Subway	3439 Austin Peay Highway	38128	11 - J	50 Pound
6/16/2010	Wal-Mart Market	2856 Hickory Hill Road	38115	68 - F	750 Gallons
6/16/2010	Wal-Mart Neighborhood	6990 Shelby Drive	38141	152 - L	750 Gallons
6/17/2010	Al-Chymia Shrine Temp	5770 Shelby Oaks Drive	38134	33 - B	500 Gallons
6/17/2010	Embassy Suites Hotel	1022 S. Shady Grove	38119	47 - P	350 Gallons
6/17/2010	Hi-Tone Café	1913 Poplar Avenue	38104	36 - C	20 Pound
6/17/2010	MCS - Shady Grove ES	5360 Shady Grove Rd.	38119	39 - R	400 Gallons
6/17/2010	Pumping Station, The	1382 Poplar Avenue	38104	29 - N	20 Pound
6/18/2010	BP	3727 N. Watkins Road	38127	7 - D	0
6/18/2010	Citgo-Georgian Hills	3713 N. Watkins Road	38127	8-K	30 Pound
6/18/2010	Exline's Best Pizza In T	3145 Watkins	38127	8 - O	30 Pound
6/18/2010	Exxon	1856 Poplar Avenue	38104	36 - C	300 Gallons
6/18/2010	Hot Spot BBQ	3701 Watkins	38127	8 - B	10 Pound
6/18/2010	Java Cabana	2170 Young Avenue	38104	43 - D	0
6/18/2010	KFC Y342238	3255 Austin Peay Highway	38128	11 - N	1000 Gallons
6/18/2010	K-Mart	3165 Austin Peay Highway	38128	16 - D	1000 Gallons
6/18/2010	Knowledge is Power Le	3303 Watkins	38127	8 - K	0

<b>Inspection Date</b>	<b>Facility Name</b>	<b>Address</b>	<b>Zip Code</b>	<b>Map Book</b>	<b>GRE</b>
6 /18/2010	Lovely's Food Market	3427 N. Watkins Road	38127	8 - F	30 Pound
6 /18/2010	New Hope Christian Ac	3277 Watkins	38127	8 - K	300 Gallons
6 /18/2010	Piggly Wiggly	3666 Watkins	38127	8 - B	500 Gallons
6 /18/2010	Premier Kids Enrichme	3475 Watkins	38127		50 Pound
6 /18/2010	Sam's Snacks	1669 Cooper	38104	43 - P	10 Pound
6 /18/2010	Sea Sea's	3659 Watkins	38127	8 - B	74 Pound
6 /18/2010	Superlo Foods	3327 Watkins	38127	8 - K	300 Pound
6 /18/2010	Superlo Foods	3327 Watkins	38127	8 - K	500 Gallons
6 /18/2010	Wing Basket	3455 Watkins	38127	8 - F	500 Gallons
6 /21/2010	Cafe Ole	959 S. Cooper	38104	43 - D	300 Gallons
6 /21/2010	McDonalds #7324	1389 Poplar Avenue	38104	29 - N	1000 Gallons
6 /21/2010	Memphis College of Art	1930 Poplar Avenue	38104	36 - C	40 Pound
6 /22/2010	Mapco	1781 Kirby Parkway	38119	58 - B	200 Gallons
6 /22/2010	Starbucks Coffee	5679 Poplar Avenue	38119	47 - O	70 Pound
6 /22/2010	TJ Mulligans	6635 Quince Road	38119	146 - K	200 Gallons
6 /23/2010	Cafe 1912	243 S. Cooper	38104	36 - H	40 Pound
6 /23/2010	Caze Soul Food	1689 Jackson Avenue	38107	23 - F	500 Gallons
6 /23/2010	Celtic Crossing	903 S. Cooper	38104	36 - R	20 Pound
6 /23/2010	Fork It Over	2299 Young Avenue	38104		50 Pound
6 /23/2010	Genghis Grill	2362 N. Germantown Pkwy.	38016	136 - D	750 Gallons

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
6 /24/2010	Asian Palace	5266 Summer Avenue	38122	32 - M	1250 Gallons
6 /24/2010	Babylon	661 N. Mendenhall	38177	32 - P	100 Pound
6 /24/2010	Barlight	661 N. Mendenhall	38122	32 -P	100 Pound
6 /24/2010	Blue Fish, The	2149 Young Avenue	38104	43 - D	750 Gallons
6 /24/2010	Casabianca Restaurant	2156 Young Avenue	38104	43 - D	50 Pound
6 /24/2010	Greenbamboo	990 Germantown Parkway	38018	139 - P	750 Gallons
6 /24/2010	Lou's Pizza Pie	2158 Young Avenue	38104	43 - D	50 Pound
6 /24/2010	Park Avenue Market	3002 Park Avenue	38111	44 - L	100 Pound
6 /25/2010	Baron Hirsch Synagogu	400 S. Yates	38119	47 - A	500 Gallons
6 /25/2010	Chism's Wing Case	1674 Whitten Road	38134	26 - O	100 Pound
6 /25/2010	Pointe, The	6480 Quince Road	38119	146 - E	800 Gallons
6 /25/2010	Quince Nursing & Reha	6733 Quince Road	38119	146 - K	300 Gallons
6 /25/2010	Teavana	2760 N. Germantown	38133	134 - M	50 Pound
6 /29/2010	Abbey's Restaurant	2345 N. Germantown	38016	136 - D	1000 Gallons
6 /29/2010	Jim & Nick's Bar-B-Que	2359 Germantown Parkway	38016	136 - D	2000 Gallons
6 /29/2010	O'Charley's	2844 New Brunswick	38133		1500 Gallons
6 /29/2010	TCBY	1708 Union Avenue	38104	36-F	750 Gallons
6 /29/2010	Texas RoadHouse	2810 New Brunswick	38133	135 - E	1000 Gallons
6 /30/2010	El Mezcal	694 Germantown Parkway	38018	142 - C	2500 Gallons
6 /30/2010	McDonalds #10676	674 Germantown Parkway	38018	142 - C	1200 Gallons

Inspection Date	Facility Name	Address	Zip Code	Map Book	GRE
6 /30/2010	Outback Steak House	1110 Germantown Parkway	38018	139 - L	250 Gallons
6 /30/2010	Panera Bread	714 Germantown Parkway	38018		100 Gallons

# Second Quarterly Report 2010 (April 1, 2010 through June 30, 2010)

## Facilities in Violation and Corrective Actions Taken

Inspection Date	Facility Name	Address	Zip Code	Map Book	Enforcement Action
4 /7 /2010	Westy's	346 Main Street	38103	28 - E	Civil Penalty
4 /8 /2010	Memphis Marriott/Magnoli	250 N. Main Street	38103	28 - J	Violation
4 /9 /2010	Cafe Napoleon	86 N. Main Street	38103	27 - R	Violation
4 /19/2010	Bluff City Coffee	505 Main Street	38103	34 - M	Violation
4 /23/2010	Holiday Inn Downtown	160 Union Avenue	38103	27 - R	Violation
4 /23/2010	Russwood Bar & Grill	160 Union Avenue	38103	27 - R	Violation
4 /23/2010	Sekisui Downtown Restau	160 Union Avenue	38103	27 - R	Violation
4 /26/2010	BP	695 Union Avenue	38103	35 - B	Violation
4 /26/2010	Queizal Coffee Shop / Int	664 Union Avenue	38103	35 - B	Violation
4 /28/2010	University of Tennessee	800 Madison Avenue	38103	35 - C	Violation
5 /7 /2010	Memphis Sounds Lounge	22 N. Third Street	38103	28 - N	Violation
5 /10/2010	MCS Grizzlies Academy	168 Jefferson Avenue	38103	28 - N	Violation
5 /25/2010	Madison Ave. Café	143 Madison Avenue	38103	28-N	Violation
5 /25/2010	Madison Cafe	920 Madison Avenue	38103	35 - C	Violation
5 /26/2010	Burger King	2205 Frayser Blvd.	38127	8 - M	Violation
5 /26/2010	Huey's	77 S. Second St.	38103	27 - R	Violation
5 /26/2010	Taco Bell #613	2183 Frayser Blvd.	38127	8 - M	Violation

Inspection Date	Facility Name	Address	Zip Code	Map Book	Enforcement Action
5/28/2010	Sonic Drive-In	3540 Covington Pike	38128	11 - M	Violation
6/3/2010	BP Shop	630 S. Third Street	38126	34 - M	Violation
6/3/2010	Gayhawk Restaurant	685 Danny Thomas	38126	35 - J	Violation
6/3/2010	Renee's Sandwiches	202 Bishop G.E. Patterson	38126	34 - H	Violation
6/11/2010	Dixie Queen	782 Highland	38111	45 - J	Violation
6/16/2010	Circle K	4010 Austin Peay Highway	38128	11 - J	Violation
6/18/2010	Citgo-Georgian Hills	3713 N. Watkins Road	38127	8-K	Violation

# Second Quarterly Report 2010 (April 1, 2010 through June 30, 2010)

## Food Establishment Wastewater Discharge Permits Issued / Renewed

Date Issued	Facility Name	Date Expires	Address	Zip Code	Map Book
4 /1 /2010	Alfred's	3 /31/2015	197 Beale Street	38103	35 - A
4 /1 /2010	Dyers Burgers	3 /30/2015	205 Beale Street	38103	35 - A
4 /7 /2010	Subway	4 /6 /2015	464 Main Street	38103	28 - E
4 /20/2010	Safari World Tapas	4 /19/2015	414 S. Main Street	38103	28-E
4 /21/2010	Ventures One Stop	4 /20/2015	6105 Summer Avenue	38134	25-H
4 /27/2010	Madison Ave. Café	4 /26/2015	143 Madison Avenue	38103	28-N
4 /27/2010	Market Café	4 /26/2015	149 Madison Avenue	38103	28-N
4 /28/2010	Euro Style	4 /27/2015	6534 Quince Road	38119	146 - E
4 /28/2010	Euro Style	4 /27/2015	6534 Quince Road	38119	146 - E
5 /3 /2010	Cafe Eclectic	5 /2 /2015	111 Harbor Town	38103	27-D
5 /3 /2010	First Methodist Church	5 /2 /2015	204 N. Second Street	38103	28 - J
5 /5 /2010	Cockadoo's	5 /4 /2015	85 S. Second St.	38103	27-R
5 /10/2010	R & R Deli	5 /9 /2015	200 Jefferson Avenue	38103	28-O
5 /17/2010	Chef's DOWntown Wings an	5 /16/2015	200 Poplar Avenue	38103	28-O
5 /17/2010	M & A Quick Stop Project	5 /16/2015	569 Poplar Avenue	38103	28 - O
5 /18/2010	Ferraro's Pizzeria & Pub	5 /17/2015	111 Jackson Avenue	38103	28-E



<b>Date Issued</b>	<b>Facility Name</b>	<b>Date Expires</b>	<b>Address</b>	<b>Zip Code</b>	<b>Map Book</b>
6 /1 /2010	Methodist Hospital North	5 /31/2015	3960 Covington Pike	38128	11 - H
6 /1 /2010	Subway	5 /31/2015	2938 Covington Pike	38128	17 - G
6 /9 /2010	McDonalds #2174	6 /8 /2015	3363 Austin Peay Highway	38128	11 - J
6 /9 /2010	Save-A-Lot	6 /8 /2015	3465 Austin Peay Highway	38128	11 - J
6 /9 /2010	Subway	6 /8 /2015	3439 Austin Peay Highway	38128	11 - J
6 /11/2010	In & Out	6 /10/2015	742 S. Parkway East	38106	42 - K
6 /14/2010	KFC Y342238	6 /13/2015	3255 Austin Peay Highway	38128	11 - N
6 /14/2010	K-Mart	6 /13/2015	3165 Austin Peay Highway	38128	16 - D
6 /17/2010	Al-Chymia Shrine Temple	6 /16/2015	5770 Shelby Oaks Drive	38134	33 - B
6 /18/2010	Citgo-Georgian Hills	6 /17/2015	3713 N. Watkins Road	38127	8-K
6 /21/2010	McDonalds #7324	6 /20/2015	1389 Poplar Avenue	38104	29 - N
6 /24/2010	Babylon	6 /23/2015	661 N. Mendenhall	38177	32 - P
6 /24/2010	Barlight	6 /23/2015	661 N. Mendenhall	38122	32 - P
6 /24/2010	Greenbamboo	6 /23/2015	990 Germantown Parkway	38018	139 - P
6 /24/2010	Park Avenue Market	6 /23/2015	3002 Park Avenue	38111	44 - L
6 /29/2010	Texas RoadHouse	6 /28/2015	2810 New Brunswick	38133	135 - E
6 /30/2010	El Mezcal	6 /29/2015	694 Germantown Parkway	38018	142 - C
6 /30/2010	McDonalds #10676	6 /29/2015	674 Germantown Parkway	38018	142 - C
6 /30/2010	Outback Steak House	6 /29/2015	1110 Germantown Parkway	38018	139 - L

# Second Quarterly Report 2010 (April 1, 2010 through June 30, 2010)

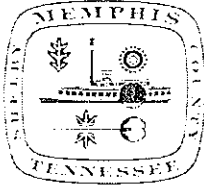
## Recently Established Facilities (New Facilities)

Date Approved	Facility Name	Address	Zip Code	Map Book	GRE
4 / 9 /2010	Rubins's Diner	208 Brooks Road	38109	62 - F	100 Pound
4 /12/2010	Vietnamese Bistro	153 N. Cleveland	38104	36 - A	200 Gallons
4 /13/2010	Wok & Roll	3659 N. Watkins Road	38127	8-B	750 Pound
4 /15/2010	Genghis Grill	2362 N. Germantown Pkwy.	38016	136 - D	750 Gallons
4 /16/2010	Big Hong Kong	3312 Jackson Avenue	38122	23 - N	750 Gallons
4 /16/2010	County Line	2838 Coleman Road	38128	17 - E	100 Pound
4 /19/2010	El Padrino	3650 Ridgeway Road	38115	77 - H	250 Pound
4 /19/2010	Scales Café	2801 Kirby Road	38115	146 - E	100 Pound
4 /22/2010	Side St. Grill	35 Florence	38104	36 - H	750 Gallons
4 /22/2010	Side St. Grill	35 Florence	38104	36 - H	10 Pound
4 /29/2010	Kroger	2130 Exeter	38134	59 - F	1500 Gallons
4 /30/2010	Fairground's Concession	400 S. Hollywood	38104	44 - A	750 Gallons
4 /30/2010	Fairground's Concession	400 S. Hollywood	38104	44 - A	750 Gallons
5 /7 /2010	Asian Palace	5266 Summer Avenue	38122	32 - M	1250 Gallons
5 /7 /2010	Chris' Corner	2886 Walnut Grove Road	38111	36 - G	100 Pound
5 /10/2010	Yogurlite	5030 Poplar Avenue	38117	46 - G	100 Pound

<b>Date Approved</b>	<b>Facility Name</b>	<b>Address</b>	<b>Zip Code</b>	<b>Map Book</b>	<b>GRE</b>
5 /20/2010	Da Burrito Factory	2477 Poplar Avenue	38112	37 - A	100 Pound
5 /20/2010	Dawg Gone Good Deli	461 E. Shelby Drive	38109	81 - J	100 Pound
5 /20/2010	Lo Yo Yogurt	559 Erin Dr.	38117	46 - G	100 Pound
5 /20/2010	Southern Avenue Charite	2221 Democrat Rd.	38132	65 - H	100 Pound
5 /28/2010	Aldo's Pizza Pies	64 S. Main Street	38103	27 - R	100 Gallons
6 /7 /2010	Bangkok Alley	715 W. Brookhaven Circle	38117	46 - H	50 Pound
6 /7 /2010	Bangkok Alley	715 W. Brookhaven Circle	38117	46 - H	50 Pound
6 /7 /2010	Bangkok Alley	715 W. Brookhaven Circle	38117	46 - H	50 Pound
6 /9 /2010	M & A Grocery	271 W. Person	38109	41 - O	50 Pound
6 /9 /2010	Teavana	2760 N. Germantown	38133	134 - M	50 Pound

# **Appendix C**

## **Food Establishment Application**



City of Memphis Division of Public Works, Environmental  
Food Establishment Wastewater Discharge Program

2303 N. Second St., Memphis, TN 38127 ~ 901-636-4328 / Fax 901-636-4325

Section 33-112-04 of the Sewer Use Ordinance requires Food Establishments (FEs) to complete and submit this Permit Application to the Program:

Existing Building? YES / NO      New Facility? YES / NO      New Construction? YES / NO

(Name of Food Establishment) \_\_\_\_\_ (Applicant Name) \_\_\_\_\_

(Street Address) \_\_\_\_\_ (City) \_\_\_\_\_ (Zip Code) \_\_\_\_\_ (Phone Number) \_\_\_\_\_

FE Type (ex. Fast Food, Full Service, Church, Daycare, Cafeteria, etc.): \_\_\_\_\_

Daily Food Preparation Times:

(Mon.) \_\_\_\_\_ (Tue.) \_\_\_\_\_ (Wed.) \_\_\_\_\_ (Thur.) \_\_\_\_\_ (Fri.) \_\_\_\_\_ (Sat.) \_\_\_\_\_ (Sun.) \_\_\_\_\_

Description of food preparation: \_\_\_\_\_

Seating Capacity: \_\_\_\_\_ # Employees \_\_\_\_\_ Size of Kitchen: \_\_\_\_\_

Est. Oils & Grease to be Used [gals/day or lbs/day] \_\_\_\_\_ / \_\_\_\_\_  
(Average) (Max) (Length) (Width) (Total Area)

Estimated Wastewater Discharge Rate [GPD]: \_\_\_\_\_

List of Equipment (Number of Each Type):

(Deep Fryers) _____	(Broilers/Grills) _____	(Stoves/Ranges) _____	(Ovens) _____	(Woks) _____
(Hoods) _____	(Dishwashers) _____	(Garbage Disposals) _____	(3-Comp. Sinks) _____	(2-Comp. Sinks) _____
(Mop Sinks) _____	(Other Sinks) _____	(Grease Removal Eqmt) _____	(Strainers) _____	(Cleanout Caps) _____

(Other Equipment) \_\_\_\_\_

\*Proposed Grease Removal Eqmt (GRE) size or sizes: \_\_\_\_\_

Engineer or Architect Name & Contact Info: \_\_\_\_\_

Contractor Name & Contact Info: \_\_\_\_\_

**Important Anticipated Dates**

Start of Construction: \_\_\_\_\_ GRE Installations: \_\_\_\_\_ / \_\_\_\_\_  
(Start Date) (End Date)

Const. Completed: \_\_\_\_\_ FE Open for Business: \_\_\_\_\_

Scaled plan showing locations of equipment that use FOG, GREs, sewer lines from kitchen to sewer connection and any other support documents for this application must be attached to this form.

<b>For official use only</b>	
Was adequate information provided? YES / NO	
(Reviewer Name) _____	(Date Reviewed) _____ Date Requested Addnl Info _____
Application approved? YES / NO	(Signature/Date) _____
Comments: _____	

\* Section 33-112-01 - Design Criteria. All grease traps used in conjunction with food service establishments shall have the capacity of 15 gallons per seat, except that no single grease trap shall be smaller than 750 gallons or larger than 3000 gallons. In certain cases, multiple grease traps may be utilized. Alternative treatment technologies will be considered on a case-by-case basis for food establishments that are to be located in an existing building where a large grease trap is not feasible.

# **Appendix D**

## **Food Establishment Permit**



The City of Memphis, Division of Public Works, Environmental Food Establishment Wastewater Discharge Program Permit

2302 North Second Street, Memphis, Tennessee 38127-7500

Phone: (901) 576-4328 Fax: (901) 357-4607

EFFECTIVE DATE: \_\_\_\_\_

EXPIRATION DATE: \_\_\_\_\_

Applicant (Owner) Name: \_\_\_\_\_ Phone No.: \_\_\_\_\_

Food Establishment (FE) Name: \_\_\_\_\_

Address: \_\_\_\_\_ Type: \_\_\_\_\_

Maximum Seating Capacity: \_\_\_\_\_ Number of Employees: \_\_\_\_\_ Op. Hrs./Days Open: \_\_\_\_\_

EQUIPMENT

- \_\_\_ Deep Fryers \_\_\_ Broilers/Grills \_\_\_ Stoves/Ranges \_\_\_ Ovens
\_\_\_ Woks \_\_\_ Hoods \_\_\_ Dishwashers \_\_\_ Garbage Disposals
\_\_\_ 3-Comp. Sinks \_\_\_ 2-Comp. Sinks \_\_\_ Mop Sinks \_\_\_ Other Sinks
\_\_\_ Grease Removal Equipment (GRE) \_\_\_ Strainer \_\_\_ Cleanout Cap

Minimum GRE Cleaning Frequency: \_\_\_\_\_

GRE Type: \_\_\_\_\_ GRE Capacity: \_\_\_\_\_ [lbs.] or \_\_\_\_\_ [gals.]

GRE Location: \_\_\_\_\_

\_\_\_ Used Grease & Oil Recycle Bins, Grease Recycling Co. Name: \_\_\_\_\_

VARIANCES

GRE Required: Yes or No / GRE Type Required: \_\_\_\_\_ / FE Allowed to Clean GRE: Yes or No
Size: Yes or No - Ordinance require size \_\_\_\_\_

LOCATION SPECIFIC - PERMIT CONDITIONS:

I hereby certify that the above information is correct; and that I am aware that changes in any of the above information will require a re-application and possible increase in the size or type of GRE required. In addition, I agree to abide by the General Permit Conditions and the City Sewer Use Ordinance; and to have the grease interceptor pumped out a minimum of once per month by a certified grease trap cleaning company, or as approved in LOCATION SPECIFIC - PERMIT CONDITIONS, to maintain the GRE in proper operating condition, as noted in the permit. This permit is valid only for the specific FE, FE location, ownership, GRE, equipment, processes and/or operations indicated above. As such, this permit cannot be sold, transferred or reassigned.

Name (Print): \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_
(Representing the Food Establishment)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_
(Representing the City of Memphis, Division of Public Works)

This permit was received for the FE by:

Name (Print): \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_
(Representing the Food Establishment)

Please See Reverse Side for the General Permit Conditions



## Section 33-112-01 of the Food Establishment Wastewater Discharge Ordinance

- A. Grease Trap Required: All food service establishments discharging wastewater to the City's wastewater facilities shall install, operate, and maintain a sufficiently sized oil and grease, water and solids separator (hereinafter called grease trap) necessary to achieve and maintain compliance. Approval of the City of Memphis, Public Works Division will be required during the construction plans approval process.
- B. Design Criteria: All grease traps used in conjunction with food service establishments shall have the capacity of 15 gallons per seat, except that no single grease trap shall be smaller than 750 gallons or larger than 3000 gallons. In certain cases, multiple grease traps may be utilized. Alternative treatment technologies will be considered on a case-by-case basis for food establishments that are to be located in an existing building where a large grease trap is not feasible.
- C. General Permit to Discharge: All food establishments will obtain a permit to discharge to the wastewater system from the Division of Public Works. This permit will be posted on the premises and renewed as needed. The permit will require the permit holder to comply with the following requirements:

### GENERAL PERMIT CONDITIONS

- 1. Retain this permit on the premises and make available upon request. [Section 33-112-01C]
- 2. Have grease removal equipment (GRE) intercept the waste lines leading from all sinks, drains, appliances, and other fixtures or equipment used in food preparation or cleanup where fat, oil, grease or greasy matter may be introduced into the sewer system. [Section 33-112-08]
- 3. Confine all processes that may introduce fat, oil, grease, and greasy matter into the sewer to fixtures connected to GRE. [Section 33-112-08]
- 4. No matter containing more than 500 mg/L of oil and grease or that might otherwise obstruct the sewer flow, nor any matter that might create a hazardous condition may be discharged into the sewer system. [Sections 33-112-02, 33-112-08 and 33-112-09]
- 5. Maintain GRE in efficient operating condition by periodic removal of the accumulated grease and solids. No such collected material shall be introduced into any drainage pipe or public sewer. [Section 33-112-08]
- 6. Maintain a GRE cleaning log or save maintenance receipts. Retain on the premises for a period of no less than two (2) years. [Section 33-112-09]
- 7. Provide a collection drum or other container for maximum segregation of fat, oil, and grease. [Section 33-112-08]
- 8. Implement and post a grease spill control plan when required. [Section 33-112-08]
- 9. You must notify the Food Establishment Wastewater Discharge (FEWD) Program within 14 days at (901) 576-4328 of any;
  - a. Sale, lease, transfer, or reassignment of premise or operation [Section 33-112-06]
  - b. Change of facility name [Section 33-112-06]
  - c. Material changes in food preparation or kitchen practices and/or addition of equipment that requires and/or generates fats, oils, or grease. [Section 33-112-06]
- 10. You must notify the Food Establishment Wastewater Discharge (FEWD) Program within five (5) days at (901) 576-4328 of any spills that result in the discharge of fats, oils, or grease to the sewer system
- 11. You must allow City representative(s) ready access at all reasonable times to all parts of the premises for purpose of sampling and inspection. [Sections 33-112-09, 33-141 and 33-143]
- 12. Permit is non transferable; any sale, lease, transfer, or assignment of the premise or operation for which it was issued shall require a new permit. [Section 33-112-06]
- 13. The terms and conditions of the permit are subject to modifications and change by the City during the life of the permit. [Section 33-112-05]
- 14. Any person(s) who knowingly makes any false statement or representation, or submits any false record, report, plan, or other document shall be guilty of violating the City of Memphis Sewer Use Ordinance.
- 15. Any person(s) discharging wastewater in violation of the Food Establishment Wastewater Ordinance or FEWD Permit is subject to fines, civil penalties, cost recovery, injunction, termination of sewer service, permit revocation and/or such other remedies as are available to the Director. [Section 33-112-10]



# **Appendix E**

## **Food Establishment Denial Letter**

# City of Memphis



1403  
Division of Public Works, Environmental  
Food Establishment Wastewater Discharge Program  
2303 North Second Street, Tennessee 38127-7500  
Telephone: (901) 576-4301 Fax: (901) 636-4325

TENNESSEE

Thursday, July 08, 2010

Laura Swift  
Save-A-Stop  
1461 Pendelton  
Memphis, TN 38114

RE: Save a Stop @ 1461 Pendelton

Mrs. Swift,

This letter is in reference to your request on July 8, 2010 requesting a review and approval for a grease trap.

You must install a GRE with a capacity of 100 pounds. The installation must meet Shelby County Code requirements in order to be permitted.

Please be advised that alternative treatment technologies have been approved in the treatment of this facility's wastewater. A more frequent cleaning schedule may be required after the trap has been placed into service. Additionally, the City of Memphis reserves the right to require larger and/or additional pretreatment equipment should conditions ever indicate a need. Please note that you are required to notify the City of Memphis of any changes in the operations of this business.

If you should have any questions, please contact me at (901) 576-4301.

Sincerely,

A handwritten signature in cursive script, appearing to read "James Greenlee".

James Greenlee, E.I.T.  
Industrial Monitoring

## **Appendix F**

### **GRE Maintenance Log**



# **Appendix G**

## **Inspection Checklist/NOV**



# The City of Memphis, Division of Public Works, Environmental Food Establishment Wastewater Discharge Inspection Checklist / Notice of Violation

Business Name: \_\_\_\_\_ Contact Person: \_\_\_\_\_

Address: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Inspection Type: Initial / Annual / Follow-up / Other

- 1. Permit **unavailable**. [Section 33-112-01C]
- 2. Maintenance Log **unavailable** or **incomplete**. [Section 33-112-09]
- 3. Food Establishment Sold, Transferred, or Re-assigned. [Section 33-112-06]
- 4. Inspector denied reasonable access. [Section 33-112-09]
- 5. Violation of location specific – permit conditions. [Section 33-112-08]

Nos. 1, 2, 3, 4, or 5 is immediate failure due to negligence of Permit Conditions and the Sewer Use Ordinance

6. GRE Size \_\_\_\_\_ [ lbs. or gals. ]                      8. Total depth \_\_\_\_\_ [ft.- in.]  
7. GRE Location \_\_\_\_\_                      9. Thickness of accumulated grease \_\_\_\_\_ [ft.- in.]

No. 9 (above) greater-than or equal to 1/3 of No. 8 (above), therefore, GRE is not being properly maintained and must be cleaned within two (2) weeks.

10. Amount of grease build up on interior walls of the trap approximately \_\_\_\_\_ [inches]

No. 10 (above) is deemed to be excessive; trap must be cleaned within two (2) weeks.

11. Current grease trap cleaning frequency \_\_\_\_\_ Date Last Cleaned \_\_\_\_\_

Increase grease trap cleaning frequency from \_\_\_\_\_ to \_\_\_\_\_. (Notify Program Mgr.)

Reason for cleaning frequency increase \_\_\_\_\_

12. Which of the following fixtures are incorporated in the trap?

Baffle \_\_\_\_ / Invert or vent pipe \_\_\_\_ / Inspection plate \_\_\_\_ / Other (specify) \_\_\_\_\_

13. Condition of baffle (where applicable)

- Excessive grease build-up (baffle must be cleaned).
- Excessive rust or other physical flaws (baffle must be replaced).
- Improperly installed (baffle must be re-installed correctly).

14. Strainers & Clean-out Caps

Missing or damaged strainers must be replaced at (specify locations) \_\_\_\_\_

Missing or damaged clean out caps must be replaced at (specify locations) \_\_\_\_\_

15. Inspection Results

- Inspection Passed
- Inspection Failed – Take corrective measures as indicated above.
- Inspection Failed due to Nos. 1 or 3, and possibly No. 5 requires new permit to be issued.

Civil Penalty Served Civil Penalty No. \_\_\_\_\_ Date Served \_\_\_\_\_

A follow-up inspection will be conducted on \_\_\_\_\_ to ensure compliance with the corrective measures indicated above. If required, a new permit will be issued at this time.

**Any person(s) discharging wastewater in violation of the Food Establishment Wastewater Ordinance or FEWD Permit is subject to fines, civil penalties, cost recovery, injunction, termination of sewer service, permit revocation and/or such other remedies as are available to the Director. [Section 33-112-10]**

Comments \_\_\_\_\_

Inspection Conducted by: \_\_\_\_\_ [Phone No. (901) 576-4328]

Notice of Violation Received by: \_\_\_\_\_ Date Received \_\_\_\_\_

# **Appendix H**

## **Approved Waste Haulers**

# City of Memphis Permitted Waste Haulers

<b>Waste hauler Name</b>	<b>Phone Number</b>	<b>Waste hauler Name</b>	<b>Phone Number</b>
A Rooter Man	(901) 681-0888	Mid-South Septic	(901) 867-2085
A-1 Septic Tank & Drain Ser	(662) 233-4565	Performance Contracting	(901) 377-3289
AAA Pumping Service	(901) 388-1867	Property Maintenance	(901) 576-4776
ABC Septic Service	(662) 838-4433	Rineco	(501) 778-9089
A-OK Pumping Services	(662) 781-7735	Rogers Pumping Service	(901) 357-5306
Arrow Portable Services, Inc	(901) 360-0980	Safety Quip	(901) 452-7040
Billy Rogers	(901) 652-8954	Sani-Tech Services	(615) 843-6828
Blue Star Environmental	(901) 890-2300	Silvey Service	(901) 872-0772
Budget Septic Servicees	(901) 837-0503	Snyder Services Plumbing	(901) 452-5953
Caver Septic Service, LLC	(800) 576-7191	Southern Distributors	(901) 743-0023
David Cleveland Pumping	(901) 353-4422	Synagro	(256) 351-0448
David Hensley Pumping Ser	(901) 872-7968	Thompson Industrial Servic	(901) 362-7700
Dyno Sewer (A-Aaa Dutton	(901) 360-8888	Underground Unlimited Wa	(901) 497-1291
Early Environmental Contra	(502) 647-3223	Universal Transport, Inc.	(501) 888-6557
Grant County Excavation	(575) 534-4239	Upchurch Services, LLC	(901) 388-0333
Grease Trap Service Pros.	(870) 732-0012		
Griffin Industries Inc.	(901) 396-3191		
Guy's Plumbing	(901) 461-2175		
Hill Services Industrial & En	(901) 388-7500		
Hill Services Plumbing & H	(901) 388-7500		
Holmes	(901) 357-1200		
Jim's Tank Service	(901) 357-7237		
Jolly Septic Service	(901) 553-2454		
Laceys Cleaning Company	(662) 470-4305		
Layne Central Company	(901) 274-2324		
Lindy's Pumping Service	(901) 353-3433		



# **Appendix I**

## **Waste Hauling Permit**

**City of Memphis, Division of Public Works  
Agreement to Discharge Hauled Waste  
Permit # 000000**

1. **Company Name:**
2. **Company Representative:**
3. **Company Address:**  
**Street Number & Name and City/State/Zip Code**
4. **Mailing Address:**
5. **Phone Number:**

By this agreement and under the limitations specified by the Division of Public Works  
----- is authorized to discharge hauled waste at the M. C. Stiles Treatment Plant.

Four types of hauled wastewaters from anywhere will be accepted for disposal with properly completed manifest without prior written approval. These four types of wastes are residential household septic tanks, restaurant grease traps, drive through car wash traps, and portable toilets. These four types of wastes will be accepted for a charge based on the current rate per gallon of truck capacity as determined by the Division of Public Works. The waste hauler will be billed the following month for all the volumes discharged for the previous month. Payments to the City must be paid within two weeks of the billing date or disposal privileges will be withdrawn.

Hauled Wastewater Billing  
City of Memphis, Division of Public Works  
P.O. Box 27170  
Memphis, Tennessee 38167-0170

No industrial wastewater including landfill leachate and/or wastewater of any kind originating from an industrial entity located in the City of Memphis sewer service area may be picked up for disposal unless the entity producing the waste has a letter of approval from the City of Memphis Environmental Department. The generator of the waste must write a letter containing all required information requesting approval to dispose of the waste and must receive the letter of approval prior to the pick up of the waste. A copy of the approval letter and properly completed manifest must accompany the permitted waste hauler during the disposal at the City of Memphis' designated discharge point. The disposal fee will be based on the current rate per gallon of truck capacity as determined by the Division of Public Works.

Industrial wastewaters and sludges generated outside the City of Memphis sewer service area will have to be evaluated on a case by case basis and the disposal fees will be based on the type of wastewater generated and will have to be agreed upon with the generator of waste and the City of Memphis prior to transporting of the waste. After the City of Memphis and the waste generator have agreed in a formalized document, a letter of approval will be issued, and a copy of this

approval letter will have to accompany the licensed waste hauler during the disposal in addition to the properly completed manifest. The disposal fee will be determined on a case-by-case basis for industrial wastewaters and sludges from outside the City of Memphis sewer service area.

No hazardous waste may be picked up from any source for disposal at the City of Memphis' designated discharge point. All hauled wastewater must have a pH of 5.5 standard units or above and have been certified by the originator of the wastewater as containing no compounds in concentrations that would make the wastewater classified as a hazardous waste. Decanting or back flushing of the grease trap or its wastes for the purpose of reducing the volume to be hauled is prohibited.

Failure to renew and/or obtain a waste hauler permit will result in the waste hauler not being allowed to use the City of Memphis' designated discharge point for disposal.

Violation of any of the City of Memphis requirements for discharging hauled wastewater will result in enforcement actions, which may include administrative fines, withdrawal of the privilege to use the City of Memphis wastewater system, and suspension of the existing waste hauler permit and/or prohibition from obtaining a new waste hauler permit,

Whereas, ----- **located at** ----- desires to discharge to the Memphis sewer system; and

Whereas, ----- agrees to comply with all requirements specified above and any revision thereof.

Now therefore,----- **is granted the right to discharge hauled wastewater of such characteristics and volume as described in this wastewater discharge permit into the City of Memphis sewer system from July 21, 2005 to July21, 2006.**

**Approved by:**

**Authorized Company Representative:**

\_\_\_\_\_  
**Manager, Industrial Monitoring**

\_\_\_\_\_  
**Signature/Date**



## **Appendix J**

### **Liquid Waste Manifest**

**CITY OF MEMPHIS  
DIVISION OF PUBLIC WORKS  
LIQUID WASTE HAULER MANIFEST FORM**

Company Name \_\_\_\_\_

Permit No. \_\_\_\_\_ Truck License No. \_\_\_\_\_

Card No. \_\_\_\_\_ Gallons Pumped \_\_\_\_\_

Date Pumped \_\_\_\_\_ Time Pumped \_\_\_\_\_

Customer Name \_\_\_\_\_

If Customer is a Business, Type of Business \_\_\_\_\_

Customer Phone Number \_\_\_\_\_

Address \_\_\_\_\_

Vessel Pump was: \_\_\_\_\_ Septic Tank \_\_\_\_\_ Grease Trap \_\_\_\_\_

Other (describe): \_\_\_\_\_

**CUSTOMER CERTIFICATION**

As an authorized representative of the above named customer, I certify under penalty of law that the above information is true and correct to the best of my knowledge, and further certify that the material being pumped does not contain hazardous wastes as defined by the Federal Resource Conservation and Recovery Act.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Print Name/Title \_\_\_\_\_

**LIQUID WASTE HAULER CERTIFICATION**

I certify under penalty of law that the above information is true and correct to the best of my knowledge, and further certify that the truck listed above contains the materials listed above in Customer Certification and does not contain hazardous wastes as defined by the Federal Resource Conservation and Recovery Act.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Print Name/Title \_\_\_\_\_

To be completed by M. C. Stiles Treatment Plant Representative at the time of discharge:

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Sample ID No. (if collected): \_\_\_\_\_

Comments: \_\_\_\_\_

Print Name/Title \_\_\_\_\_

White copy - Wastewater  
Canary copy - Hauler  
Pink copy - Customer

# **Appendix K**

## **Waste Log**

# DAILY LOG FOR DISPOSAL OF HAULED WASTE AT THE STILES TREATMENT PLANT

Date: \_\_\_\_\_

	Time	Company Name	Sewer Fee Truck Billing #	Truck Tank Capacity (Gallons)	Driver Name	Operator Name
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						



# **Appendix L**

## **Door Hanger**

**POR FAVOR UTILICE LA TAPA CONECTADA.  
LEA ABAJO PARA LOS DETALLES.**



## **CANTIDAD EXCESIVA DE LA ALACANTARILLA EN SU VECINDARIO**

La Ciudad respondió recientemente a la cantidad excesiva de la alcantarilla que fue causada por la GRASA.

Respuestas por la capacidad excesiva les CUESTA DINERO a los CONTRIBUYENTES.

PARA PROTEGER SU SISTEMA DE PLOMERÍA, NUESTRA SALUD, EL AMBIENTE, Y LAS ALCANTARILLAS DE LA CIUDAD, ACEPTÉ LA TAPA REUTILIZABLE "ECHA LA GRASA EN UNA LATA"

**¡ECHA LA GRASA  
EN UNA LATA!**

1. Eche la grasa en una lata.
2. Póngale la tapa y luego en el congelador.
3. Cuando se llene, quite la tapa y eche la lata en la basura.
4. Reutilice la tapa.

**NO ECHE LA GRASA EN EL  
DESAGUADERO AYUDE GRARDAR  
DINERO DE LOS CONTRIBUYENTES**

**Please Use the Attached Lid:  
Read Below For Details**



## **SEWER OVERFLOW IN YOUR NEIGHBORHOOD**

The City recently responded to a sewer overflow which was caused by GREASE in the sewer.

Overflow Response COSTS Taxpayers MONEY.

**TO PROTECT YOUR PLUMBING SYSTEM,  
PUBLIC HEALTH AND ENVIRONMENT  
& THE CITY'S SEWERS,**

Please accept the attached reusable lid to help the City  
**"CAN THE GREASE"**

**DO NOT POUR GREASE DOWN THE DRAIN  
SAVE TAXPAYERS' MONEY**



Please Use the Attached Lid:  
Read Below For Details



## SEWER OVERFLOW IN YOUR NEIGHBORHOOD

The City recently responded to  
a sewer overflow which was caused by  
**GREASE** in the sewer.

Overflow Response **COSTS** Taxpayers  
**MONEY.**

TO PROTECT YOUR PLUMBING SYSTEM,  
PUBLIC HEALTH AND ENVIRONMENT  
& THE CITY'S SEWERS,  
Please accept the attached reusable lid  
to help the City  
"CAN THE GREASE"



DO NOT POUR GREASE DOWN THE DRAIN  
SAVE TAXPAYERS' MONEY



**Appendix M**  
**FOG Pamphlets**



# Fats, Oils, and Greases aren't just bad for your arteries and your waistline; they're bad for sewers, too.

Sewer overflows and backups can cause health hazards, damage home interiors, and threaten the environment. An increasingly common cause of overflows is sewer pipes blocked by grease. Grease gets into the sewer from household drains as well as from poorly maintained grease traps in restaurants and other businesses.

## Where does the grease come from?

Most of us know grease as the byproduct of cooking. Grease is found in such things as:

- Meat fats
- Lard
- Cooking oil
- Shortening
- Butter and margarine
- Food scraps
- Baking goods
- Sauces
- Dairy products

Too often, grease is washed into the plumbing system, usually through the kitchen sink. Grease sticks to the insides of sewer pipes (both on your property and in the streets). Over time, the grease can build up and block the entire pipe.

Home garbage disposals do not keep grease out of the plumbing system. These units only shred solid material into smaller pieces and do not prevent grease from going down the drain.

Commercial additives, including detergents, that claim to dissolve grease may pass grease down the line and cause problems in other areas.



© James L. Graham, Jr., P.E.

## The results can be:

- Raw sewage overflowing in your home or your neighbor's home;
- An expensive and unpleasant cleanup that often must be paid for by **you, the homeowner**;
- Raw sewage overflowing into parks, yards, and streets;
- Potential contact with disease-causing organisms; and
- An increase in operation and maintenance costs for local sewer departments, which causes higher sewer bills for customers.



© NYCDEP

## What we can do to help

The easiest way to solve the grease problem and help prevent overflows of raw sewage is to keep this material out of the sewer system in the first place.

### There are several ways to do this.

- 1) Never pour grease down sink drains or into toilets.
- 2) Scrape grease and food scraps from trays, plates, pots, pans, utensils, and grills and cooking surfaces into a can or the trash for disposal (or recycling where available).
- 3) Do not put grease down garbage disposals. Put baskets/strainers in sink drains to catch food scraps and other solids, and empty the drain baskets/strainers into the trash for disposal.
- 4) Speak with your friends and neighbors about the problem of grease in the sewer system and how to keep it out. Call your local sewer system authority if you have



# What Restaurant and Building Owners Need to Know About Grease Traps or Interceptors

Restaurants, large buildings, such as apartment complexes; and other commercial establishments may have grease traps or interceptors that keep grease out of the sewer system. For a grease trap or interceptor to work correctly, it must be properly

- 1** Designed (sized and manufactured to handle the amount that is expected),
- 2** Installed (level, vented, etc.), and
- 3** Maintained (cleaned and serviced on a frequent basis).

Solids should never be put into grease traps or interceptors. Routine, often daily, maintenance of grease traps and interceptors is needed to ensure that they properly reduce or prevent blockages.

Be cautious of chemicals and additives (including soaps and detergents) that claim to dissolve grease. Some of these additives simply pass grease down pipes where it can clog the sewer lines in another area.

# Fat-Free Sewers

This brochure was prepared under Cooperative Agreement Assistance #CX824505-01-0 between the Water Environment Federation (WEF) and the U.S. Environmental Protection Agency. For more information, contact your local sewer system authority or the

**Water Environment Federation**  
601 Wythe Street  
Alexandria, VA 22314-1004  
Phone: 703/684-2400  
Fax: 703/684-2492  
Web site: <http://www.wef.org>

For additional copies of this brochure, contact WEF at 1-800-666-0206, 1-703-684-2452 or <http://www.wef.org>



## How to Prevent Fats, Oils, and Greases from Damaging Your Home and



Las grasas y los aceites no sólo son perjudiciales para las arterias y para la figura; también son dañinos para las alcantarillas.

Los derrames y reflujos de aguas residuales pueden ser peligrosos para la salud, dañar el interior de los hogares y amenazar el medio ambiente. Una causa cada vez más común de derrames son las obstrucciones de las tuberías de alcantarillado por la grasa, que penetra en el sistema desde desagües domésticos y trampas mal mantenidas en restaurantes y otros negocios.

Para obtener copias adicionales de este folleto, llame al 1-800-666-0206 ó 1-703-684-2452, o vaya a: <http://www.wef.org>.



Copyright © 2000 Water Environment Federation.  
♻️ Impreso en papel reciclado con tinta a base de soja.

N.º de ref.: HS1100 6/01

# Alcantarillas sin grasa

Cómo impedir que las grasas y los aceites dañen su hogar y el medio ambiente



# **Appendix N**

## **FOG Press Release**





**FOR IMMEDIATE RELEASE**

CONTACT: Sharon Gordon, 576-4349, [sharon.gordon@memphistn.gov](mailto:sharon.gordon@memphistn.gov)

## **Keeping Cooking Fats, Oils, and Grease Out of City Sewer System Will Help Prevent Harmful Sewer Backups**

**Memphis, TN (December 3, 2009)** – Do your part to prevent sewer backups by properly disposing of cooking fats, oils, and greases (FOG). These products should never be poured down a household sink – the FOG clings to pipes in the city’s sanitary sewer system. Over time, this FOG may build up and block the pipe, causing overflows that could put contaminated sewage into your home, neighborhood, and area lakes, rivers, and streams.

The City of Memphis Storm Water Program encourages everyone to properly dispose of fats, oils, and greases as a way of helping prevent blockages that allow raw sewage to enter our city’s storm water system. The storm water system carries water safely out of neighborhoods and delivers it to the Loosahatchie and Wolf Rivers and to Nonconnah Creek. These in turn carry the water to the Mississippi River and McKellar Lake.

You can help prevent FOG-caused sewer backups by:

- Reusing cooking oil when possible, or properly disposing of it by placing it in a sealable container, refrigerating until the oil thickens, and disposing of the oils by including the container with your other garbage. You can dispose of small amounts of oil or grease by pouring the material on used newspaper or other absorbent material and placing it in your household garbage.
- Scraping food scraps in the trash, not the sink.
- Even when you run hot water after pouring grease into the sink, the grease will solidify and restrict the flow in the pipe as soon as the water cools, and may cause an overflow.
- Wiping pots, pans, and dishes before rinsing or washing them.
- Placing a catch screen over the sink drain when washing dishes to catch small scraps that would otherwise go down the drain.

A sewer backup in your home can cause damage, is unsanitary, and hard to clean up. A sewer backup in your neighborhood is unpleasant for all. So watch out for FOG – fats, oils, and greases – in the drain when working in your kitchen.

**For more information about grease disposal, call 576-4328 or to report a sanitary overflow call 529-8025. To learn more about the city’s Storm Water Program call 576-4349.**

###

E-mailed to:

WKNO-FM

Entercom Radio, Memphis, which includes:

94.1 KQK Classic Hits

99.7 FM100

WMC 79 Country Legends

Am & fm

104.5 WRVR The River

92.9 FM and 680 AM ESPN Sports Radio

FAXed to:

The Commercial Appeal

The Cordova Appeal

Memphis Business Journal

The Memphis Flyer

The Daily News

The Downtowner

Daily Helmsman (U of M)

The Hebrew Watchman

The Tri-State Defender

Best Times

The Silver Star News

La Prensa Latina

WHBQ-TV

WLMT-TV

WPTY-TV

WMC-TV

WREG-TV

WMPS AM

WHBQ AM and FM

KXHT FM

WMFS FM

WQOX FM

WREC AM

WKIM FM

KJMS FM

WCRV AM

KWAM AM

WEGR FM

WUMR FM

WLOK AM

WDIA AM

WHRK FM

## **Appendix D**

### **Lift Stations Receiving SCADA Installation**

### Lift Stations to Receive SCADA

1 Auction	2556 Thousand Oaks
380 North Third	4239 South Mendenhall
2844 Coach	682 Greystone
4417 Raleigh Lagrange	4280 Old Brownsville
4479 Northwood Hills	4329 Wildwood
408 Island Drive	4478 Wildwood
2366 Blue Road	4411 Cedar Hills
2951 Calvert	4313 Cedar Hills
5065 North Watkins	4286 Sunset Point East
2619 Monette	9503 Rocky Hills
4360 Ann Arbor	5175 Jonetta
4292 Genyth	47 West Vanhusen
3919 Lakewood	4884 Highway 61 South
3997 Martindale	1324 Holmes Road
280 South Island Drive	5595 Horn Lake
5230 Raleigh Millington	277 Windsor
1490 Bellevue	4730 East Shore
5985 Woodstock Hills	4950 East Shore
2918 Rangeline	1474 West Shelby Drive
119 Gayoso	1868 Memphis Depot
4791 Bolen Huse	5035 Mallard Point
1254 Big Orange	4784 Cora Road
5184 Pleasant View	1585 West Mitchell
4486 Window	120 Industrial
5730 Saranac	Riverport #2
9651 Woodland Run	5455 Elvis Presley
2837 Schaeffer	3461 Airways
9561 El Hill	1217 Meadowlark
9624 El Hill Cove	5471 Vandergreen
9680 Highway 64	1043 Wilson
8709 Rockcreek Parkway	5081 Hillbrook
2646 Countrywood	3022 Josibett
251 Walnut Bend	386 Jack Carley
1525 Kimbrough	482 Jack Carley
1399 Ridgeway	2820 Harbor
5251 Brenton	400 West Illinois
9666 Woodland View	1141 North Second
948 Rocky Oaks Trail	542 North Watkins
9612 Grove	Bayou Gayoso
950 Early Maxwell	2565 Winchester
360 North Highland	Pyramid

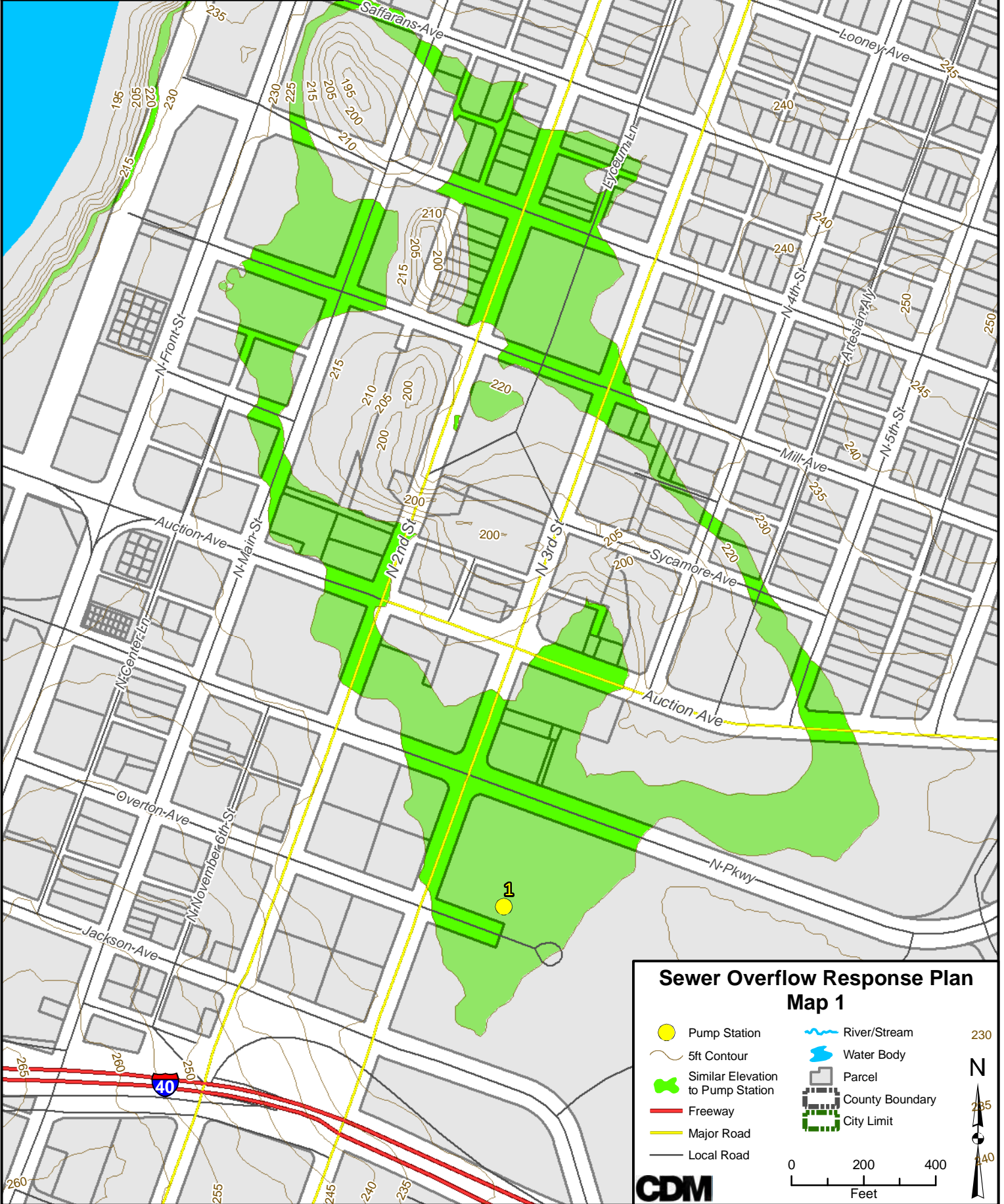
# Appendix F

## Lift Station Critical Manholes

**Appendix F  
Lift Station Critical Locations**

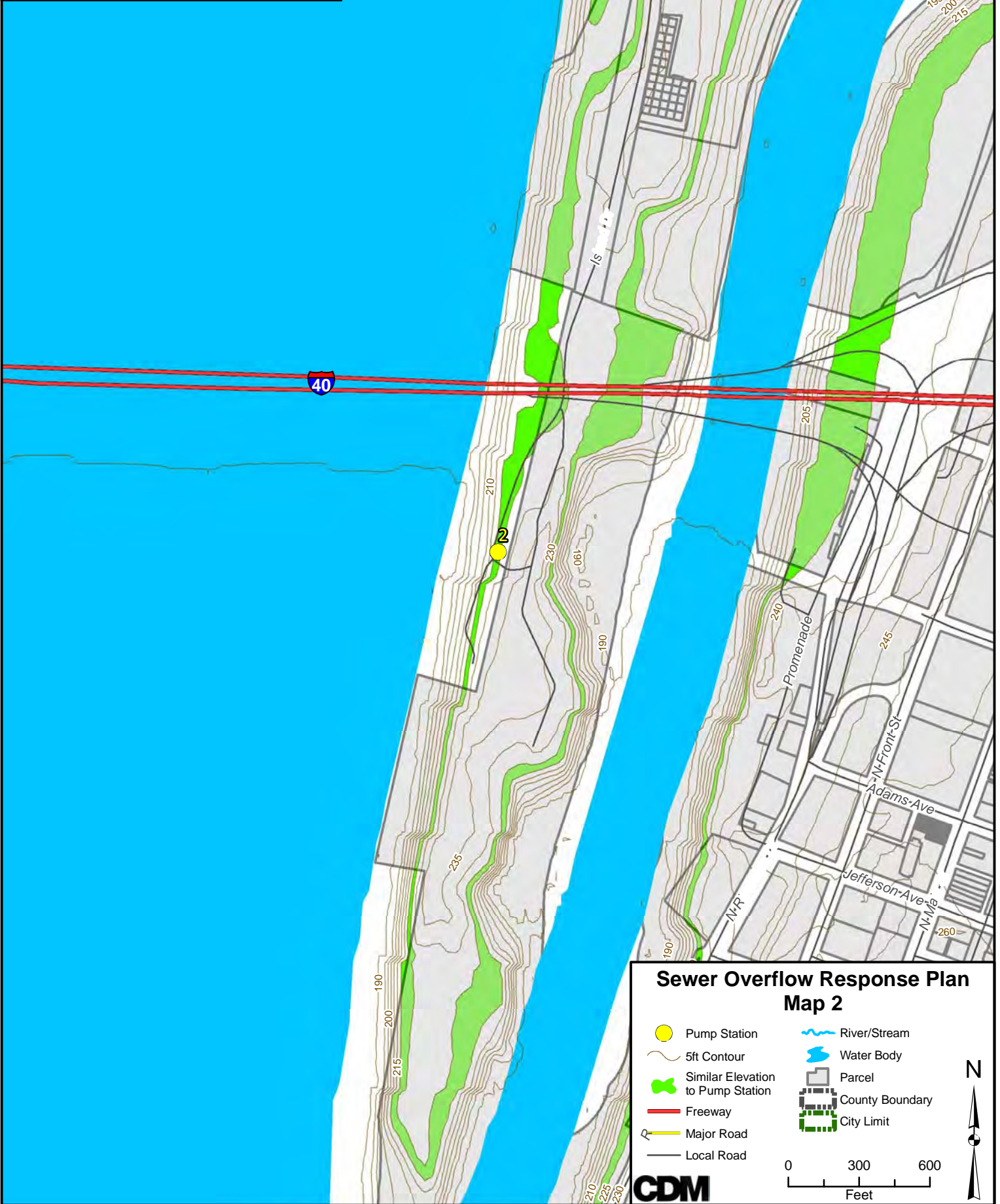
<b>ID</b>	<b>Address</b>	<b>Elevation</b>	<b>Mapbook Page</b>	<b>Critical Locations</b>
1	380 North Third	223.17	620	North on North 3rd Street to North Parkway
2	Mud Island #2	220.51	619	Island Drive under the I-40 Overpass
3	5230 Raleigh Millington	227.96	359	North Along Raleigh Millington Road to the Intersection of Fite Road
				Fite Road west of Blue Sky Drive
4	1490 North Bellevue	236.92	565	North on North Bellevue Boulevard to the I-40 Overpass
5	1254 Big Orange	284.17	-	East of Macon Road & Big Orange Road Intersection
				Intersection of Laurisa Drive & Rocky Hills Drive
6	8709 Rockcreek Parkway	341.65	-	Adjacent to Lift Station on Rockcreek Parkway
7	1525 Kimbrough	266.7	757	Kimbrough Road from Stonewyck Road to Farmingdale Road
				West of Farmingdale Road to Intersection with Golden-Fields Drive
8	950 Early Maxwell	310.12	713	Intersection of Early Maxwell Boulevard & Kentucky Avenue
				Intersection of Early Maxwell Boulevard & Mississippi Avenue
				Intersection of Mississippi Avenue and Alabama Street
9	1324 West Holmes	240.13	1062	Locations West Along Longcrest Road from Lift Station
10	4950 East Shore	235.08	1062	Locations adjacent to Lift Station
11	1474 West Shelby Drive	240.25	1021	Locations Adjacent to Lift Station
				South on Coro Road Until Sharp Bend to West
				South on Lakeridge Drive to Intersection of North Drive
12	1585 West Mitchell	256.69	869	Adjacent to Lift Station
13	Riverport #2	214.61	839	Adjacent to Lift Station
14	1043 Wilson	303.31	710	South on Wilson Street to Intersection of McLemore Avenue
15	386 Jack Carley	215.96	707	Adjacent to Lift Station
16	2820 Harbor	223.51	802	Harbor Avenue to End of Line (Approximately 5 Houses Northwest)
				Harbor Avenue to End of Line (Approximately 10 Houses Southeast)
17	35 West Saffarans	234.37	593	North on North Front Street to Keel Avenue
				South on North Front Street to Auction Avenue
18	1141 North Second	227.81	564	Adjacent to Lift Station
19	4791 Bolen Huse	255.91	360	Adjacent to Lift Station
20	1399 Ridgeway	299.33	786	South Along Ridgeway Road to the Intersection of Quince Road
21	4239 Mendenhall	282.91	994	Adjacent to Lift Station

ID	Pump Station Address	Elevation (ft)
1	380 N Third	223.17



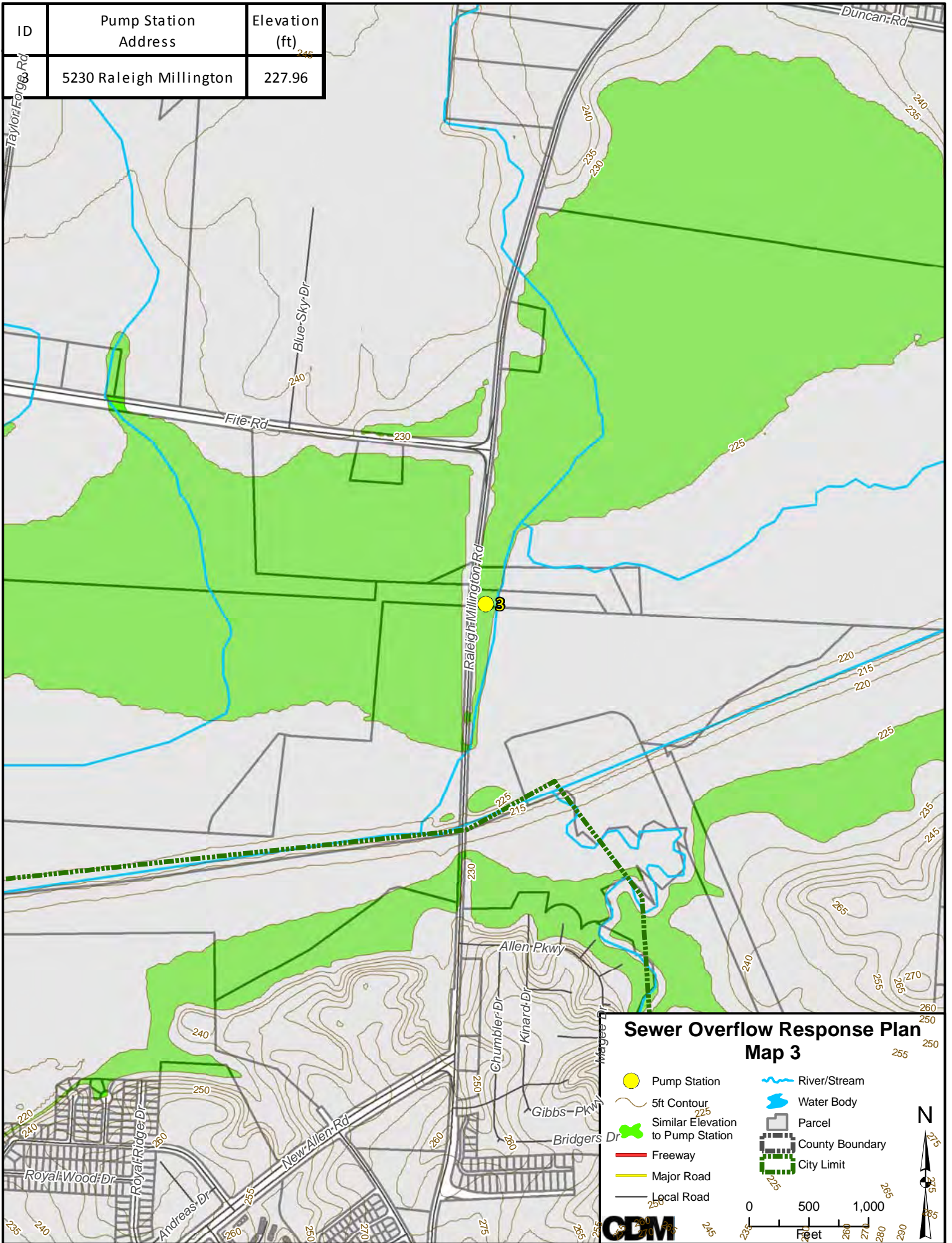


ID	Pump Station Address	Elevation (ft)
2	Mud Island # 2	220.51



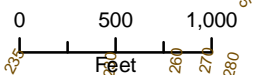


ID	Pump Station Address	Elevation (ft)
	5230 Raleigh Millington	227.96



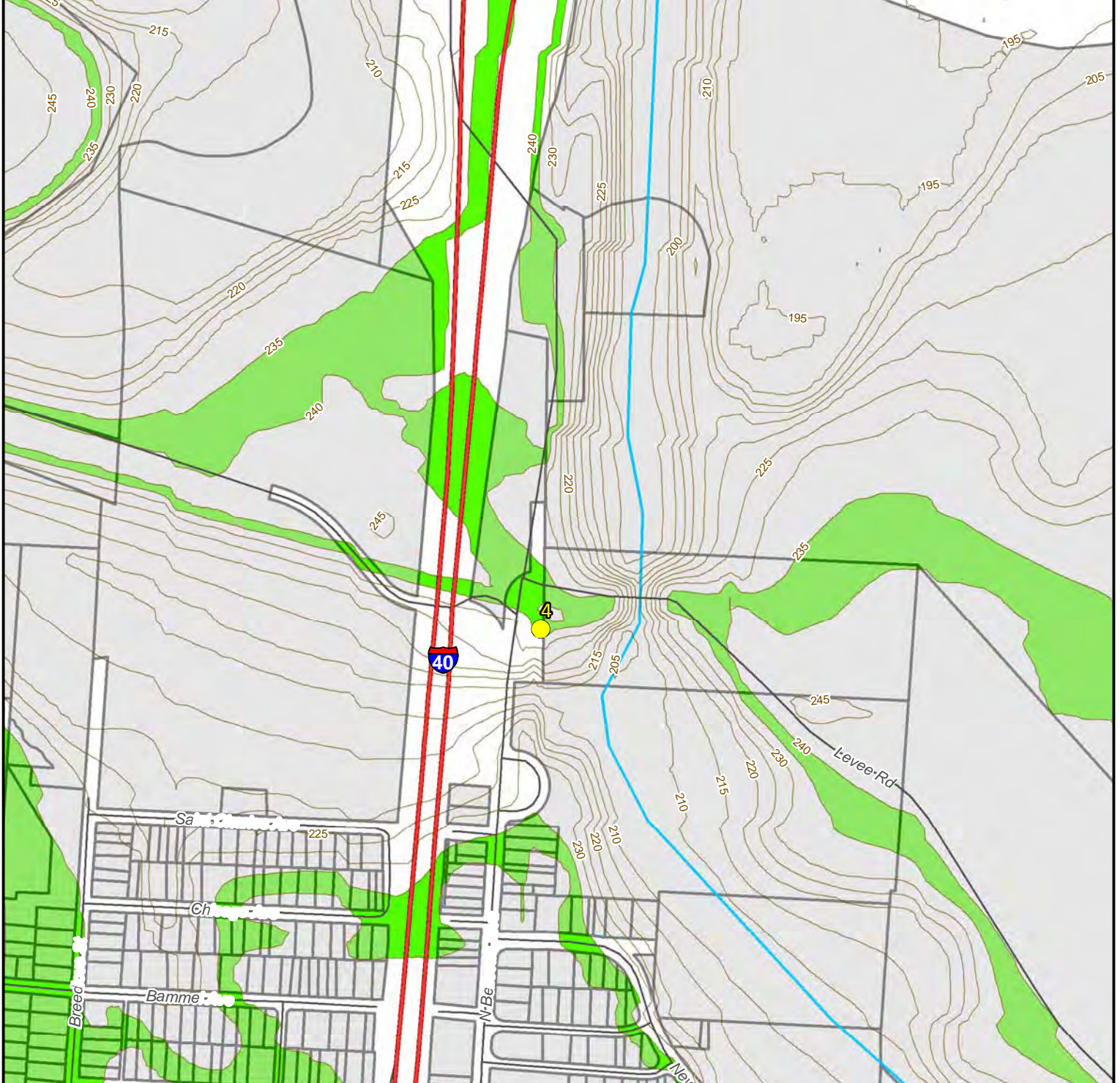
### Sewer Overflow Response Plan Map 3

- Pump Station
- ~ River/Stream
- Water Body
- 5ft Contour
- Parcel
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- County Boundary
- City Limit



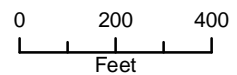


ID	Pump Station Address	Elevation (ft)
4	1490 N Bellevue	236.92



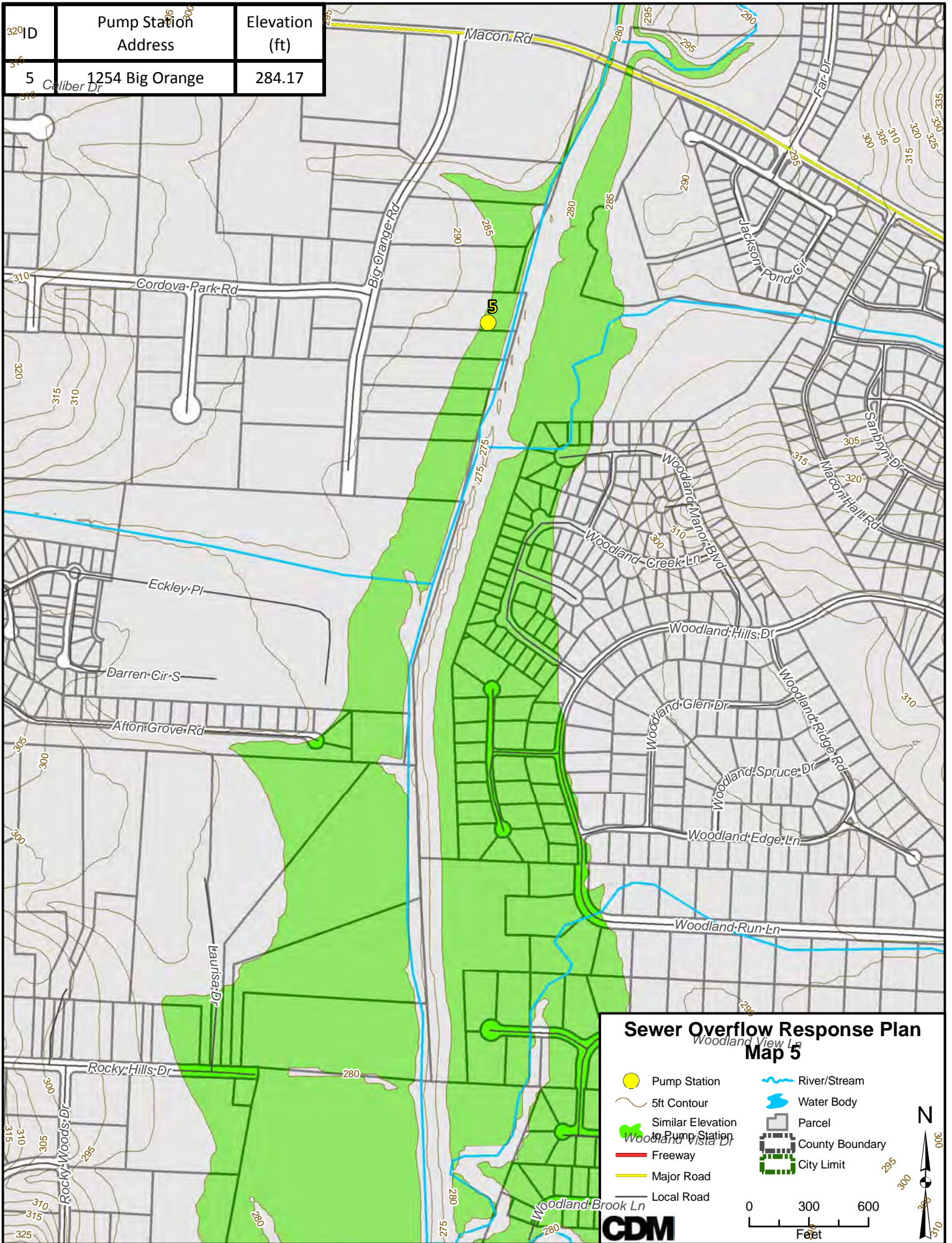
### Sewer Overflow Response Plan Map 4

- Pump Station
- 5ft Contour
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- River/Stream
- Water Body
- Parcel
- County Boundary
- City Limit



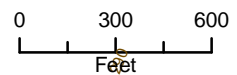


ID	Pump Station Address	Elevation (ft)
5	1254 Big Orange	284.17



**Sewer Overflow Response Plan  
Map 5**

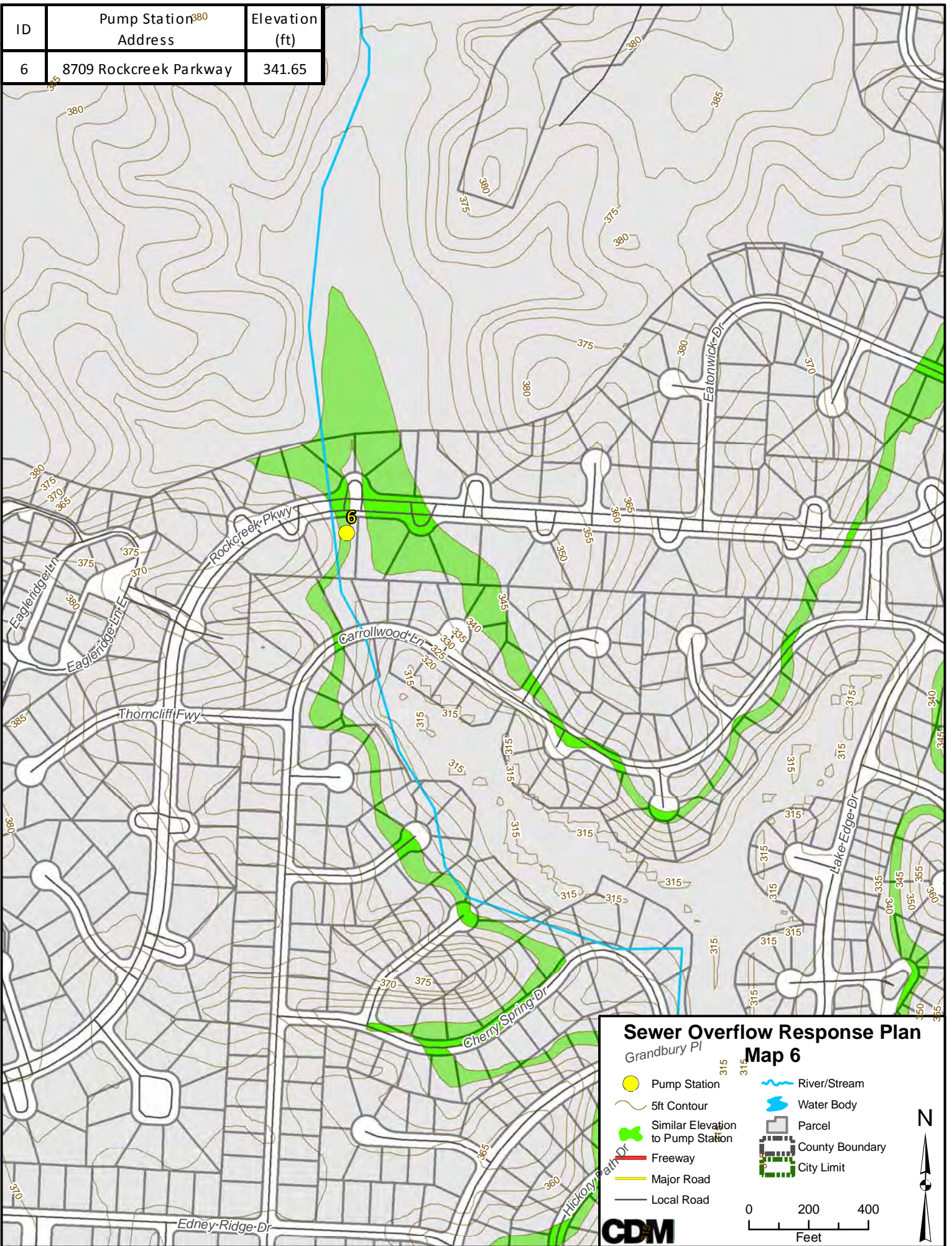
- Pump Station
- 5ft Contour
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- River/Stream
- Water Body
- Parcel
- County Boundary
- City Limit



**CDM**

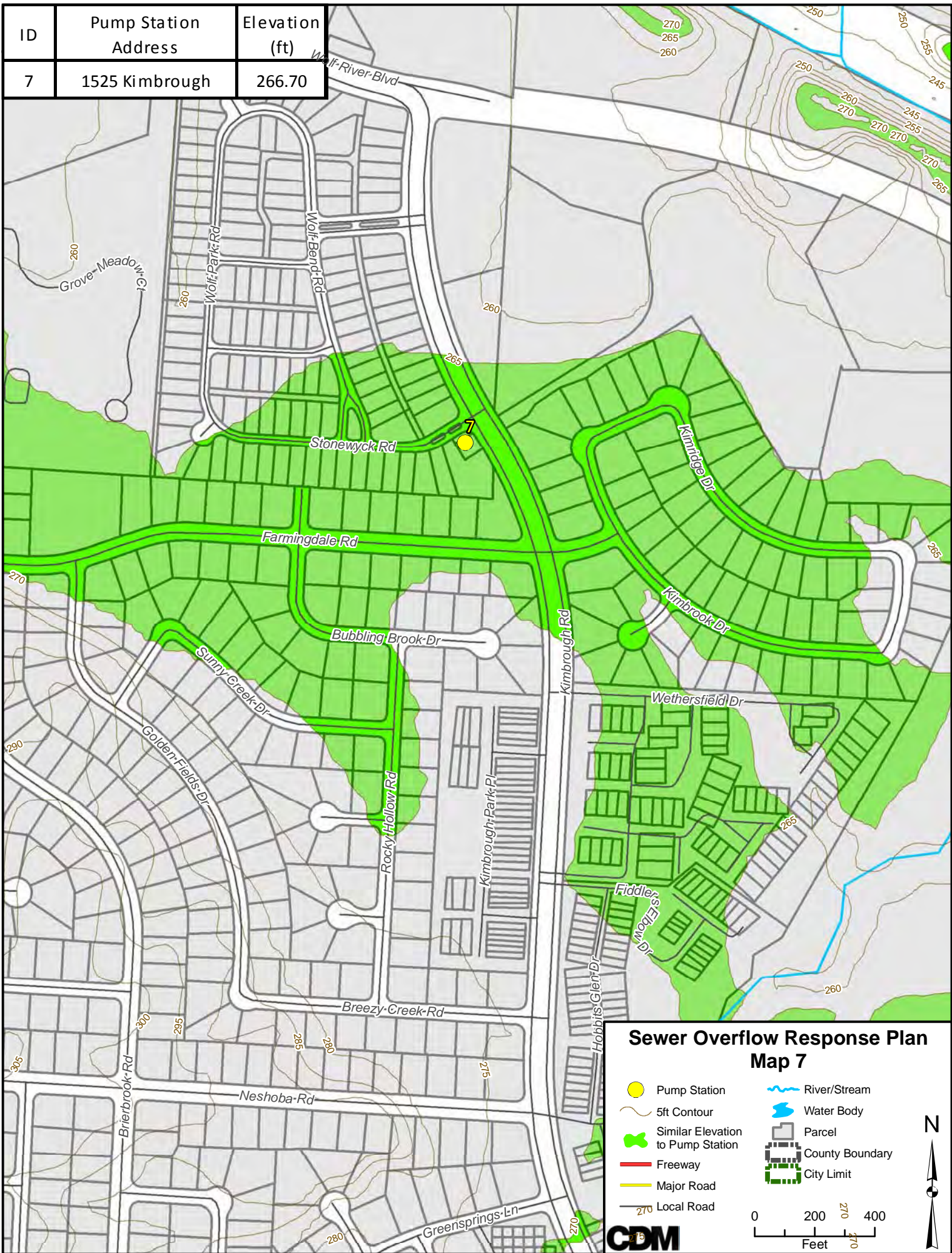


ID	Pump Station <sup>880</sup> Address	Elevation (ft)
6	8709 Rockcreek Parkway	341.65



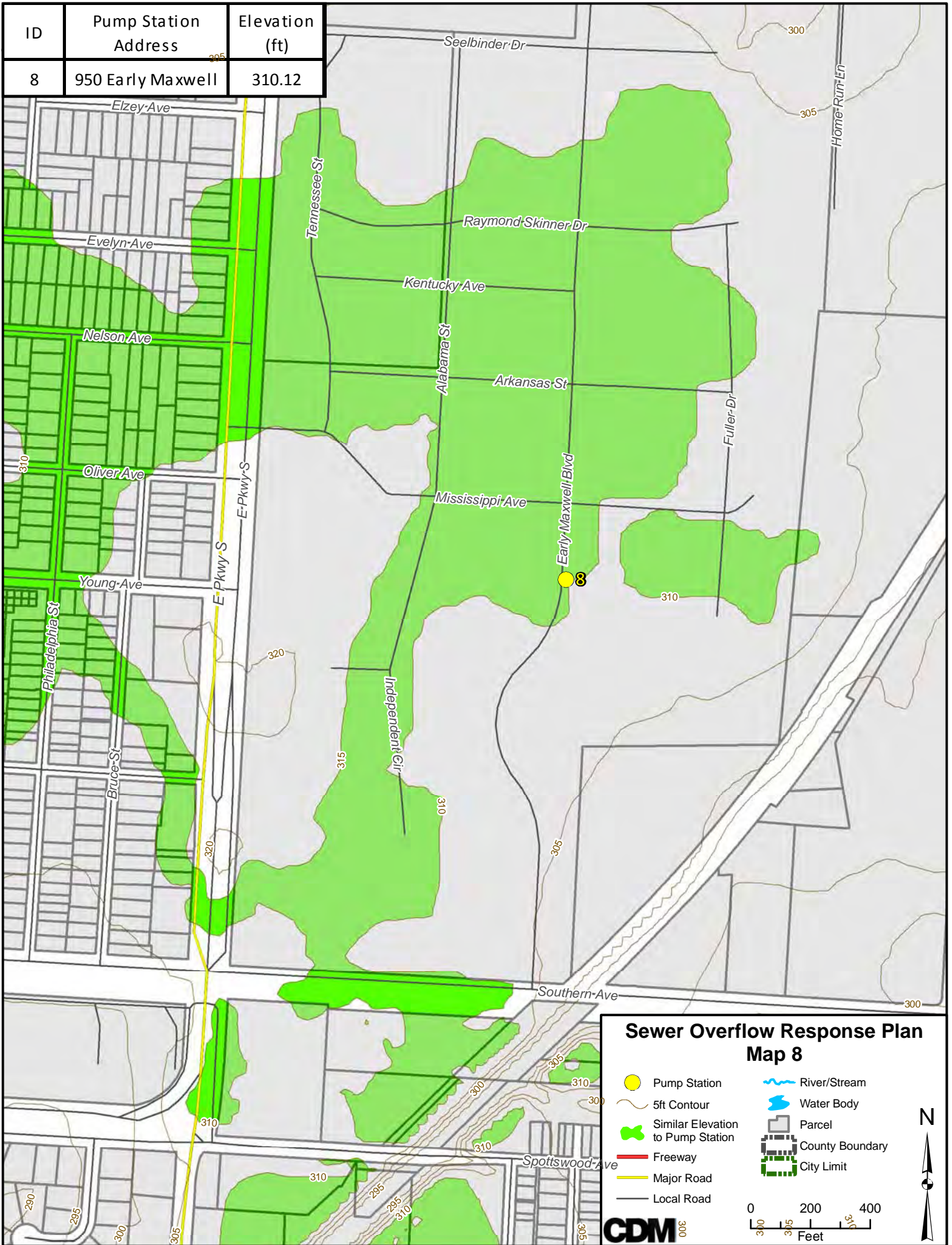


ID	Pump Station Address	Elevation (ft)
7	1525 Kimbrough	266.70



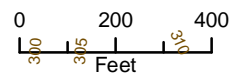


ID	Pump Station Address	Elevation (ft)
8	950 Early Maxwell	310.12



### Sewer Overflow Response Plan Map 8

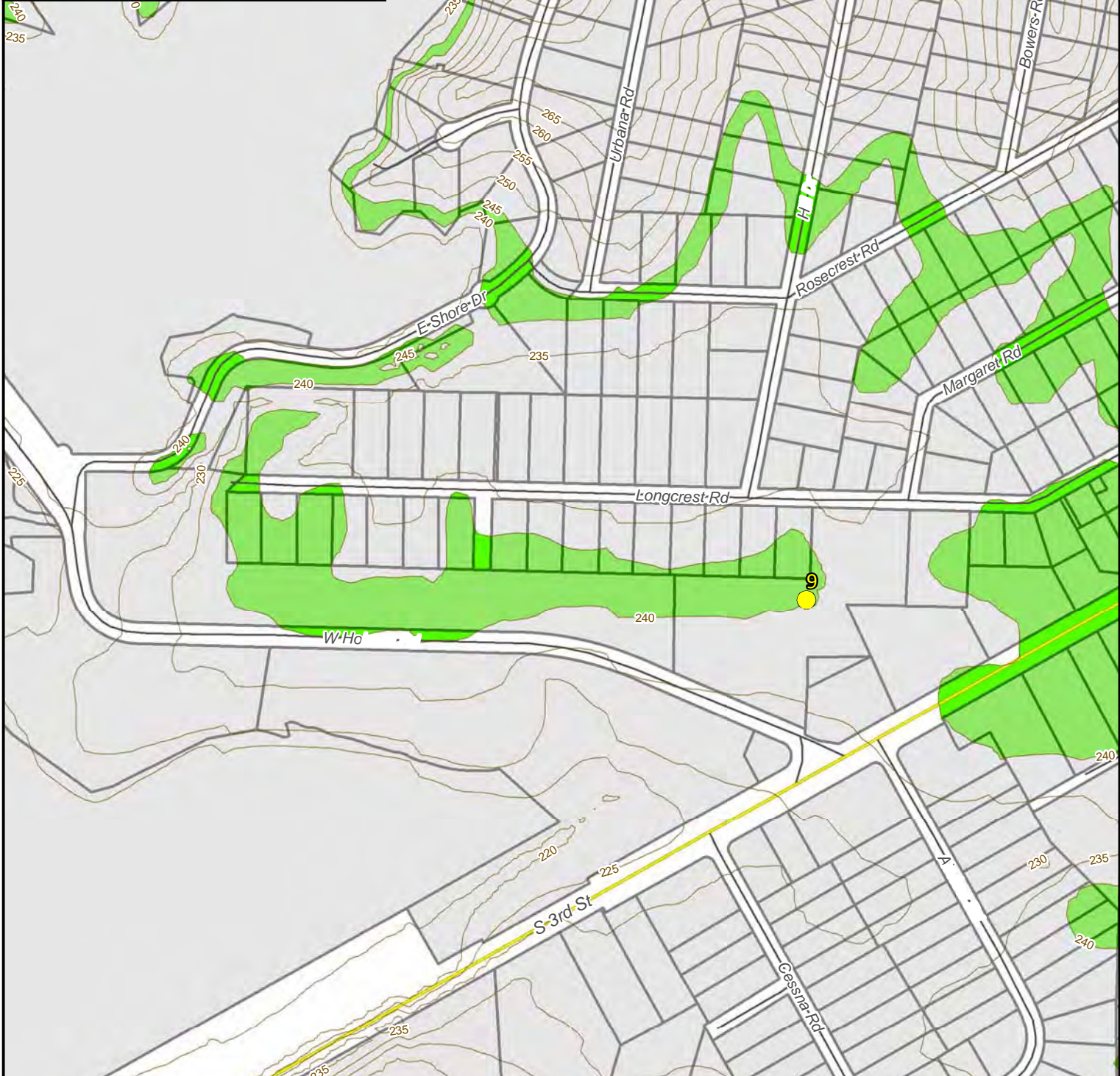
- Pump Station
- 5ft Contour
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- River/Stream
- Water Body
- Parcel
- County Boundary
- City Limit



**CDM**



ID	Pump Station Address	Elevation (ft)
9	1324 W.Holmes	240.13



**Sewer Overflow Response Plan  
Map 9**

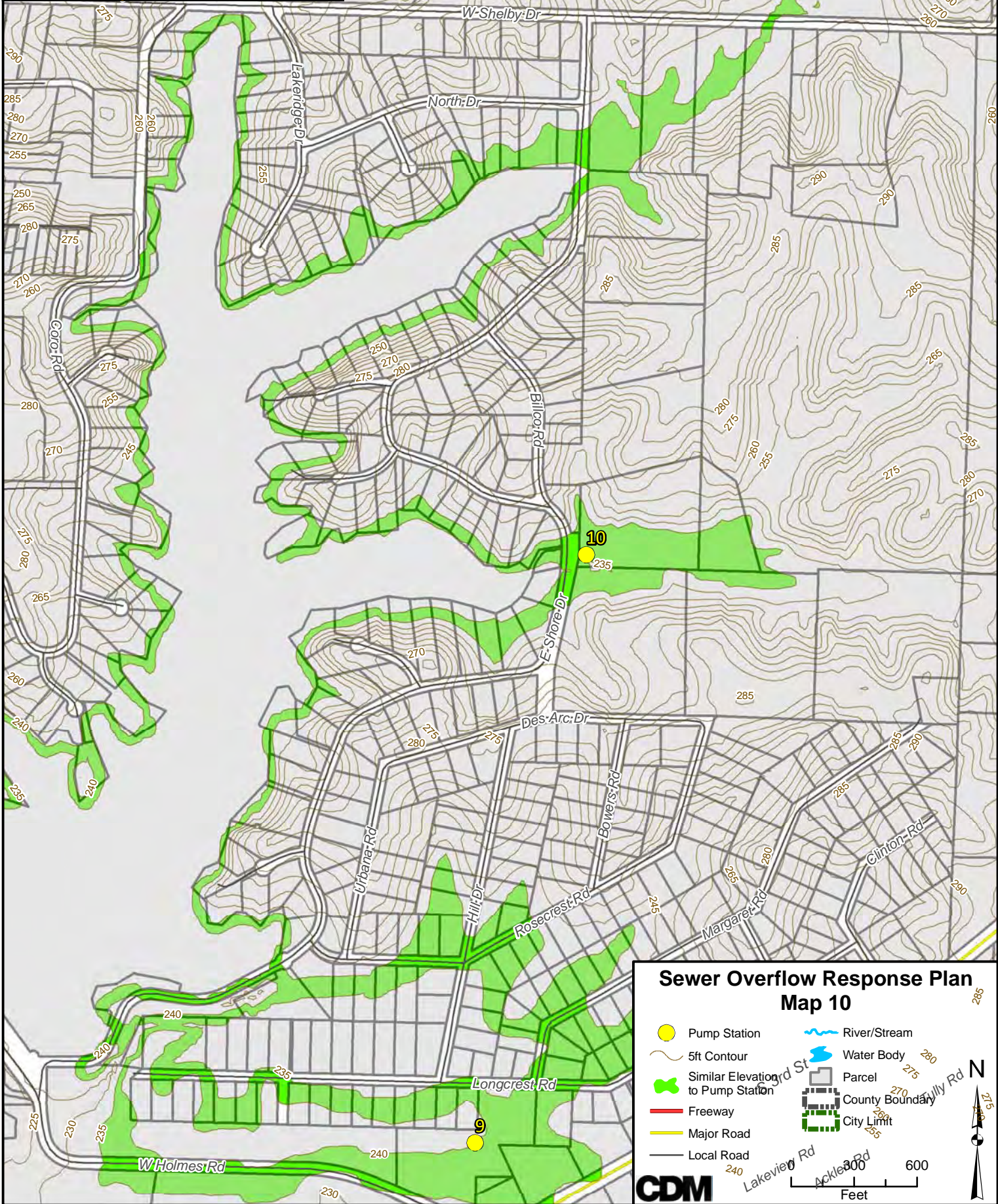
- Pump Station
- 5ft Contour
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- River/Stream
- Water Body
- Parcel
- County Boundary
- City Limit

0 200 400  
Feet



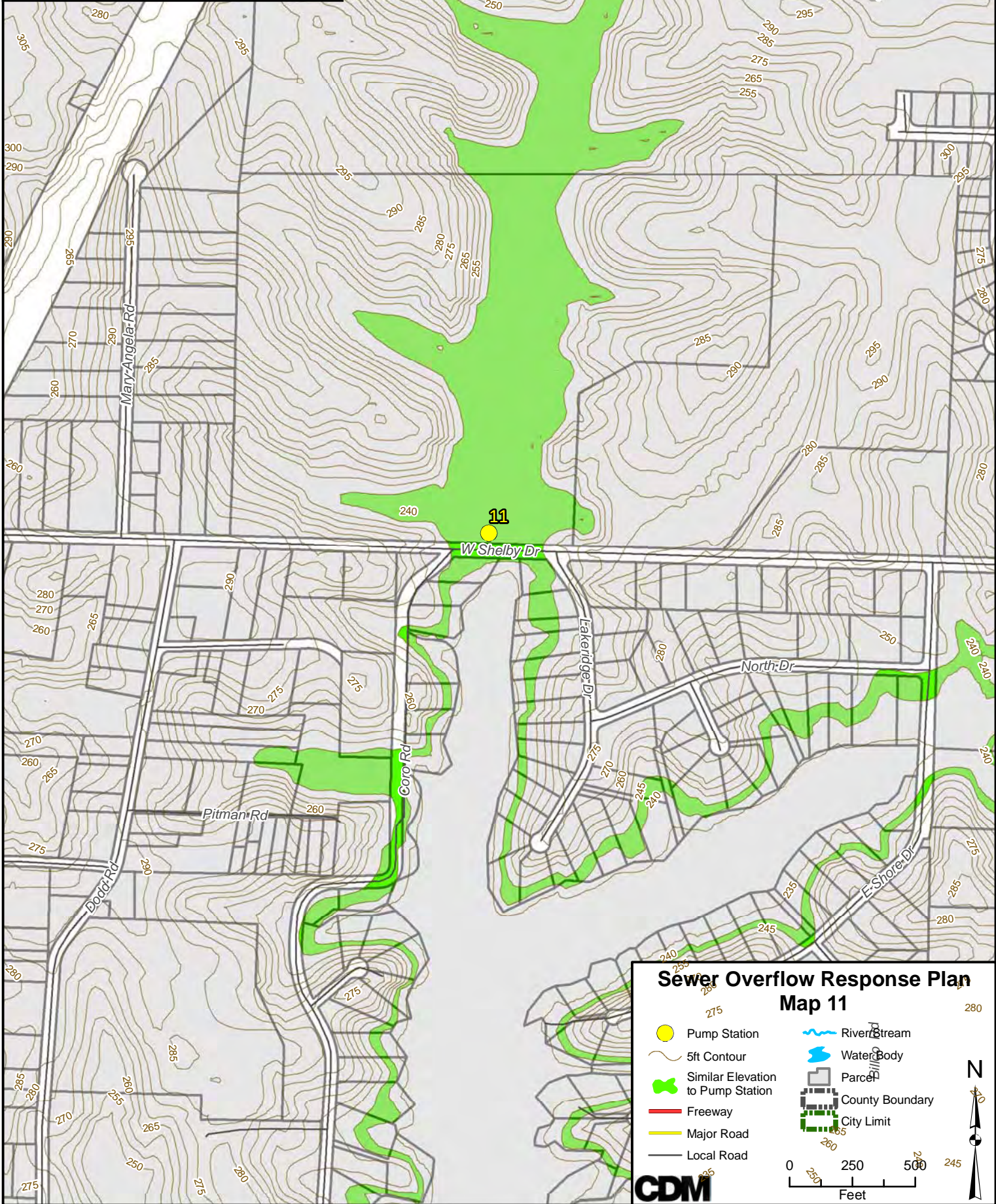


Pump Station ID	Pump Station Address	Elevation (ft)
10	4950 East Shore <sup>11</sup>	235.08



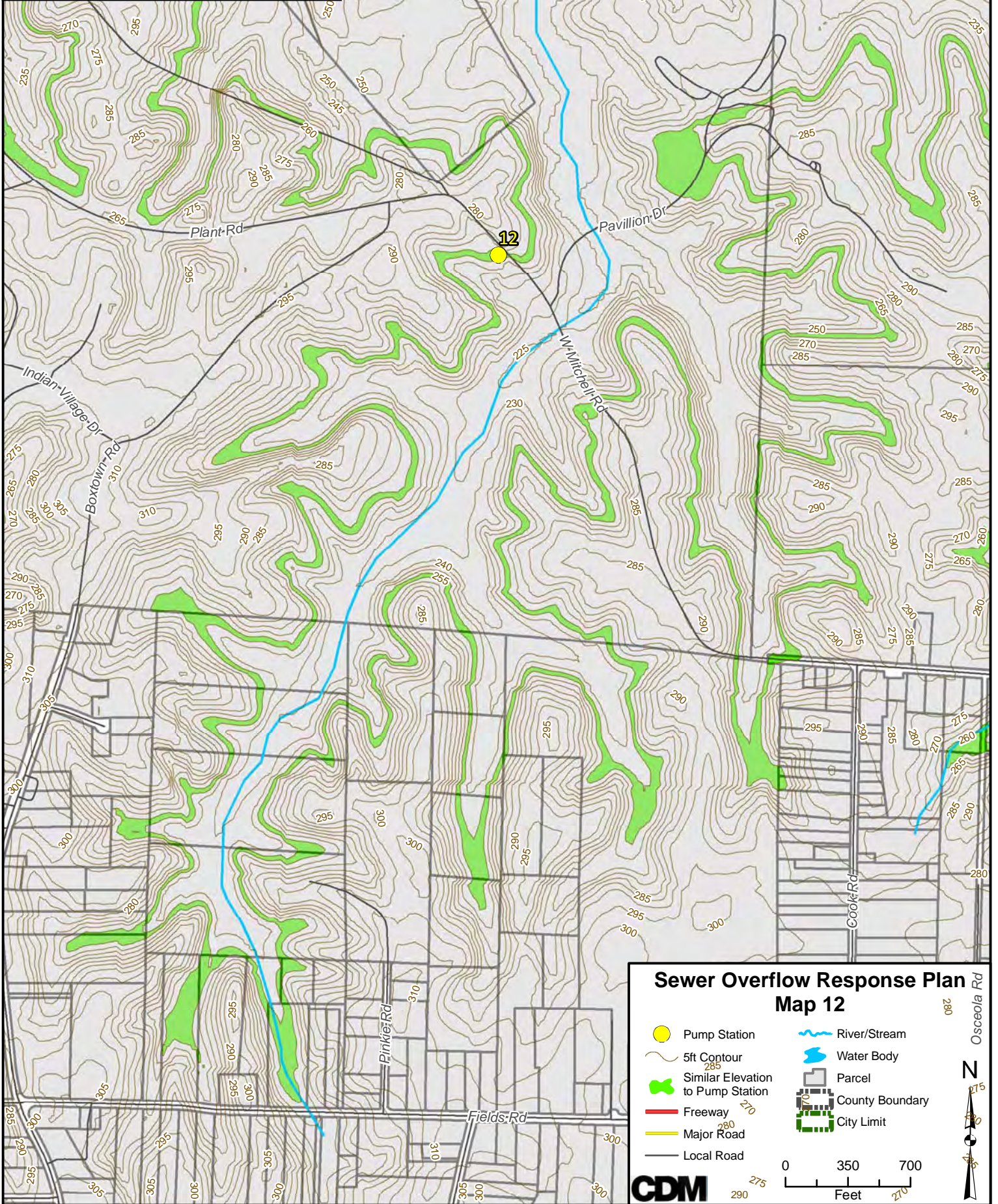


ID	Pump Station Address	Elevation (ft)
11	1474 W.Shelby Dr.	240.25



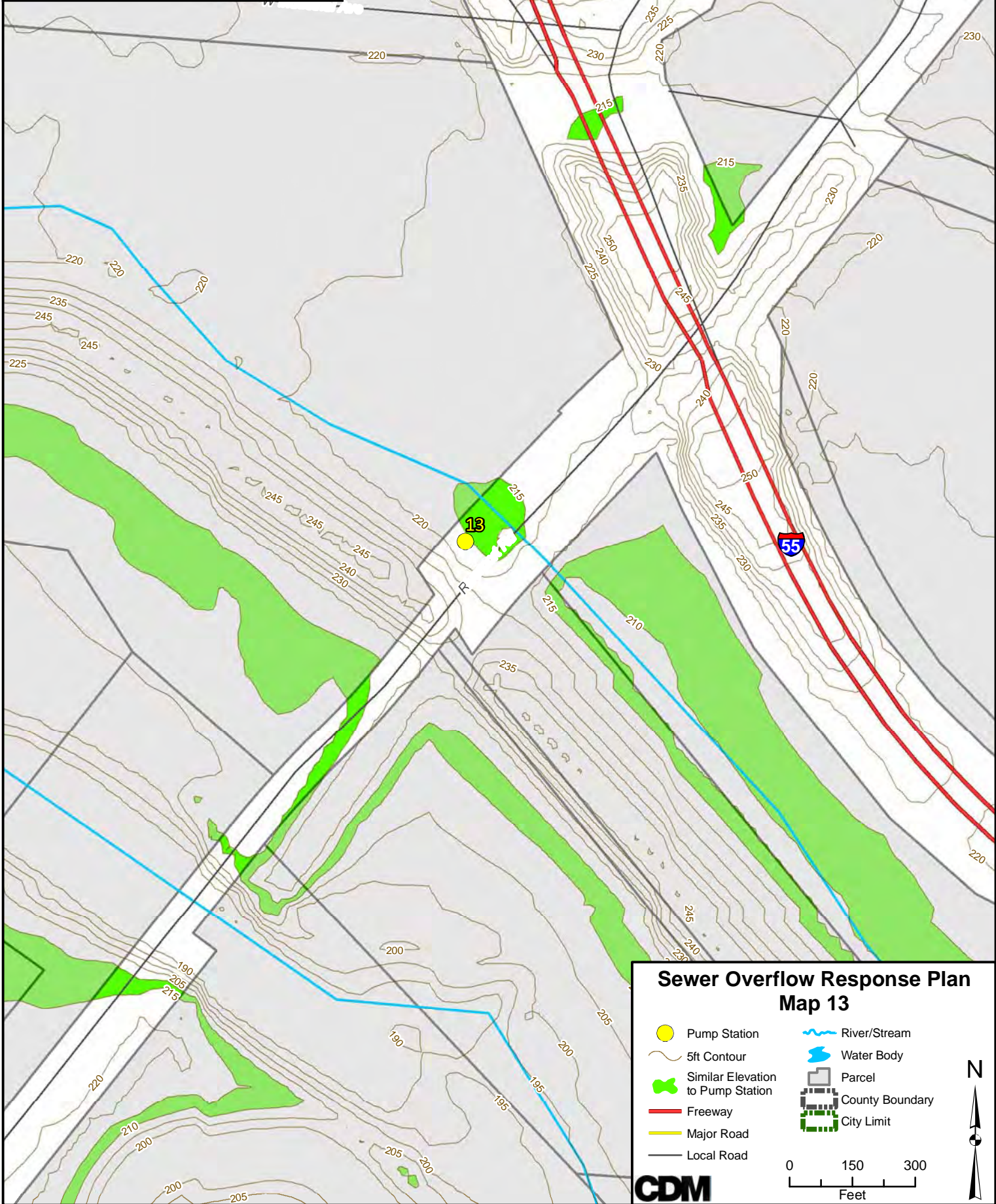


ID	Pump Station Address	Elevation (ft)
12	1585 W. Mitchell	256.69





ID	Pump Station Address	Elevation (ft)
13	Riverport # 2	214.61



### Sewer Overflow Response Plan Map 13

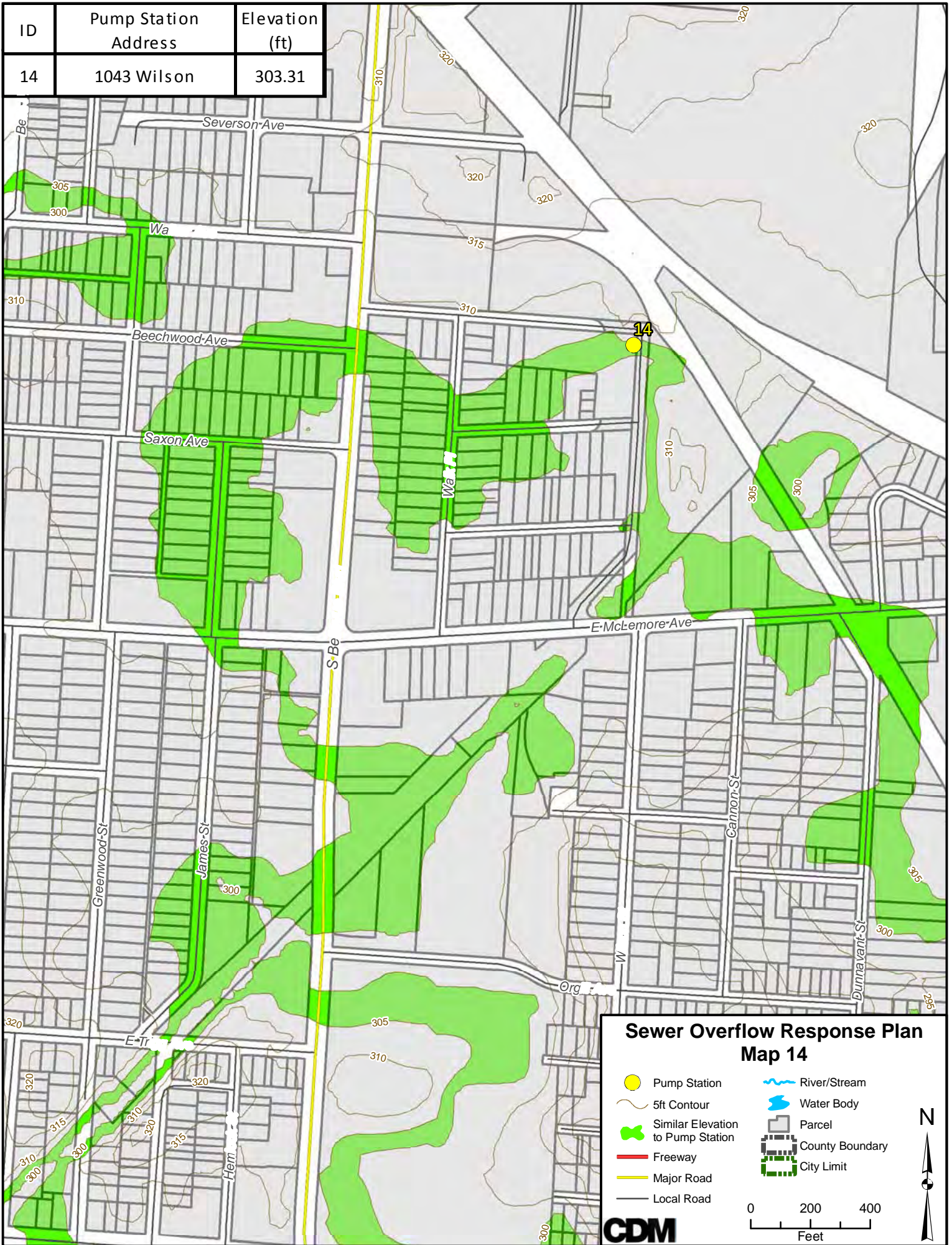
Pump Station	River/Stream
5ft Contour	Water Body
Similar Elevation to Pump Station	Parcel
Freeway	County Boundary
Major Road	City Limit
Local Road	

0 150 300  
Feet

**CDM**



ID	Pump Station Address	Elevation (ft)
14	1043 Wilson	303.31



**Sewer Overflow Response Plan  
Map 14**

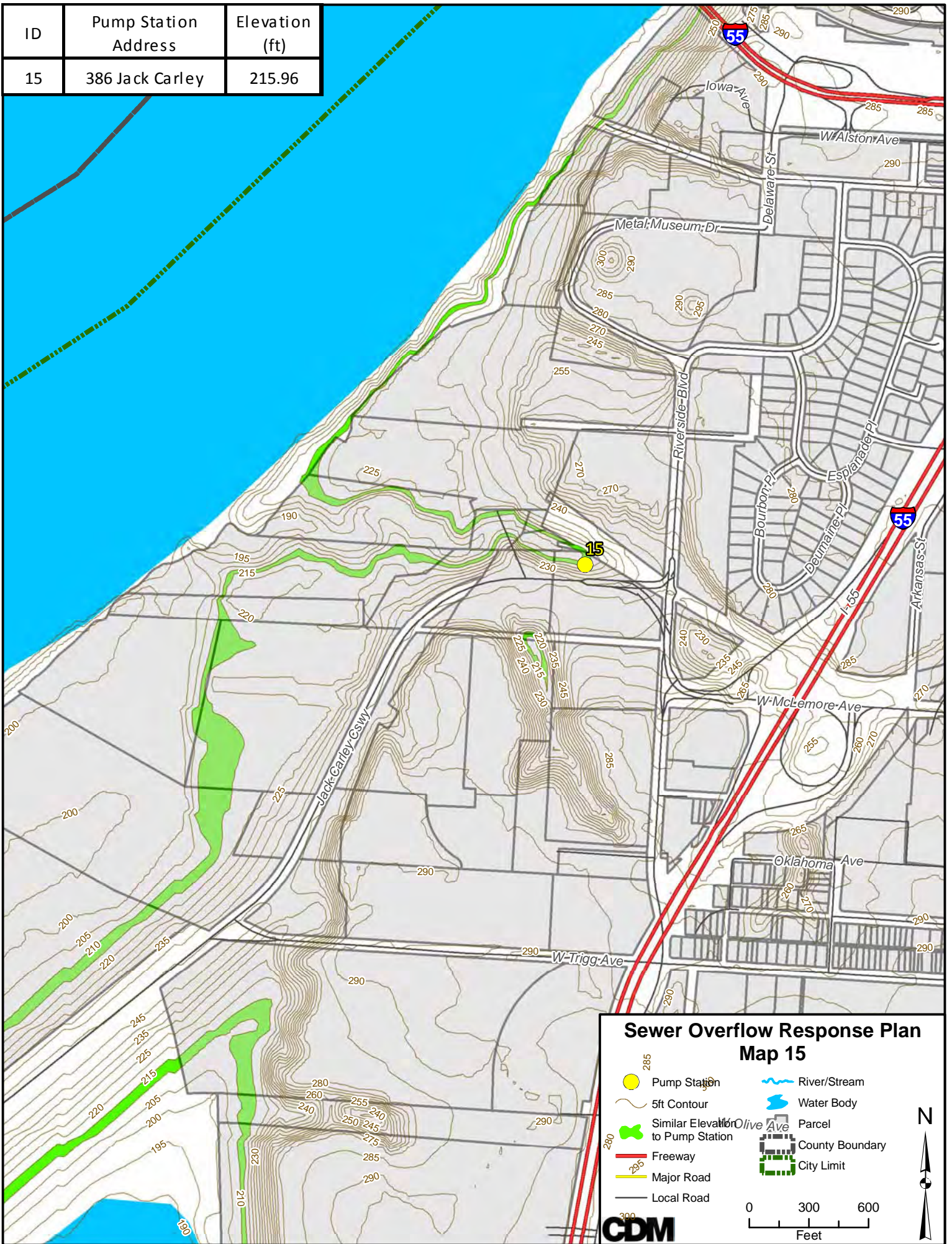
- Pump Station
- 5ft Contour
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- River/Stream
- Water Body
- Parcel
- County Boundary
- City Limit

0 200 400  
Feet

**CDM**

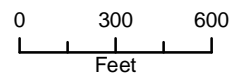


ID	Pump Station Address	Elevation (ft)
15	386 Jack Carley	215.96



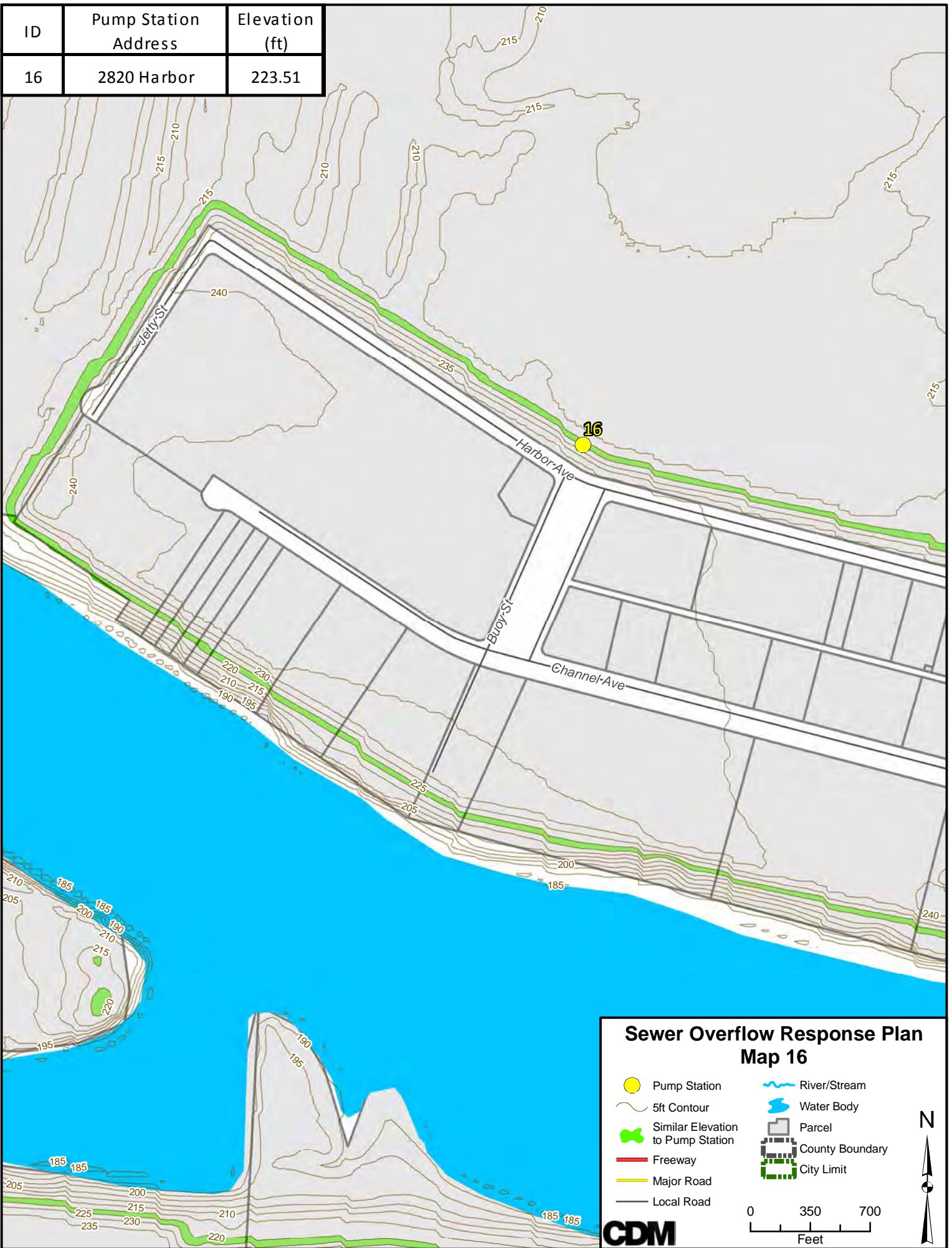
### Sewer Overflow Response Plan Map 15

- Pump Station
- 5ft Contour
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- River/Stream
- Water Body
- Parcel
- County Boundary
- City Limit



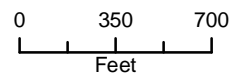


ID	Pump Station Address	Elevation (ft)
16	2820 Harbor	223.51



### Sewer Overflow Response Plan Map 16

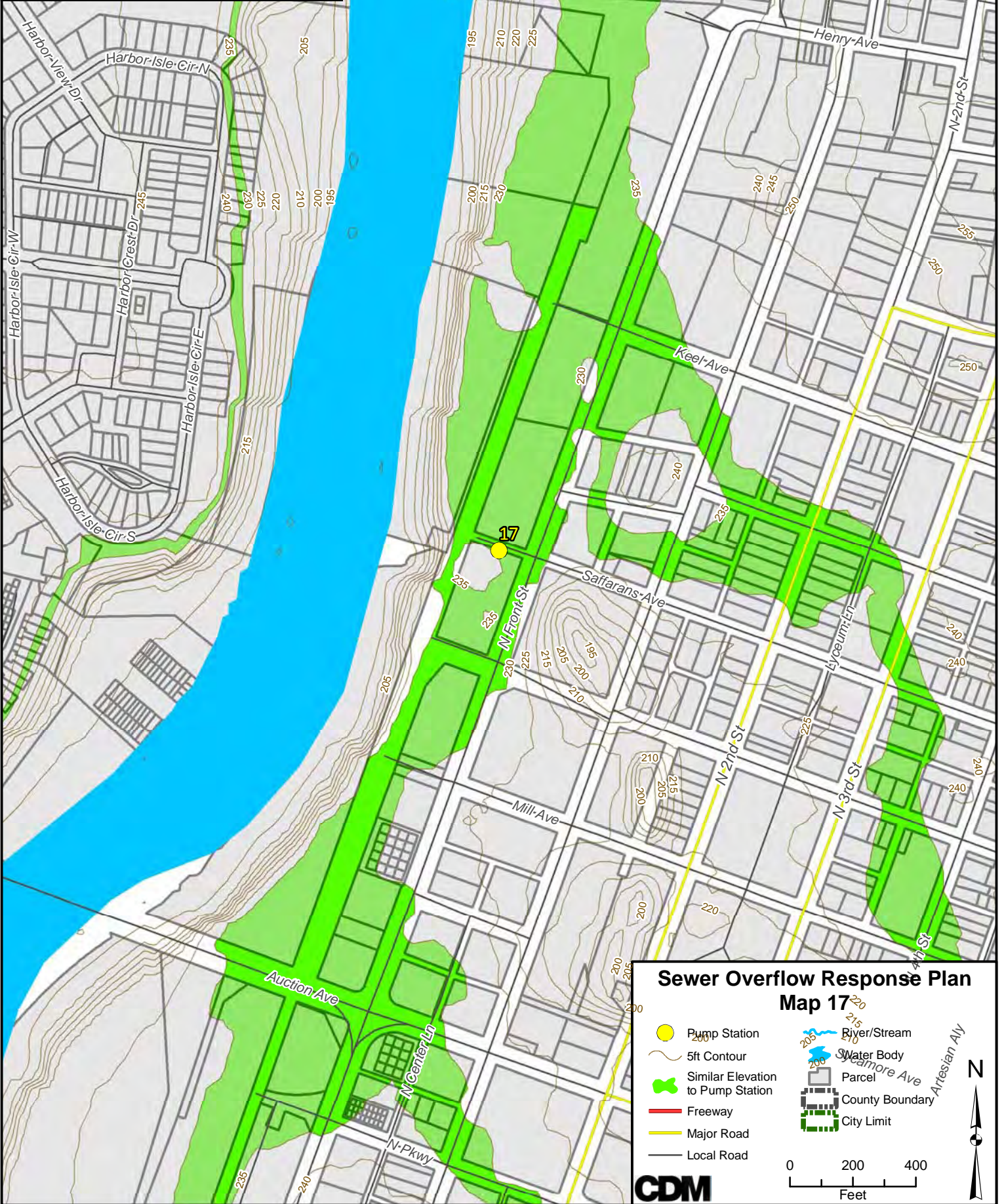
- Pump Station
- 5ft Contour
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- River/Stream
- Water Body
- Parcel
- County Boundary
- City Limit



**CDM**



ID	Pump Station Address	Elevation (ft)
17	35 W.Saffarans	234.37



**Sewer Overflow Response Plan  
Map 17**

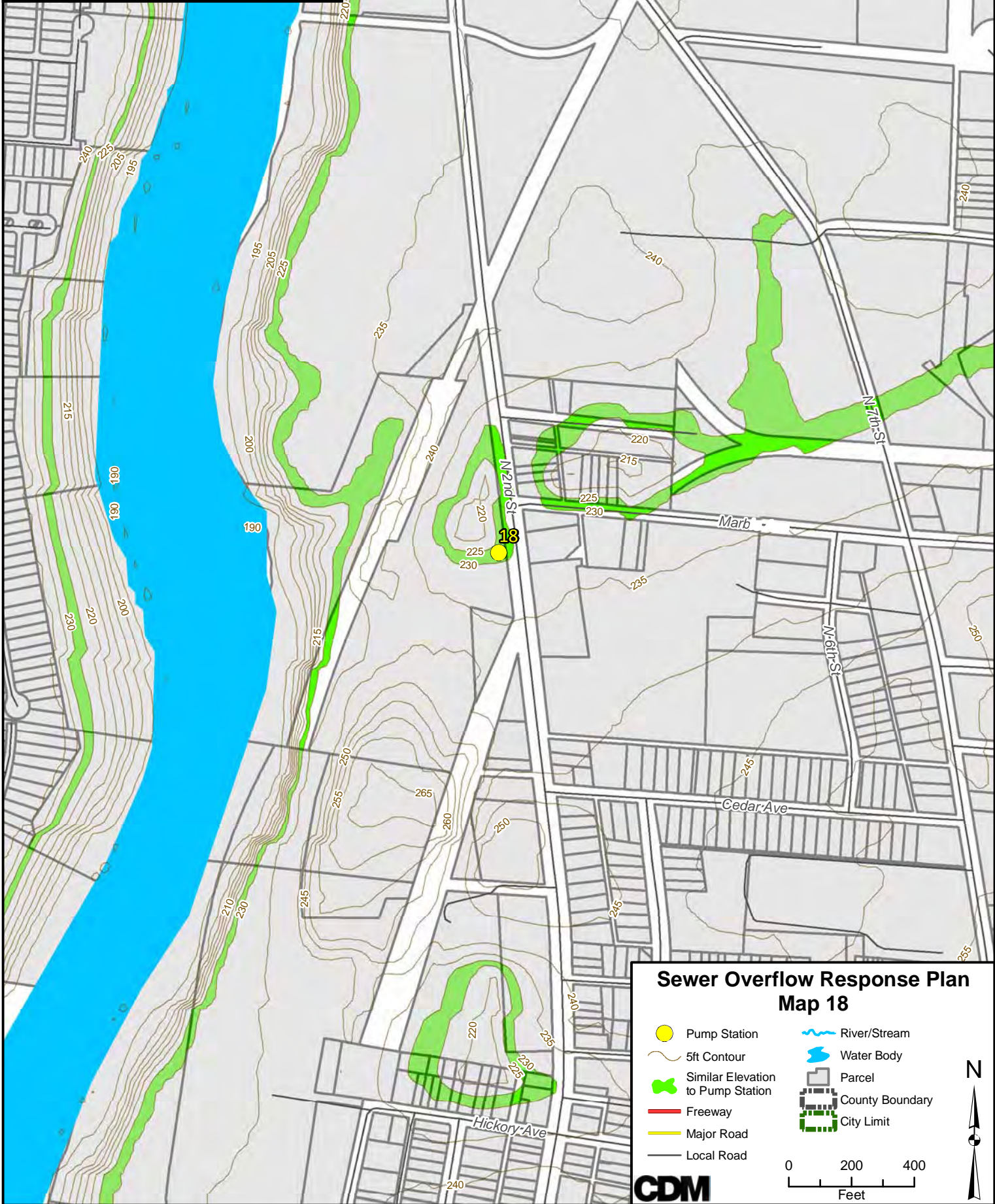
- Pump Station
- 5ft Contour
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- River/Stream
- Water Body
- Parcel
- County Boundary
- City Limit

0 200 400  
Feet

CDM

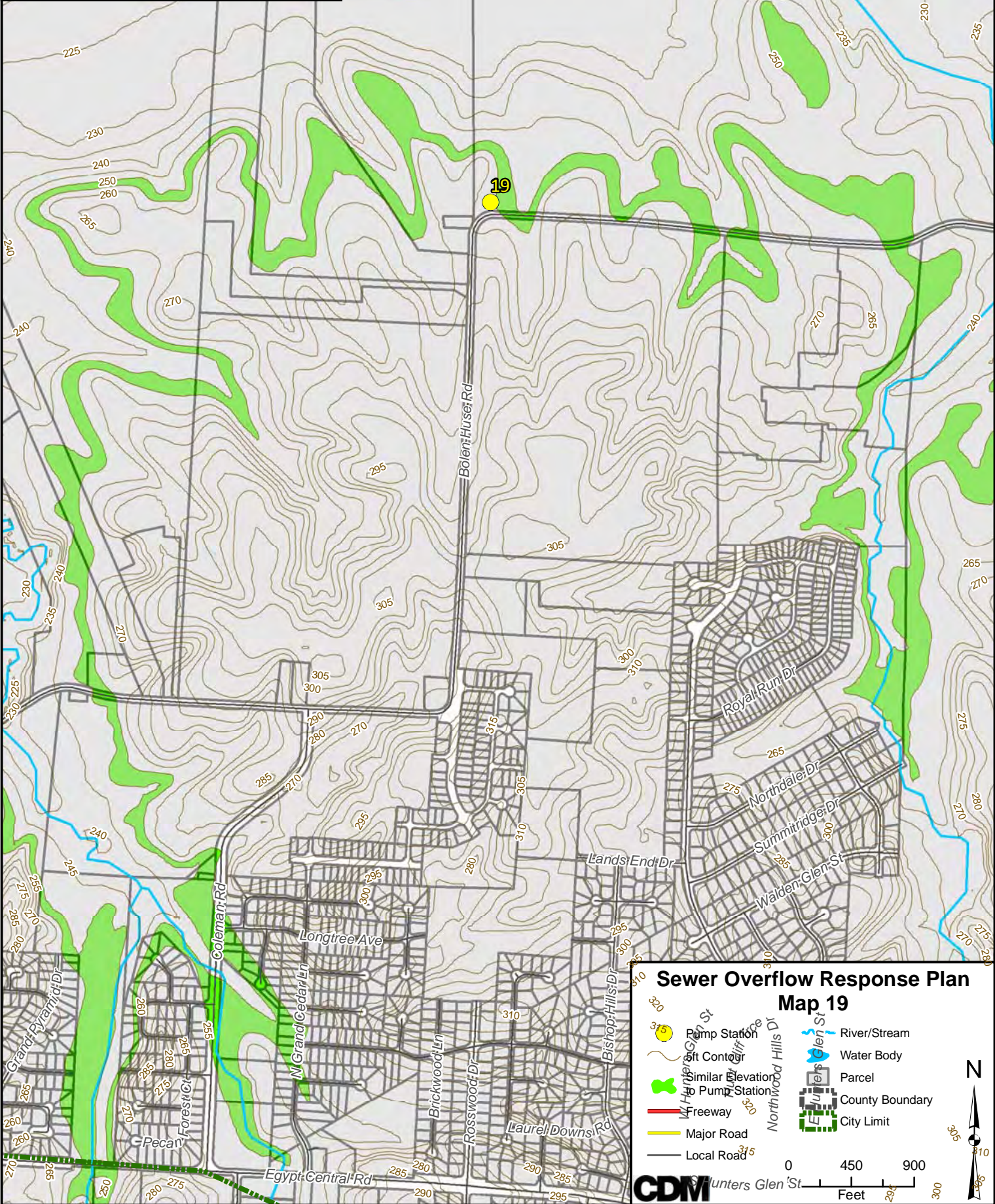


ID	Pump Station Address	Elevation (ft)
18	1141 N.Second	227.81



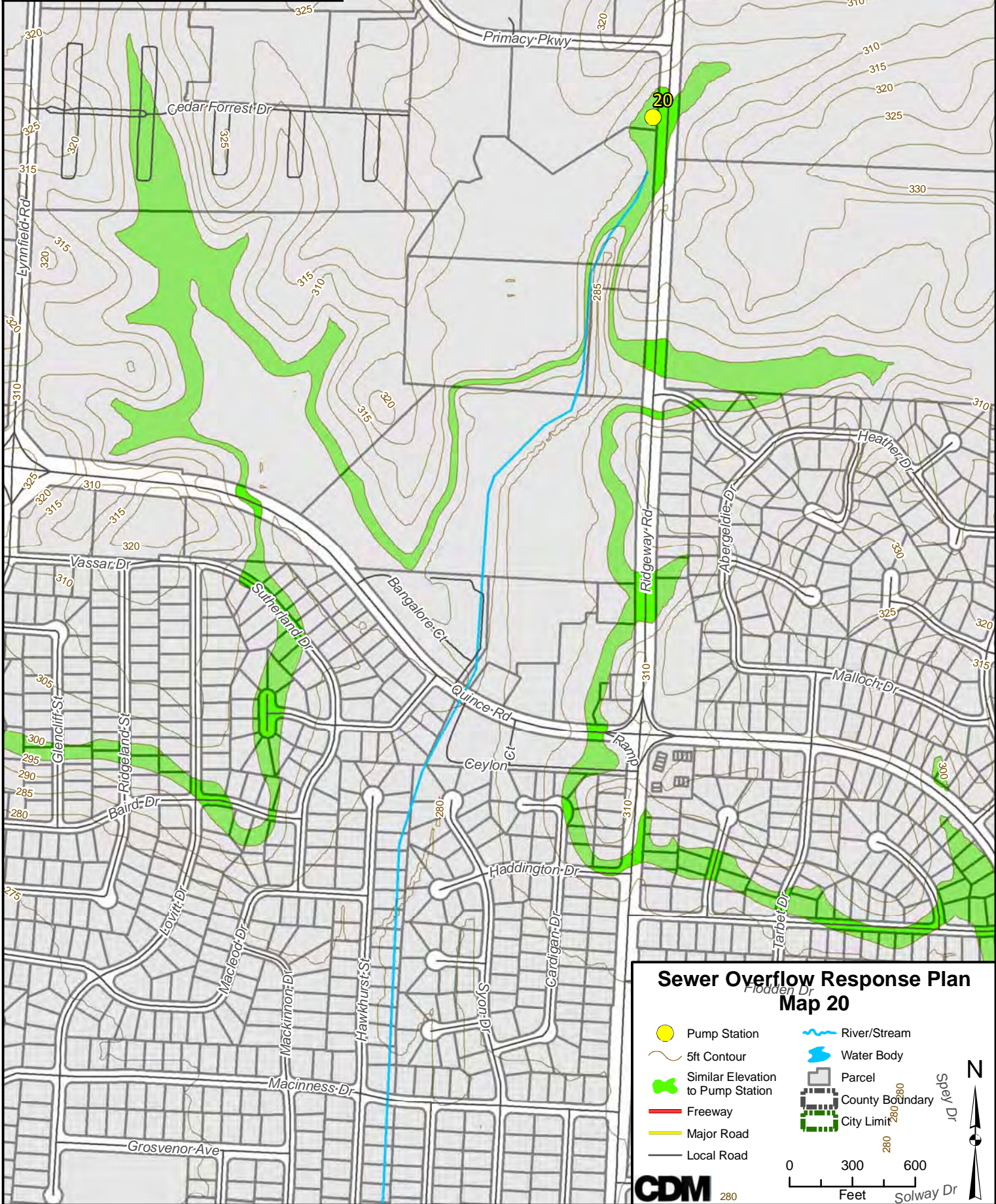


ID	Pump Station Address	Elevation (ft)
220	215	
19	4791 Bolen Huse	255.91



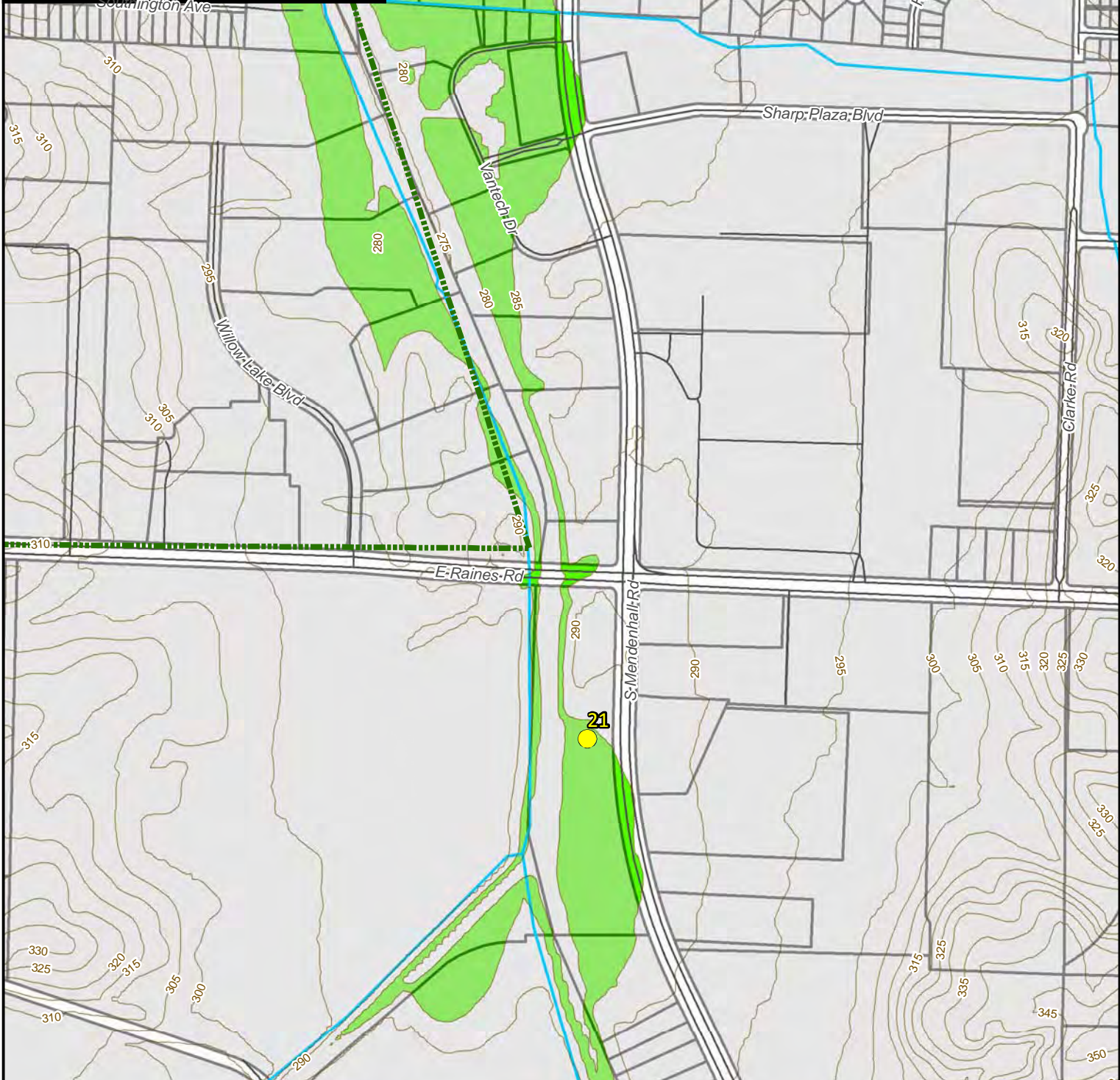


ID	Pump Station Address	Elevation (ft)
20	1399 Bridgeway	299.33





315 D	Pump Station Address	Elevation (ft)
21	4239 Mendenhall	282.91



**Sewer Overflow Response Plan  
Map 21**

- Pump Station
- 5ft Contour
- Similar Elevation to Pump Station
- Freeway
- Major Road
- Local Road
- River/Stream
- Water Body
- Parcel
- County Boundary
- City Limit

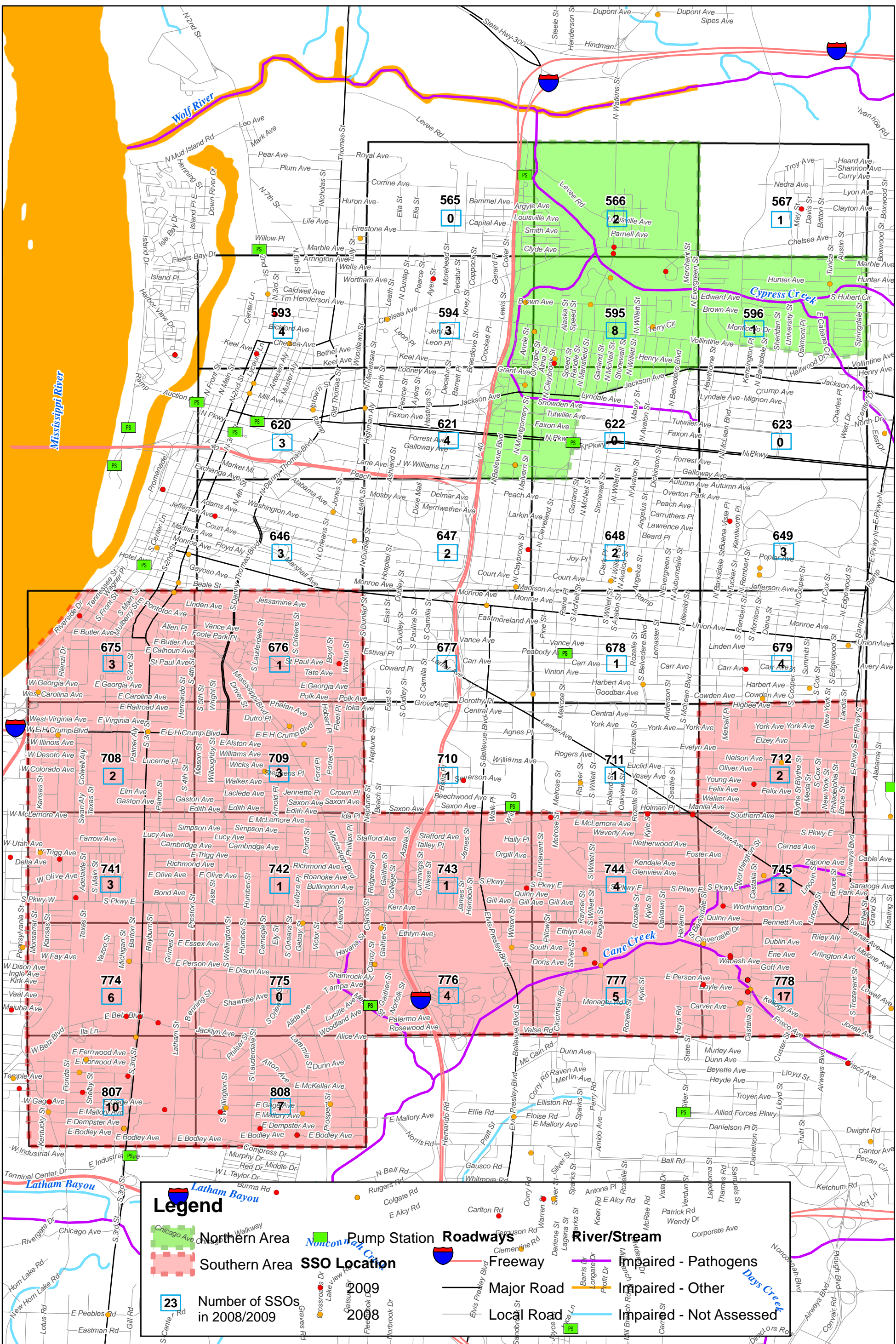
0 350 700 Feet

CDM

# **Appendix E**

## **First Year Assessment Area**





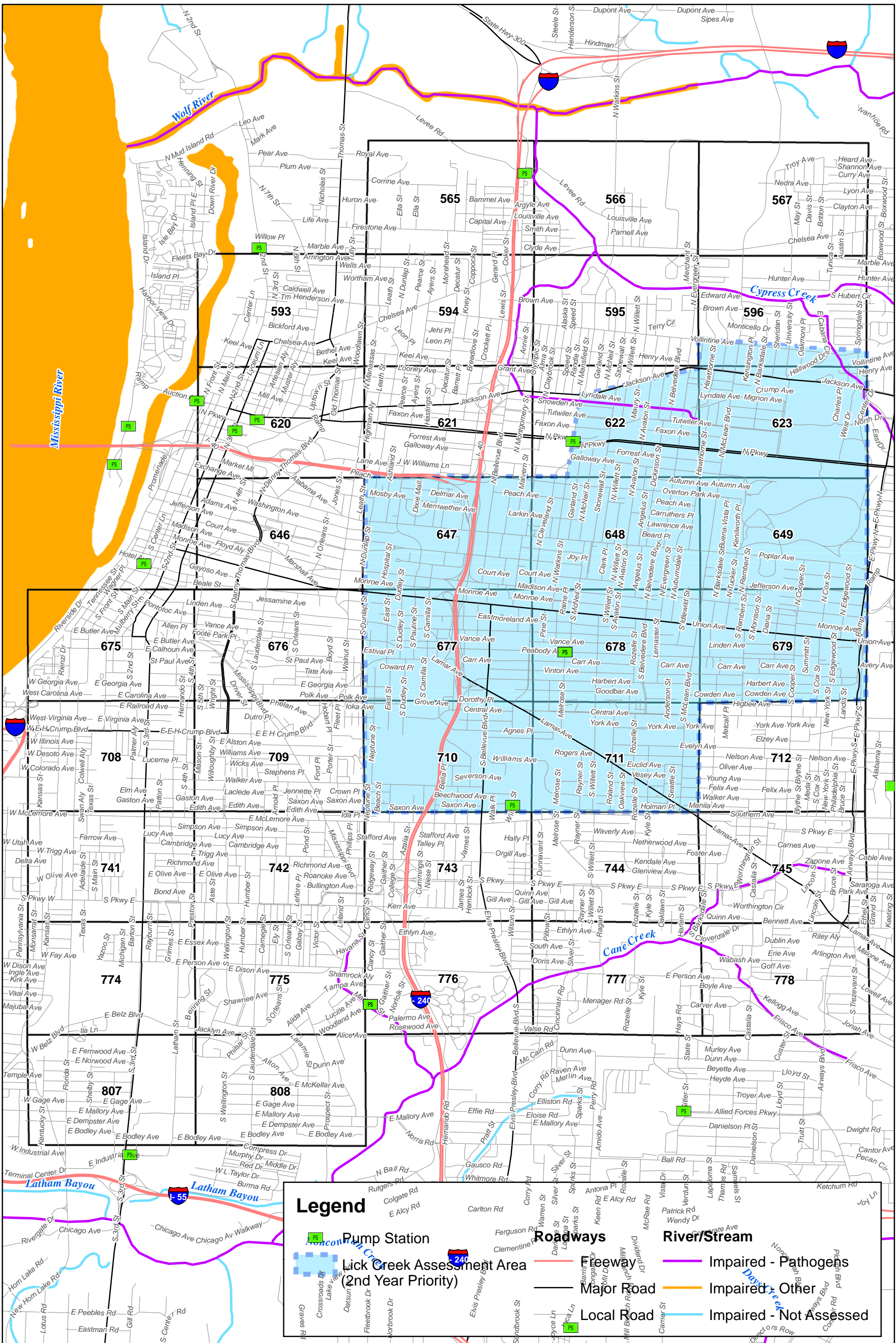
# Assessment Areas Memphis, Tennessee



# **Appendix F**

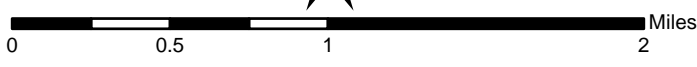
## **Lick Creek Assessment Area**





**Legend**

- PS Pump Station
- Lick Creek Assessment Area (2nd Year Priority)
- Freeway
- Major Road
- Local Road
- Impaired - Pathogens
- Impaired - Other
- Impaired - Not Assessed

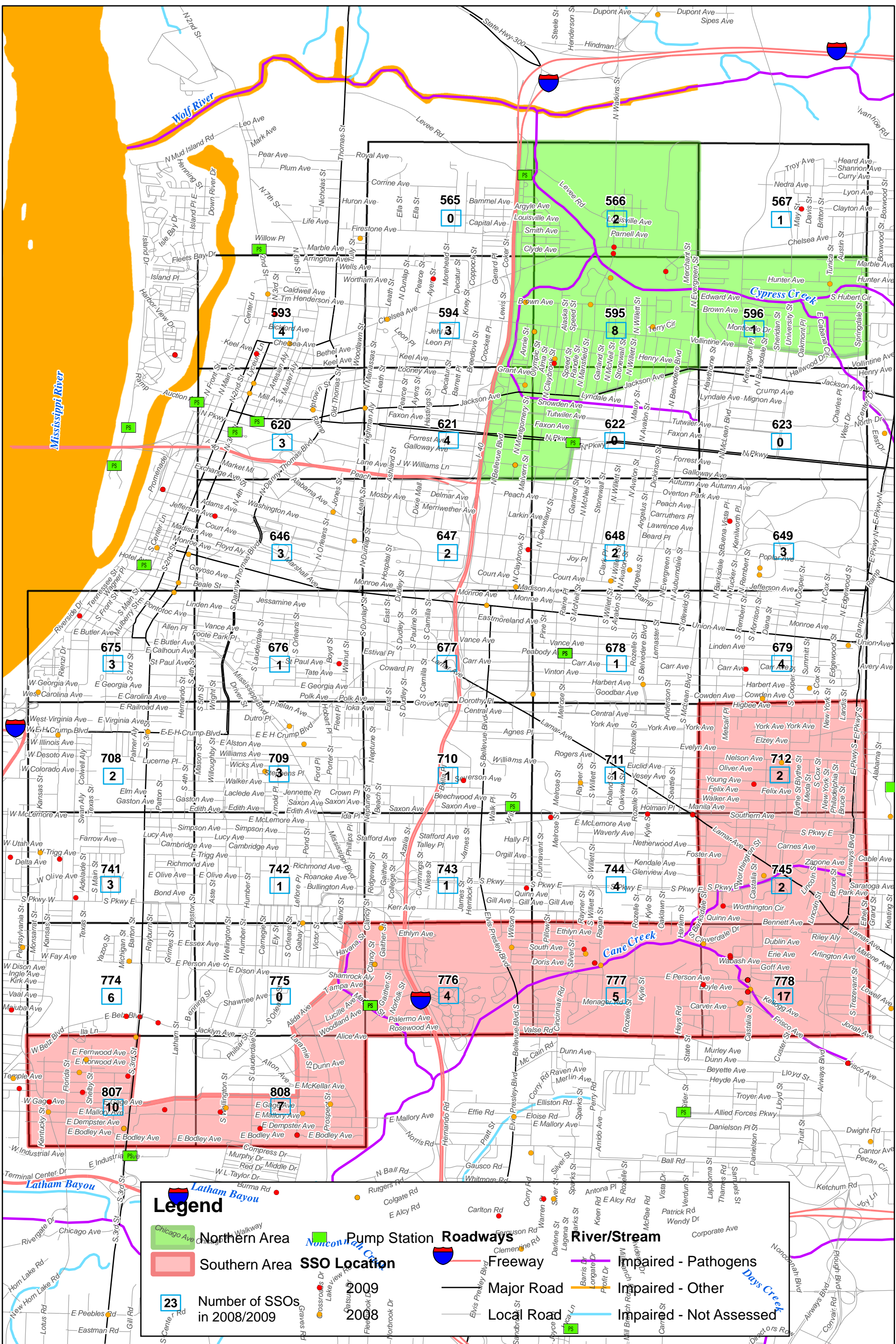


**Lick Creek Assessment Area  
Memphis, Tennessee  
Appendix F**



## **Appendix G**

### **Priority Rehabilitation Areas of the WCTS**










## Rehabilitation Areas Memphis, Tennessee

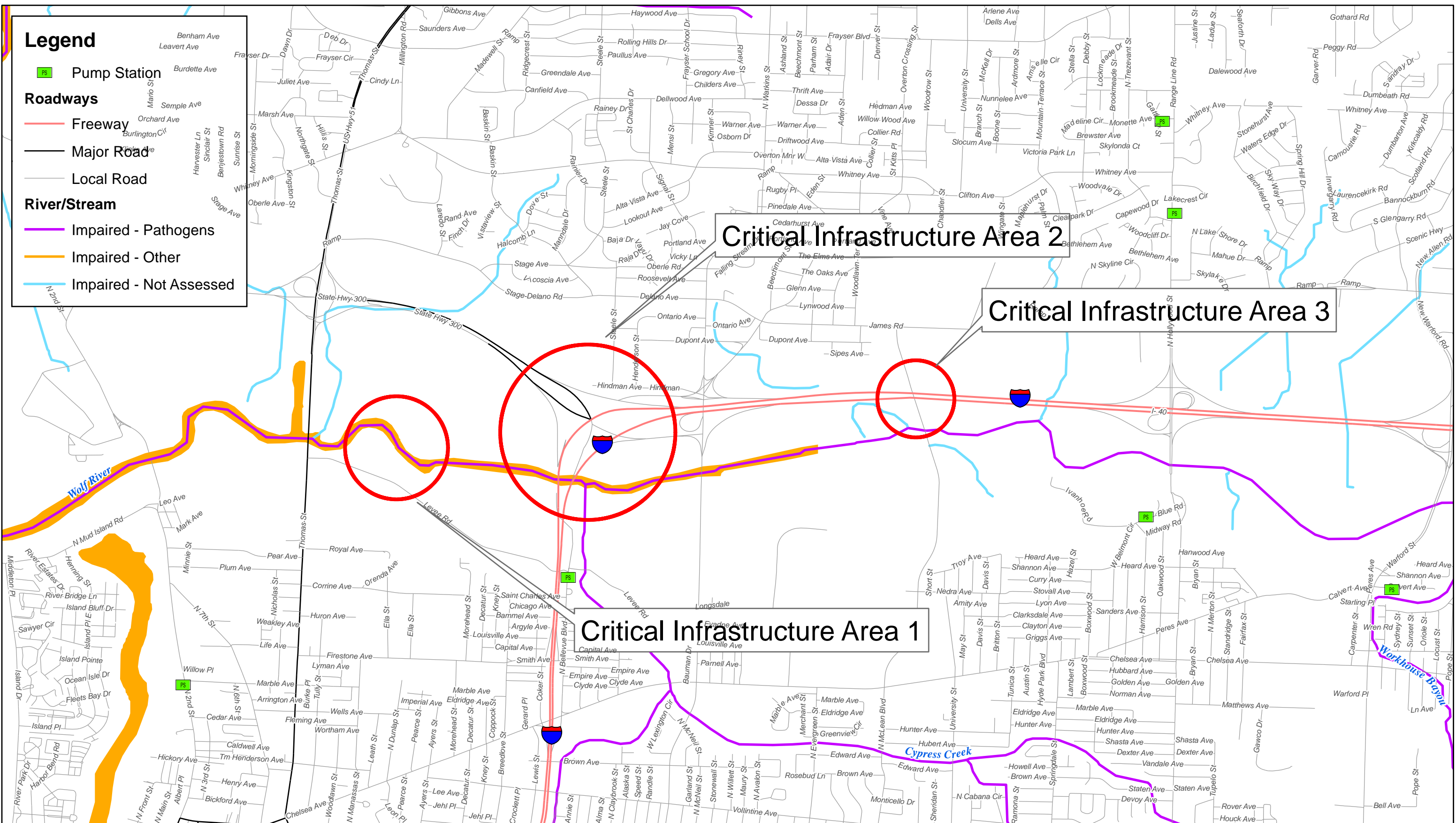
# **Appendix H**

## **Critical Area Rehabilitation Projects**



# Legend

-  Pump Station
- Roadways**
  -  Freeway
  -  Major Road
  -  Local Road
- River/Stream**
  -  Impaired - Pathogens
  -  Impaired - Other
  -  Impaired - Not Assessed



Critical Infrastructure Projects  
Memphis, Tennessee

# **Appendix I**

## **M.C. Stiles WWTP Foam Study & Outfall Improvements Work Plan**



210 25<sup>th</sup> Avenue North, Suite 1102  
Nashville, Tennessee 37203  
tel: 615-320-3161  
fax: 615-320-6560

## Memorandum

*To: City of Memphis Division of Public Works*

*From: CDM*

*Date: December 1, 2010*

*Subject: Stiles WWTP Foam Study and Outfall Improvements Work Plan*

## Introduction

The draft NPDES Permit for the M.C. Stiles Wastewater Treatment Plant (WWTP) authorizes discharge of treated wastewater from Outfall 001 with the requirement that “there shall be no distinctly visible floating foam, scum, oil, or other matter contained in the wastewater discharge.” While the City has voluntarily taken steps to reduce foaming in its effluent, foam is still observed at times of lower flow in the Mississippi River, both at Outfall 001 and downstream of the outfall. The plant staff has used a defoaming agent since the late 1990s; but this approach does not provide a sustainable, long-term solution to address the root causes of foaming at the plant. CDM has supported the City in evaluating the probable sources and solutions to foaming to provide more beneficial alternatives to addressing the issue. This document provides a summary of the technical analyses conducted to investigate foaming at Outfall 001 and an overall work plan for implementing the proposed solution.

## Objectives

The underlying state narrative water quality standards (“WQS”) upon which the NPDES permit condition is based does not anticipate that all foam be eliminated from the discharge. For example, where the water quality criterion is for protection of fish and aquatic life, the WQS at 1200-4-3-.03(3)(c) prohibits the discharge of foam “of such size or character that may be detrimental to fish and aquatic life.” Similarly, the water quality criteria for:

- industrial water supply at 1200-4-3-.03(2)(e) prohibits the discharge of foam of such size and character that “may impair the usefulness of the water as a source of industrial water supply;”
- recreation at 1200-4-3-.03(4)(c) prohibits the discharge of foam of such size or character that “may be detrimental to recreation;”

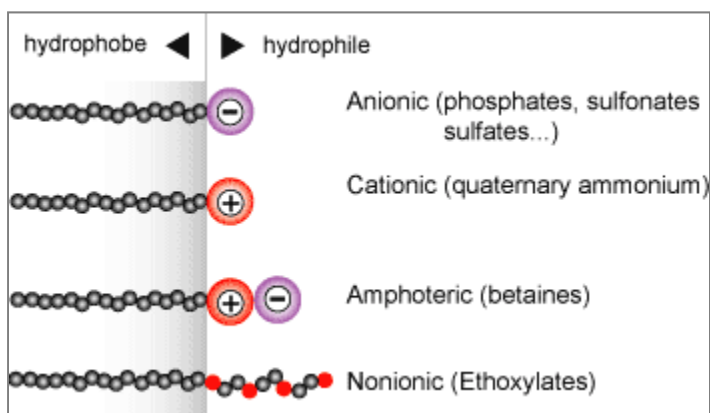


- irrigation at 1200-4-3-.03(5)(d) prohibits the discharge of foam of such size or character that “may impair the usefulness of the water for irrigation purpose;”
- livestock watering and wildlife at 1200-4-3-.03(6)(d) prohibits the discharge of foam of such size or character “as to interfere with livestock watering and wildlife;” and
- navigation at 1200-4-3-.03(7)(a) prohibits the discharge of foam of such size or character “as to interfere with navigation.”

The City objectives under this consent decree are to assure that any foam that may remain after implementation of the project provided in this work plan be in compliance with the underlying applicable water quality standards.

## Background Information

In general, foaming at a wastewater treatment plant could be caused by manmade surfactants or from long-chain fatty, acids, petroleum hydrocarbons, and natural surfactants. Manmade surfactants enter wastewaters mainly by discharge of aqueous wastes from household and industrial laundering and other cleansing operations. Detergents used in cleaning operations may also contain agents known as “builders” to enhance the surfactant effect. Builders lower water hardness by scavenging the calcium and magnesium ions. Typically, some form of sodium phosphate is used; although, in some areas, phosphate is no longer used as an additive due to environmental concerns. As alternatives, other chelating agents are used. It is important to note that the builders that are added to detergents, while enhancing foaming, are not the source of the foaming itself.



**Figure 1**  
**Examples of Surfactant Molecules**

A surfactant combines, in a single molecule, a strongly hydrophobic group with a strongly hydrophilic one. These molecules tend to congregate at the interfaces between the aqueous medium and the other phases of the system such as air, oily liquids, and particles; thus imparting their aforementioned properties. The surfactant hydrophobic group, generally, is a hydrocarbon containing 10 to 20 carbon atoms; and the hydrophilic groups are of two types: those that ionize in water and

those that do not. The ionic surfactants are further subdivided into two categories: anionic surfactant ion, or negatively charged ions, and cationic ions, which are positively charged. Nonionizing (nonionic) surfactants commonly contain a polyoxyethylene hydrophilic group. Hybrids of these types also exist. Examples of Surfactant Molecules are shown in **Figure 1**.

Quantification and identification of the source of compounds responsible for foam can be challenging. Anionic surfactants are the most prominent surfactants, with an extensive list of producers and trade names. Anionic surfactants account for about two-thirds of the synthetic surfactant production, with linear alkyl sulfonates (LAS) on top of the list. This is why the industry standard for quantification of surfactants is to analyze for methylene blue active substances (MBAS) using LAS as the equivalent standard. This method is useful for estimating the anionic surfactant content of waters and wastewaters, but the possible presence of other types of surfactants must be kept in mind. Cationic surfactants constitute less than .1 of the anionic surfactants and are commonly used for disinfecting, fabric softening, and various cosmetic purposes, rather than for their deterative properties.

At current detergent and water usage levels, the surfactant content of raw domestic wastewater is typically in the range of approximately 1 to 20 mg/L. When present in wastewater treatment systems, surfactants can be problematic. In fact, surfactants can kill microorganisms at concentrations in the 1 – 5 mg/L range and harm them at even lower concentrations (0.5 mg/L), depending upon the nature of the chemical(s). Surfactants can produce foams directly in a wastewater treatment system or combine with other compounds in the treatment system, resulting in enhanced foam formation. In addition, many surfactants have relatively low biodegradability and may pass through a wastewater treatment plant untransformed.

Surfactants can also be produced from biological activity using various hydrocarbons. The scientific literature describes various experiments where microorganisms are able to produce foaming surfactants from alkanes. The most infamous of these micro-organisms is *Gordonia* (formerly *Nocardia*) *amarae*. Many publications describe the filamentous characteristics of *Nocardia*. However, *Nocardia* can also be present in activated sludge in a non-filamentous form and escape obvious detection. Atlas (1981) described the biodegradation of petroleum hydrocarbons, including branched alkanes, resulting in the formation of long-chain fatty acids (C10 or greater).

To determine if the foam is attributable to man-made surfactants, analytical tests for MBAS and non-ionic surfactants (CTAS) can be run. To detect low concentrations of the surfactants in dilute wastewaters, analysts use a precondition test called “sublation”, where foaming chemicals are floated up and concentrated just as they do in an aeration basin (see SM 5540). If results indicate that there is greater than approximately 10 mg/L of either/or a combination of MBAS and CTAS, the chemical mix of the surfactants is most likely the cause

of foam. In the case the surfactant class is clearly identified, neutralization of the base charge can be accomplished with a defoaming agent (e.g., such as addition of a cationic defoamer to neutralize anionic surfactants). If, however, results of these tests do not conclusively identify man-made surfactants as the source of foam, additional analysis should be conducted to identify the compounds that compose the foam. Once the chemical composition of the foam and the surfactant concentrations are identified, alternatives for addressing the foam issue may be developed.

## **Foam Sampling and Results**

To determine the source of the foam that is regularly observed at the M.C. Stiles WWTP Outfall 001, this study included a sampling and testing program of the plant process, influent sewer interceptors, and industrial users (IU) discharges, along with a record review of qualitative visual observations of foam. A sample of the foam that forms at the outfall was also collected, concentrated, and submitted for specialized testing at Auburn University. Additionally, the City conducted an IU surfactant survey to gather data for determining the possible sources and causes of the foam. The survey results are provided in **Appendix A**.

## **Surfactant Sampling and Results**

Results of the analytical testing for wastewater samples collected at locations in the WWTP process are provided in **Table 1**. In addition to samples collected throughout the plant, samples were collected from the Mississippi River, upstream of Outfall 001 to determine if these compounds were also present in the receiving stream. If these compounds were present in significant quantities, the hydraulic energy that is imparted to the river as a result of the plant discharge could result in foaming within the river. Samples of concentrated foam were also collected at the clarifiers and Outfall 001 for analysis of the foam itself. Samples were also taken from selected IUs and the three major sewer interceptors entering the plant. These analytical results are summarized in **Table 2**.

**Table 1**  
**Sample Results for Anionic (MBAS) and**  
**Nonionic (CTAS) Surfactants in M. C. Stiles WWTP and Interceptors**

Location	Date	MBAS (mg/L)	CTAS (mg/L)
Mississippi River, Upstream	4 /15/2009	<0.025	N/A
	5 /13/2009	<0.025	<0.5
	7 /29/2009	<0.025	0.36
Lagoon Return	4 /15/2009	0.45	N/A
	5 /12/2009	0.055	<0.5
	7 /22/2009	0.38	<0.5
	7 /28/2009	0.3	0.45
	4 /15/2009	0.45	N/A
	5 /12/2009	0.12	<0.5
	7 /22/2009	0.46	<0.5
Plant Influent	4 /15/2009	1.17	N/A
	5 /12/2009	<0.025	<0.5
	7 /20/2009	0.15	0.7
	7 /28/2009	1.06	0.48
Grit Tank	5 /13/2009	1.39	<0.5
	7 /23/2009	<0.025	<0.5
	7 /28/2009	0.025	0.42
	7 /28/2009	0.7	0.42
Contact Tank-A	4 /15/2009	0.04	N/A
	5 /13/2009	<0.025	<0.5
	7 /23/2009	0.4	<0.5
Contact Tank-B	4 /15/2009	0.04	N/A
	5 /13/2009	<0.025	<0.5
Return Sludge-A	4 /15/2009	<0.025	N/A
Return Sludge-B	4 /15/2009	<0.025	N/A
Secondary Clarifiers	4 /15/2009	0.18	N/A
	5 /13/2009	<0.025	<0.5
	7 /23/2009	<0.025	<0.5
	7 /28/2009	<0.025	0.23
Stabilization Tank-A	5 /13/2009	0.045	<0.5
	7 /23/2009	0.66	N/A
Stabilization Tank-B	5 /13/2009	0.056	<0.5
Effluent at Weir	4 /15/2009	0.18	N/A
	5 /12/2009	<0.025	<0.5
	7 /22/2009	<0.025	<0.5
	7 /28/2009	<0.025	0.4
Effluent at Outfall	5 /12/2009	0.07	<0.5
	7 /22/2009	<0.025	<0.5
	7 /28/2009	0.083	0.35
Foam, Clarifier A	6 /15/2009	1.08	5.6
	8 /10/2009	32.2	14.5
Foam, Outfall	5 /12/2009	0.069	<0.5

**Table 2**  
**Sample Results for Anionic (MBAS) and**  
**Nonionic (CTAS) Surfactants in Industrial User Discharges**

Location	Date	MBAS (mg/L)	CTAS (mg/L)
American Yeast	4 /27/2009	<0.025	3.5
	7 /27/2009	0.14	2.81
Buckeye Technologies	7 /27/2009	0.1	0.34
Cacade Tissue Group	7 /27/2009	0.39	1.64
KTG	4 /27/2009	<0.025	<0.5
	7 /27/2009	<0.025	0.45
PMC Biogenics	5 /19/2009	<0.025	<0.5
Front Street Interceptor	4 /27/2009	0.73	<0.5
	5 /11/2009	0.11	<0.5
	5 /18/2009	0.081	N/A
	7 /20/2009	0.19	<0.5
	7 /27/2009	0.11	0.57
Loosahatchie River Interceptor	4 /27/2009	<0.025	<0.5
	5 /11/2009	0.025	<0.5
	5 /18/2009	0.042	<0.5
	7 /20/2009	0.28	<0.5
	7 /27/2009	0.064	0.64
Wolf River Interceptor	4 /27/2009	0.08	<0.5
	5 /11/2009	0.063	<0.5
	5 /18/2009	0.143	N/A
	7 /20/2009	0.15	<0.5
	7 /27/2009	1.16	0.54
Plant Influent	4 /15/2009	1.17	N/A
	5 /12/2009	<0.025	<0.5
	7 /20/2009	0.15	0.7
	7 /28/2009	1.06	0.48

The reported concentrations of MBAS and CTAS in the wastewater samples, as presented in **Tables 1** and **2**, are well below 10 mg/l and, as such, do not indicate unusually high concentrations of these classes of surfactants present in the plant and/or industrial dischargers. None of the samples had individual or combined concentrations of these classes of compounds in excess of 10 mg/L. While this is not conclusive proof that the chemical mix of surfactants is not the primary cause of foam, it is clear that there is not a single class of surfactant that can be identified. This means that using a base charge neutralization approach may not fully address the foaming at Outfall 001. As a result, additional analyses of the foam in the plant (at clarifier A) were conducted and are presented in **Table 3**.

**Table 3**  
**Sample Results from Specialized Surfactant**  
**Analyses of Foam from Clarifier A at the M.C. Stiles WWTP**

Compound	Fatty Acids	Composition (%)
1	Palmitic acid	15.8
2	Stearic acid	7.2
3	Myristic acid	5.1
4	Oleic acid	16.4
5	Palmitoleic acid	3.8
6	Linoleic acid	2.9
	<b>Quaternary Amines</b>	
7	Didecyl dimethyl ammonium salt	2.2
8	Octyl decyl dimethyl ammonium salt	2.0
9	Dioctyl dimethyl ammonium salt	1.8
10	Benzyl dimethyl tetradecyl ammonium chloride	0.5
11	Decyl dimethyl ammonium salt	0.6
	<b>Linear Benzylalkylsulfonates (MBAS)</b>	
12	4-sulfophenyl undecanoic acid	6.2
13	4-sulfophenyl octadecanoic acid	3.1
14	4-sulfophenyl octanoic acid	1.6
	<b>Other Compounds</b>	
15	Nonylphenol ethoxylate	1.9

In addition to identification and quantification of specific surfactant compounds, a microscopic inspection of the foam was conducted. This analysis indicated that a moderate amount of bacteria was present in the foam structure. However, these bacteria were not consistent in morphology with known foam producing bacteria. Most likely, the bacteria present in the foam were floated into the foam by surfactant micelles and trapped there. With respect to the specific concentrations of surfactant compounds in the foam sample, compounds 1 to 6, which are long-chain fatty acids, may contribute to foaming problems. Long-chain fatty acids made up 51 percent of the dry weight of the foam; and while fatty acids are not a major source of foaming problems on their own, they often intensify the effects of surfactant-based foam. Fatty acids can also stabilize foam, making it more resistant to typical defoamers. Compounds 7 to 11 are significant products from the common class of surfactants known as quaternary amines and comprised 7.1 percent of the foam (by dry weight). Quaternary amines are commonly utilized in household and industrial cleaning solutions because of their antibacterial action. Quaternary amines are slowly biodegradable under aerobic conditions. Compounds 12 to 14 are linear alkyl benzosulfonates and were detected in the samples at 10.9 percent of the foam by dry weight. These compounds are common household detergents. An additional surfactant, nonylphenol ethoxylate (compound 15), was detected in the sample as well. This compound is also an ingredient in common household detergent and comprised less than 2 percent of the dry weight of the foam.

In summary, the foam that is present on the clarifiers is a mixture of man-made surfactants and fatty acids that likely arise from influent fats, oils, and grease, as well as potentially from



grease in the system. The foam is formed by the fatty acids and stabilized by the surfactants. A diverse mixture of common surfactants is present in the samples, indicating a high likelihood that they arise from multiple sources and/or products; and, therefore, reduction or removal of surfactants to the WWTP is impractical as they arise from many sources.

### **Visual Foam Observations**

In the mid-1990s, WWTP management initiated an outfall defoaming program consisting of injecting a 10-percent polydimethylsiloxane solution into WWTP effluent at the existing chlorine contact tank to eliminate or, at least, significantly reduce foaming on the river. In an effort to further decrease foam at Outfall 001, the WWTP started using a double-strength defoaming agent (i.e., a 20-percent polydimethylsiloxane solution) for injection into the WWTP effluent in April 2009.

Observations of foam on the river show that foam originating from Outfall 001 generally remains within approximately 90 yards of the eastern bank of the river. The foam that originates from the WWTP outfall is characterized as frothy and bright white. The foam tends to be unstable and generally dissipates within 0.5 miles of the outfall, even when the defoaming agent is not fed. Observations from the eastern river bank have also shown that dense, yellow-brown foam frequently originates from upstream of the outfall. This foam generally extends across the entire width of the river and does not originate from the outfall. WWTP management believes that a large proportion of the complaints of foam on the river have been due to reports of the dense, yellow-brown foam that originates at some point upstream from the plant. To demonstrate that the upstream-originating foam is different than the foam that is present at Outfall 001, a sample of this yellow-brown foam was collected and sent to Auburn University for specific surfactant testing. Results from this sample analysis are shown in **Table 4**.

In addition to identification and quantification of specific surfactant compounds, a microscopic inspection of the foam indicated that a moderate amount of bacteria and a large amount of silt/clay was present in the foam structure. This material gives the foam the yellowish-brown color when it begins to dry. The bacteria were not consistent in morphology with known foam producing bacteria; and the bacteria, clay, and silt particles that are present in the foam have most likely floated into the foam by surfactant micelles and become trapped.

**Table 4**  
**Sample Results from Specialized Surfactant Analyses**  
**of Foam from Mississippi River Upstream of Outfall 001**

Compound	Fatty Acids	Composition (%)
1	Palmitic acid	12.30
2	Stearic acid	9.60
3	Myristic acid	5.70
4	Oleic acid	11.80
5	Palmitoleic acid	5.00
6	Linoleic acid	3.10
7	Octadecanoic acid methylester	5.80
8	Octadecamide	4.60
9	Dodecanoic acid methyl ester	2.50
10	Tetradecanoic acid methyl ester	3.50
	<b>Quaternary amines</b>	
11	Didecyl dimethyl ammonium salt	0.90
12	Octyl decyl dimethyl ammonium salt	1.10
13	Diocetyl dimethyl ammonium salt	0.70
14	Benzyl dimethyl tetradecyl ammonium chloride	0.30
15	Decyl dimethyl ammonium salt	0.30
	<b>Linear Benzylalkylsulfonates</b>	
16	4-sulfophenyl undecanoic acid	1.20
17	4-sulfophenyl octadecanoic acid	1.40
18	4-sulfophenyl octanoic acid	1.00
	<b>Other Compounds</b>	
19	Nonyl phenol ethoxylate	0.90

With respect to the specific concentrations of surfactant compounds in the river foam sample, compounds 1 to 10 are long-chain fatty acids which may contribute to foaming problems. The long-chain fatty acids made up 63.9 percent of the dry weight of the foam. These fatty acids likely originate from organic decomposition and re-suspension of sediments. Naturally occurring river and sea foam are comprised of similar fatty acids. Compounds 11 to 15 are significant products from the common class of surfactants known as quaternary amines. They comprised 3.3 percent of the foam by dry weight. These quaternary amines comprise only a small fraction of the foam and are not likely to be the source of the foam. Compounds 16 to 18 are linear alkyl benzosulfonates and were detected by GC-MS in the samples and accounted for 3.6 percent of the foam by dry weight. These compounds are common manmade detergents and are likely present as result of use upstream. Nonylphenol ethoxylate (compound 19), was also detected in the sample but comprised less than 0.9 percent of the foam by dry weight.

In summary, the river foam is comprised mostly of naturally occurring fatty acids and is consistent with naturally occurring river foams. The foam is formed by fatty acids and their methyl esters that arise from fatty acid decomposition. The fatty acids may originate from

aerobic biodegradation of petroleum alkanes, vegetable oils, and animal fats. A small, but diverse mixture of common surfactants is present in the samples. The manmade surfactants were a minor component of the foam and are likely the result of upstream discharges.

## **Alternative Defoaming Agent Demonstration Study**

While various analyses and observations were being conducted, the City of Memphis contacted NRP Group to test an alternate, non-silicon based defoaming product to determine its effectiveness compared to the polydimethylsiloxane solution currently being used. Testing was conducted on November 5, 2009.

The NRP product was added at the beginning of the north and south troughs and at the junction box at a dose of 0.05 mg/L. The product was added 30 minutes after the silicone-based product was shut off and, again, 30 minutes later. An additional test was run following a shutoff of all defoaming products for 30 minutes when the NRP product was added again.

A slight visual reduction in the foaming was noted with the NRP product over the current silicone product used at the WWTP. However, the conditions of the river prevented conclusive results. The river was at a high stage, resulting in submergence of the discharge, which prevented the very heavy foaming that typically occurs when the river is at a low stage. The water flowing from the end of the discharge causes additional foaming as a result of the hydraulic release created.

## **Summary of Foam Evaluations and Recommendations**

In summary, the composition of the foam that is present in the M. C. Stiles WWTP and at Outfall 001 is a mixture of man-made surfactants and biologically produced fatty acids that likely arise from sewer users and other grease within the collection system. Foam is formed by fatty acids and is stabilized by surfactants/biosurfactants. A diverse mixture of common surfactants is present, indicating a high likelihood that they arise from multiple sources and/or products.

Removal and/or reduction of hydraulic drops at the chlorine contact basin and outfall that allow energy and air to be imparted into water would reduce foaming. Addressing the large hydraulic drops to the discharge would make anti-foaming agents effective (if necessary at all) and would eliminate most of the foaming at Outfall 001.

Due to the difficulty of identifying and eliminating all the surfactant and fatty acids discharging to the plant, the recommended solution is to address the foaming by restructuring the outfall structure to remove the large hydraulic drops responsible for air entrainment. Based on a preliminary review of the existing outfall, a redesign or reconfiguration of the existing outlet structure is anticipated to relieve the air entrainment and

release of the air at the outfall causing the existing foaming. Recommendations of this study are to move forward with the design of the outfall reconfiguration and construction of a new outfall structure.

## **Existing Outfall Structure**

Effluent from the plant has an energy grade line well above the invert elevation of 224 feet, which must dissipate roughly 10 to 40 feet of head at or before its discharge to the river. Currently, most of the foam is generated at the primary outfall vertical drop, situated at the top of the river bank, and there is little horizontal distance between the drop structure and outlet for foam bubbles to rise and be purged before discharging. When the river level is below an elevation of 197 feet, the drop structure to the river acts hydraulically as an open channel, preventing submergence that is hydraulically favorable for eliminating air entrainment.

Currently, effluent flows over a broad-crested weir in the chlorine contact basin into either an 84-inch primary or secondary overflow outfall pipe. From the chlorine contact basin at Station 0+00, the primary outfall pipe slopes downward to an invert elevation of 210 feet at Station 1+55, then continues at a reduced slope to an invert elevation of 209 feet at Station 3+49. Here, flow empties into a vertical drop structure adjacent to the Mississippi River bank where the outfall structure has a free-fall drop to an invert elevation of 190 feet. This free-fall entrains a significant amount of air, much of which is released up the vertical shaft, leaving a significant residue of foam to discharge into the river. Down gradient of the drop structure, flow continues within the primary 84-inch pipe which extends another 54 feet to Station 4+18, where its crown intersects the concrete mat bank revetment. Effluent flows into the river through an 8-foot-wide headwall structure at an invert elevation of 190 feet.

The secondary outfall pipe, which is used only at high Mississippi River water levels, currently slopes from Station 0+00, within the chlorine contact basin at an invert elevation of 224 feet, to Station 1+15 at an invert elevation of 221 feet. The pipe terminates at a headwall structure located approximately 200 feet from the shoreline. Any effluent that must be diverted through this secondary pipe flows through a 200-foot earthen drainage ditch, approximately at grade, to the bank of and into the river.

In the vicinity of the river outlet, the river bank is lined with heavy rip-rap, at an embankment side slope of approximately 3H:1V. The top elevation of the lined bank is 220 feet. The rip-rap lining continues down slope to an approximate elevation of 180 feet. At the location of the outfall, the Mississippi River is about 2,400 feet wide and has a maximum depth of 55 feet, based on the average recorded depth of 194 feet over the past 10 years.

## Mississippi River Water Elevations

Development of alternative outfall configurations to address foam formation depends upon the ability to remove major hydraulic drops in the outfall structure, as well as the submergence of the outfall structure in the Mississippi River. Thus, understanding the variability of water elevations in the river are critical to developing, evaluating, and selecting the best alternative to meet the objectives of reducing foam formation.

The past 10 years of historical Mississippi River flow and depth data were obtained and reviewed. In that period, the average Mississippi River water elevation at the City of Memphis has been 194.4 feet. Seasonal low-water levels were between 175 – 180 feet during that period. However in the most recent years the river elevation has been closer to 180 – 182 feet. The high-water level in the river within the past 10 years was 222 feet, recorded in April and May of 2002.

The past 10 years of Mississippi River data are shown in **Figure 2**. This data indicates that there are significant differences in the amount of time that an outfall would be entirely or partially submerged, based on alternative elevations at 190, 180, and 175 feet. As previously discussed, submergence is not the primary mode of foam reduction, but does provide a secondary mechanism for minimizing foam formation. Submergence also provides improved dispersion of effluent flow, which may improve compliance with other discharge permit standards.

Based on historical river data, a proposed outfall alternative at 190 feet would be partially submerged 62-percent of the time with the outfall being entirely submerged 41-percent of the time, or 150 days of the year. In comparison, proposed outfall structures at 180 feet and 175 feet would be partially submerged 96 and 99.6 percent of the time, respectively; and each alternative would be totally submerged 70 and 87 percent of the time, respectively. This equates to a submergence of 256 and 317 days, at elevations 180 feet and 175 feet, respectively. The 180-foot outfall alternative would provide an additional 100 plus days annually over the 190-foot alternative. The 175-foot outfall elevation provides an additional 60 days of submergence over the 180-foot alternative. This information regarding the number of days of outfall submergences for several alternatives will be used in a feasibility evaluation that will also consider constructability and cost with the alternative effectiveness, which includes consideration of the annual submergence of the outfall structure.



**Figure 2**  
**10-year Historical Mississippi River Data vs. Proposed Outfall Elevations**

## Alternative Outfall Designs

Five alternative layouts to the existing piping and drop structure were evaluated to address the hydraulic issues associated with air entrainment and foaming issues. The plan for addressing foam control is to adapt and extend the secondary outfall pipeline using one of the following alternatives. This approach will allow the existing primary outfall to remain in service throughout construction of a modified outfall structure. The alternatives that will be evaluated for feasibility, cost, constructability, and effectiveness include the following:

- Construct a non-vertical drop structure with discharge through a portal in the bank at an invert elevation of 190 feet.
- Construct a non-vertical drop structure with discharge through a portal in the bank at an invert elevation of 180 feet.
- Construct a non-vertical drop structure with discharge through a short diffuser located approximately 150 feet from the bank at an invert elevation of 175 feet



- Construct a non-vertical drop structure with discharge through a diffuser approximately 1,000 feet long, extending across the deepest part of the river, at and/or under an elevation of 150 feet. This option was quickly eliminated after discussions with the US Army Corps resulted in concerns due to its presence within a ship channel that routinely needs maintenance dredging, as well as the problems of sand waves propagating over the diffuser alignment.
- Utilize a mechanical energy dissipater in place of the reconfiguration of the existing piping and outfall structure.

## **Alternatives Evaluation**

For each of the alternatives, a new design could employ the existing 84-inch pipeline at the secondary outfall. Using and extending the secondary pipeline for these alternatives would allow construction to proceed without interrupting operation of the primary outfall. Upon completion and commissioning of any alternative, the existing outlet would be reconfigured as the secondary emergency outfall.

The non-vertical drop structure mentioned in all alternatives, except for the energy dissipater, would replace the vertical drop structure in the primary pipeline. This existing drop structure is considered to be the major hydraulic drop that causes air entrainment and subsequent foaming. The non-vertical drop would consist of a steep (about 6H:1V) portion of the extended secondary pipeline, from invert elevation 221 feet at station 110+00 to one of the alternative discharge elevations (190 feet, 180 feet, or 175 feet) at Station 350+00, where Station 0+00 is the outlet from the chlorine contact tank. At Station 350+00, a tee of the same diameter as the outlet pipeline would be used, with the stem of the tee rising vertically to several feet above grade. This tee stem would function as an air release for bubbles and foam generated where the effluent in the partially full, steeply sloping pipe enters the full-flowing pipe.

### **Alternative 1 – Non-vertical Drop Structure, Discharge at 190 Feet**

The first alternative provides for effluent discharge through a portal in the river bank at an invert elevation of 190 feet. This option would allow discharge into the River at the same elevation as the existing outfall. Therefore, there would be portions of the year that the outfall would not be submerged. Outfall submergence is not essential, because the primary reduction of foam would result within the flatter portion of piping, with release of the air and foam at the rising vertical tee; however, submergence of the outfall structure is an additional source of foam dissipation. This alternative also has the advantage that construction would be adjacent to the shoreline, evading the river cross section and any dangers of outfall burial by sand waves or damage by impact from river traffic. Due to the required depth of the outfall piping, this alternative would require the least excavation and site work, and would be the least expensive of the three outfall reconfiguration options (Alternatives 1, 2 and 3).

### **Alternative 2 – Non-vertical Drop Structure, Discharge at 180 Feet**

The second alternative provides for effluent discharge through a portal in the river bank at an invert elevation of 180 feet. This option would also be constructed adjacent to the banks, thus avoiding the danger of burial by sand waves or damage by river traffic. Compared with the present outlet, this alternative would significantly reduce foam, but would have submergence during a greater portion of the year, which could provide a greater level of foam dissipation throughout the year. In addition, the greater depth of submergence will also allow for greater mixing of the effluent, extending the plume a slightly greater distance from the shore than a free-fall plume. Due to the additional 10 feet of depth required for the construction of the effluent pipeline, this option would require additional excavation and site work.

### **Alternative 3 – Non-vertical Drop Structure, Discharge at 175 Feet**

This outfall reconfiguration option includes extending the outfall piping to an elevation of 175 feet – approximately 150 feet from the shore. Due to the extension into the river and the requirement of the multi-port diffuser, this option is a difficult option to construct and would have a significantly higher cost. This alternative also is subject to significant risk of damage from river traffic, including freight transport and dredging operations. Sand waves would also be a concern and could have significant impacts on plant operations and maintenance activities and costs. Although the outfall would be submerged a greater percentage of the year, the disadvantages of operations, in addition to the complex excavation (deeper on the plant site and open trenching of the river bed) required for construction of this alternative eliminate it from further consideration.

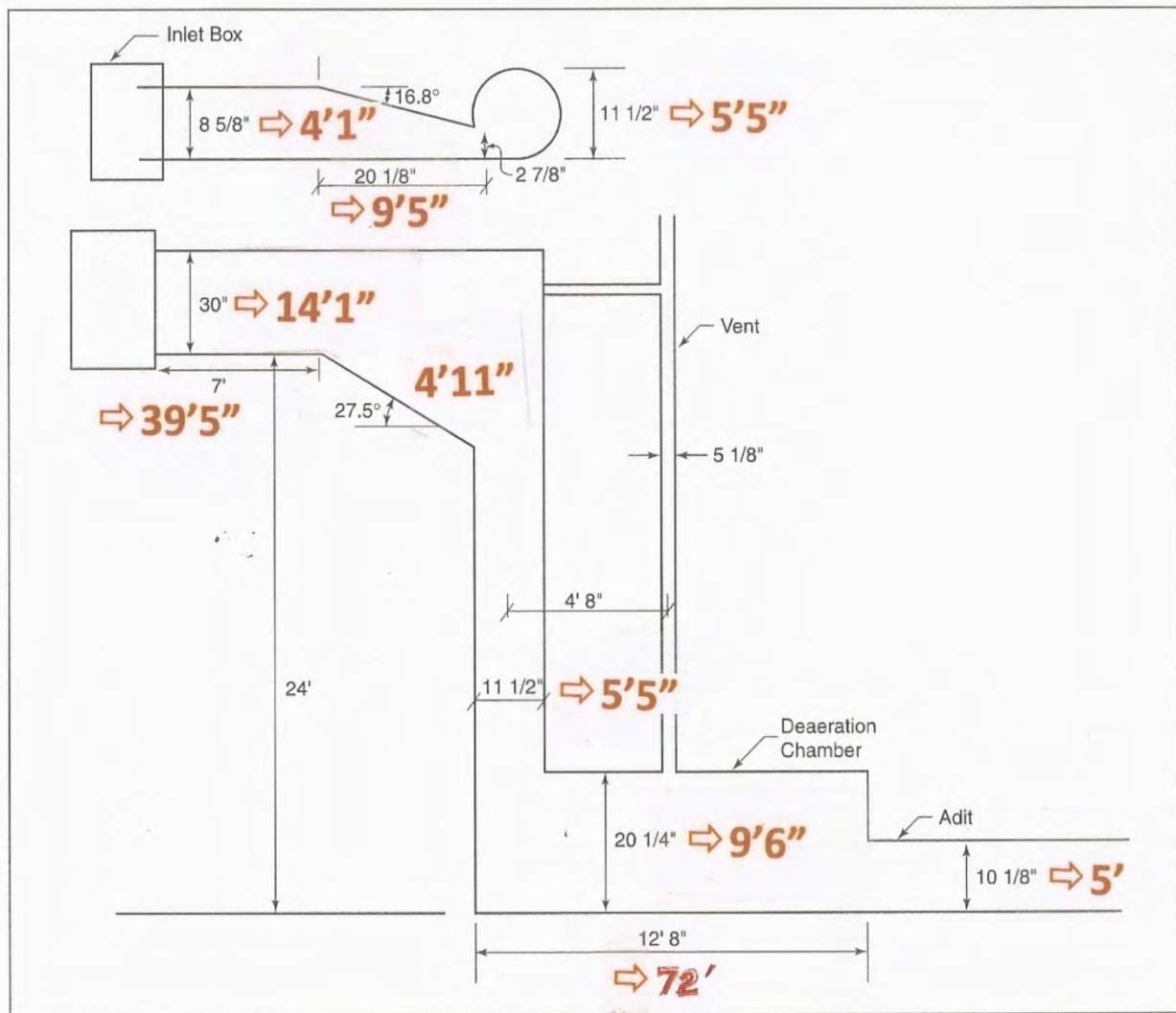
### **Alternative 4 – Non-vertical Drop Structure with Discharge Through Diffuser at 1,000 feet from Shore**

This alternative involves the construction of a non-vertical drop structure with discharge through a diffuser, approximately 1,000 feet long, extending across the deepest part of the river at and/or under an elevation of 150 feet. After preliminary discussions with the US Army Corps, this option was quickly eliminated due to concerns over the presence of a diffuser structure within a busy navigation channel. The diffuser would require significant, routine maintenance in addition to potential dredging responses to sand wave propagation over the diffuser alignment.

### **Alternative 5 – Mechanical Energy Dissipater**

The final alternative includes installation of an energy dissipater on the existing outfall. As an alternative to the sloping-pipe configuration recommended above, the vortex energy dissipater, which has been studied extensively in hydraulic laboratories at St. Anthony Falls, Iowa Institute of Hydraulic Research, Caltech, and other research institutions, was evaluated

for its applicability to the reduction of the foam at the M.C. Stiles WWTP outfall. A typical design resulting from physical model studies is shown in **Figure 3**. The dimensions shown in black, in inches, are the dimensions in a physical model that have been demonstrated to be successful in dissipating hydraulic head with a minimum of attendant foaming; the design flow rate in this model was 3.5 cubic feet per second (cfs) (2.3 mgd) , while the peak discharge in the model was 4.85 cfs (3.2 mgd).



**Figure 3**  
 A Vortex Drop Structure Design Based on Physical Modeling

The dimensions shown in red, in feet and inches, have been scaled to pass a design peak flow of 235 mgd (364 cfs) to address the peak flow at the M. C. Stiles WWTP. The scaling was conducted using a Froude scaling ratio and was determined as follows:

$$L_{\text{prototype}}/L_{\text{model}} = (Q_{\text{prototype}}/Q_{\text{model}})^{0.4} = (364/4.85)^{0.4} = 5.625.$$

Thus, the diameter of the drop shaft, 11 ½ inches in the model, becomes  $11 \frac{1}{2} \times 5.625 = 64.7$  inches = 5 feet 5 inches in the prototype, sized for the peak flow for the facility.

Except for the model's 24-foot drop (which has not been scaled, because the design should operate satisfactorily at lesser drop distances), the red dimensions in **Figure 3** indicate that this structure could fit into the space available between the end of the current secondary outfall and the top of the river bank. The extent to which this dissipater would reduce foaming, compared with the sloping-pipe configuration recommended above, is not explicitly understood and there are concerns with regard to its effectiveness. Complex design requirements and expensive, specialized, concrete construction would be required for this alternative. The resulting structure would be over 100 feet long and approximately 20 feet in depth. The massive size and unknown success of the vortex energy dissipater, compared with reconfiguring the outfall pipe makes this a less than preferred alternative.

## Recommended Alternative

It is recommended to design and implement Alternative 2, which includes a reconfigured piping and outfall with construction of the new outfall at a 180-foot elevation. Discharging to the river at an invert elevation of 180 feet, rather than the present 190 feet, puts the outlet approximately 30 feet farther from shoreline, which shall allow for greater mixing within the river. In addition, the lowering of the depth by 10 feet decreases the fraction of time that the discharge conduit flows as an open-channel pipe, resulting in submergence over 30 percent greater days than at an elevation of 190 feet. This submergence provides an additional level of secondary foam reduction and protection. The reconfigured outfall should allow for a significant reduction in foam production at the WWTP effluent, thereby eliminating the visible discharge of the plant. In order to estimate the level of effort required to develop a design and schedule, a design approach has been proposed and is discussed in the following section.

## Design Approach

Based on the preliminary evaluations, the proposed new design will extend the existing secondary outfall pipe to a new outfall elevation of 180 feet. The new outfall will dissipate energy via a hydraulic jump in a gently sloping pipe, rather than in a vertical drop structure.

While this Alternative will not completely eliminate air entrainment, the jump will create far less foam than a vertical free-fall. This approach will also provide a generously adequate distance after the jump to allow foam bubbles to collect at the top of the pipe and be vented, instead of continuing to the river and being discharged with the effluent. The layout of the preferred Alternative lowers the discharge invert from the current 190 feet to 180 feet, resulting in a discharge point about 30 feet further off shore than the current outfall structure. The proposed outfall would include the following physical constraints (note, however, that during detailed design the optimum sizes, locations, invert elevations, etc. will be determined and may vary somewhat from the conceptual configuration presented below):

- The existing headwall on the secondary outfall pipe, at Station 1+15 and invert 221 feet, would be removed.
- The existing 84-inch secondary outfall would be extended from Station 1+15 and invert 221 feet, sloping down to an invert elevation of 180 feet.
- From the toe of the outfall slope, the outfall conduit would continue horizontally at invert 180 feet to a point under the top of the river bank, about 350 feet from the chlorine contact basin.
- An 84-inch vertical vent shaft would be provided, intersecting the horizontal outfall pipe.
- From Station 3+57 feet, the horizontal outfall pipe would be continued to its intersection with the concrete-mat-revetted river bank, at Station 4+60, invert 180 feet. Flow would be released to the river in a headwall structure identical to the existing structure.

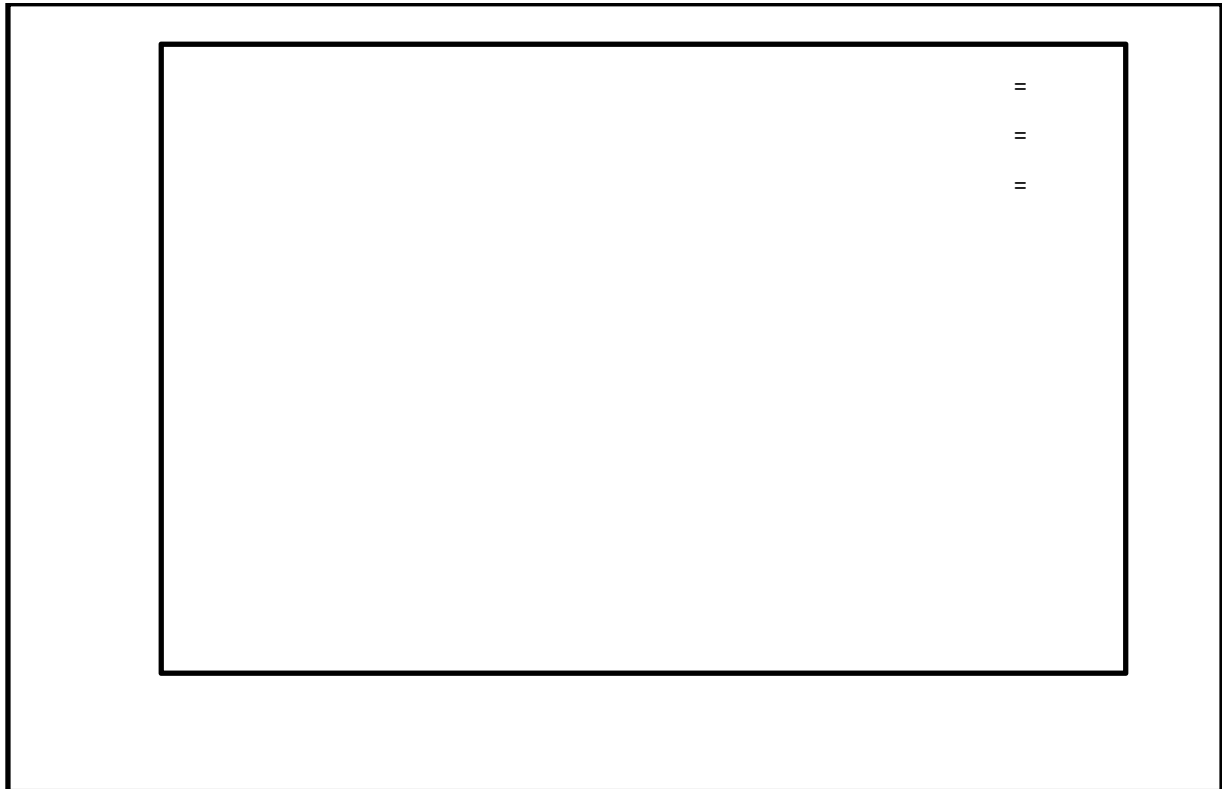
For the layout, bubble velocity rise will be considered in determining the horizontal distance between the bottom of the slope and the vent shaft. Research by Wu and Gharib (2002) has been used to calculate these dimensions which are presented in **Table 5**.

**Table 5**  
**Calculated Horizontal Distance between the**  
**Bottom of the Slope and the Vent Shaft**

Q, mgd	B, ft	X, ft	(X - 115), ft	Slope Tangent = (221-180)/(X-115)	Slope for Jump, Degrees
80	69	281	166	0.247	13.9
135	116	234	119	0.345	19.0
235	202	148	33	1.24	51.2

In **Table 5**, the position of the toe of the slope, X feet from the WWTP, is 350 feet - B feet. The tangent of the slope is the vertical drop from elevation 221 to 180, or 41 feet, divided by the horizontal run of the slope, which is X feet - 115 feet - the location of the end of the current secondary outfall. This provides for a variety of layout options which are illustrated, in

profile, in **Figure 4**. Three alternative slopes are shown in red, dark red, and violet. The vent pipe (violet) extends vertically to just above grade (green) at Station 350. The B distance is from the toe of the slope to the vent pipe.



**Figure 4**  
**Pipe Invert Profiles for Various Values of Slope Toe Location X**

## Layout

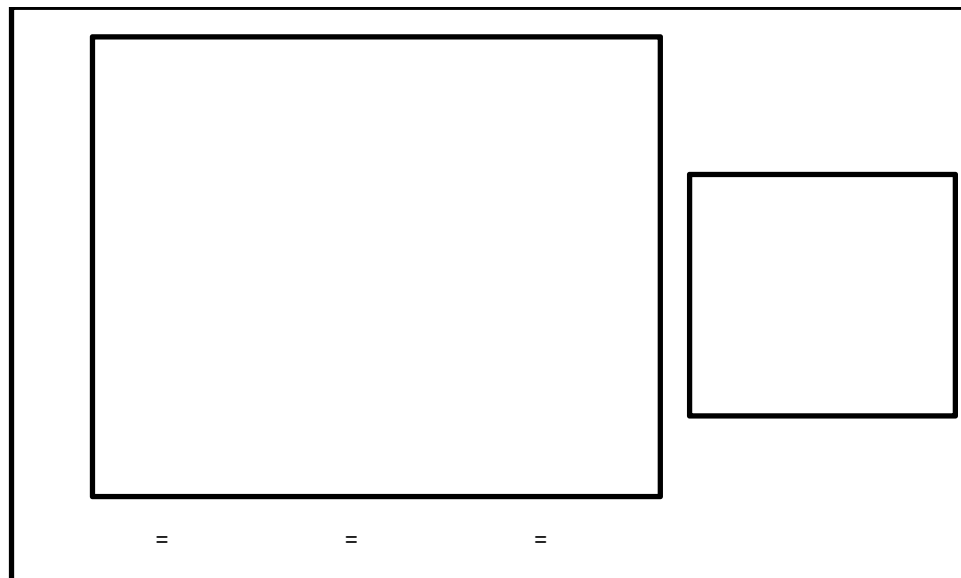
**Figure 4** provides a schematic of three configurations of the proposed alternative which would be buried beneath the shore grade and the revetted embankment (green line). All three layout configurations use the existing 84-inch secondary outfall line from the WWTP boundary at elevation 224 feet to a point 115 feet from the chlorine contact basin at elevation 221 feet ( <115, 221> ). All configurations slope downward to an invert elevation of 180 feet and continue horizontally at the invert elevation of 180 feet until intersecting a vertical vent pipe under the top of the bank at <350, 180>, then emerging through the river bank at <470, 180>, 500 feet from the chlorine contact basin.



The differences in these layouts are primarily in the slopes employed between the end of the existing 84-inch secondary outfall pipe at <115, 221> and the bottom of the slope at <X, 180>. A description of the differences among these layout options is provided below:

- **X = 150 ft (red line).** This provides the greatest distance, B, from the toe of the slope to the vent pipe (B = 200 ft), for adequate time for bubbles to rise to the top of the pipe and escape up the vent pipe even at the peak flow rate of 235 mgd. However, the slope of 50 degrees is the steepest, and the volume of excavation required would be the greatest, at about 7,000 cu yd.
- **X = 230 ft (dark red line).** This provides a B of 116 feet from the toe of the slope to the vent pipe, for adequate time for bubbles to rise to the top of the pipe and escape up the vent pipe at the permitted flow rate of 135 mgd. The slope would be 19 degrees, and the volume of excavation required would be slightly less than 6,000 cu yd.
- **X = 280 ft (violet line).** This provides the shortest distance, B, from the toe of the slope to the vent pipe (B = 70 ft), for adequate time for bubbles to rise to the top of the pipe and escape up the vent pipe, but is only designed at the current dry-weather flow rate of about 80 mgd. However, the slope of 14 degrees is the gentlest. The volume of excavation required would be the least, at just over 5,000 cu yd.

The excavation, bubble-rise distance, B, and slope quantities for these three alternatives are compared graphically in **Figure 5**.



**Figure 5**  
**Comparative Effects of Various Values of Slope Toe Location, X**

Among these alternatives, the required excavation varies a relatively small amount.

The B values are estimates of the distance required to let entrained air bubbles rise to the top of the pipe, and are conservative because:

- The bubble rise velocity,  $U$ , of 10 cm/sec applies to bubbles 1 mm in diameter, whereas most bubbles will be larger, with faster rise velocities.
- B was calculated assuming that all bubbles will need to rise throughout the entire pipe diameter,  $D$ , whereas the bubbles generated in the hydraulic jump on the slope will initially be distributed throughout the pipe cross-section.
- Except at very low river levels, the hydraulic jump causing bubble entrainment will occur some distance up the slope. Therefore, in addition to the horizontal distance,  $B$ , from the toe of the slope to the vent pipe, there will be a distance on the slope from the jump location to the toe of the slope for bubbles to rise toward the top of the pipe.

These points are somewhat offset by the fact that bubble rise will be slightly hindered by the turbulence of the flow in the pipe, tending to stir some of the rising bubbles downward.

All the slopes used in these three arrangements should engender less air entrainment than a vertical free-fall plunge, but in general, the gentler the slope the less air entrainment is to be expected. The arrangement in which  $X = 150$  ft has a slope of 50 degrees, which is much greater than those of the other two layouts – 19 and 14 degrees, respectively – and may be expected to entrain considerably more air.

## Summary and Recommendations

As previously discussed, the recommendation is to complete the design and implementation of Alternative 2 – construction of a new outfall structure with a discharge elevation of 180 feet. As noted, during the design, precise details regarding the configuration, location and sizing of the modified outfall will be made, and some variation to the details can be expected, however the overall concept of Alternative 2 will be followed. Discharging to the river at an invert elevation of 180 feet, rather than the present 190 feet, puts the outlet approximately 30 feet farther from the shoreline than the existing structure, which allows for greater mixing within the river. In addition, lowering the outfall depth by 10 feet decreases the fraction of time that the discharge conduit flows as an open-channel pipe opposed to being submerged by over 30 percent, providing an additional level of secondary foam reduction. The recommended layout for Alternative 2 includes a design that aligns the toe of the outfall slope at  $X = 230$  feet from the chlorine contact basin. This provides a slope of 19 degrees, which is much gentler than that for the steepest layout option, still providing a bubble rise distance that is adequate for average flows of 135 mgd. These recommendations will allow for a

significant reduction in foam formation in the outfall structure and the visible foam at the outfall into the Mississippi River.

**Proposed Schedule**

Based on the recommended alternative for improvements to the outfall structure and piping at the Stiles WWTP, the following proposed schedule is included for the implementation of the project from design through commissioning and startup. The total estimated time for a full operating system is anticipated to be 28 months. A schedule by major task is included for reference in **Figure 6**.

Project Task	Month																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Project Design	█																												
Permitting							█																						
Bidding									█	█																			
Procurement / Contract Negotiations											█	█	█																
Construction																█	█	█	█	█	█	█	█	█	█	█	█	█	
Commissioning and Startup																												█	

**Figure 6**  
 Outfall Improvements Implementation Proposed Schedule

## **References**

Wu, M-M, and M. Gharib, "Experimental Studies on the Shape and Path of Small Air Bubbles Rising in Clean Water," J. Physics of Fluids vol 14 no. 7, July 2002.

Drawings G-72, "Primary and Secondary Outfall Pipes: Plan and Profile," and G-74, "Plant Effluent Line: Outfall Details," both by Ellers, Reeves, Fanning and Oakley, Inc./Consoer Townsend & Associates, August 1972.

**APPENDIX A**  
**INDUSTRIAL USER SURFACTANT SURVEY**

Permit Number	Facility Name	Fac Street Address	Fac City	Fac Zip Code	Fac Phone Number	Interceptor	Facility Info_Notes	Product Name	Prod Chem Name	Product Family Name	Product Type or Class	Prod Manufacturer	Manufacturer Address	Manufacturer City	Manufacturer Zip Code	Manufacturer Phone	Product Info_Notes
N-FS3-102	Allied Graphics, Inc.	806 Walnut Street	Memphis	38106	901-774-5502	Front Street		V7310 Developer		Inorganic Salt		MacDermid	5210 Phillip Lee Drive, SW	Atlanta	30336	800-348-7201	
N-FS3-102	Allied Graphics, Inc.	806 Walnut Street	Memphis	38106	901-774-5502	Front Street		W6230 Defoamer	Proprietary Mixture	Inorganic/Organic Mixture		MacDermid	5210 Phillip Lee Drive, SW	Atlanta	30336	800-348-7201	
N-FS3-102	Allied Graphics, Inc.	806 Walnut Street	Memphis	38106	901-774-5502	Front Street		W6410-L	Proprietary Mixture	Organic Mixture		MacDermid	5210 Phillip Lee Drive, SW	Atlanta	30336	800-348-7201	
N-FS3-159	Ameripride Services, Inc.	800 Vance Avenue	Memphis	38126	901-647-3129	Front Street		Accentuate II		Liquid Laundry Starch		Dober Chemical Corp	14461 South Waverly Ave	Midlothian, IL	60445	708-388-7700	
N-FS3-159	Ameripride Services, Inc.	800 Vance Avenue	Memphis	38126	901-647-3129	Front Street		Bannish II	000935	Liquid Antichlor		Dober Chemical Corp	14461 South Waverly Ave	Midlothian, IL	60445	708-388-7700	
N-FS3-159	Ameripride Services, Inc.	800 Vance Avenue	Memphis	38126	901-647-3129	Front Street		Detergent #27	000575	Liquid Laundry Detergent		Dober Chemical Corp	14461 South Waverly Ave	Midlothian, IL	60445	708-388-7700	
N-FS3-159	Ameripride Services, Inc.	800 Vance Avenue	Memphis	38126	901-647-3129	Front Street		Dober Base Oil		Liquid Solvent Based Laundry		Dober Chemical Corp	14461 South Waverly Ave	Midlothian, IL	60445	708-388-7700	
N-FS3-159	Ameripride Services, Inc.	800 Vance Avenue	Memphis	38126	901-647-3129	Front Street		Dober-Brite	000514			Dober Chemical Corp	14461 South Waverly Ave	Midlothian, IL	60445	708-388-7700	
N-FS3-159	Ameripride Services, Inc.	800 Vance Avenue	Memphis	38126	901-647-3129	Front Street		Fabristat		Disinfectant		Dober Chemical Corp	14461 South Waverly Ave	Midlothian, IL	60445	708-388-7700	
N-FS3-159	Ameripride Services, Inc.	800 Vance Avenue	Memphis	38126	901-647-3129	Front Street		Super Reduce	000927			Dober Chemical Corp	14461 South Waverly Ave	Midlothian, IL	60445	708-388-7700	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Ajax Quik Solv Spray Cleaner				Colgate-Palmolive Co.	191 East Hanover	Morristown, NJ	07960-3151	800-432-8226	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Alki-Foam	AKF1, AKF5, AKF55			Sporlan Division of	206 Lange Drive	Washington, MO	63090	636-239-1111	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Lemon Fresh Pine-Sol All-Purpose		Clear yellow liquid with citrus odor		Clorox Professional Products Co.	1221 Broadway	Oakland, CA	94612	510-271-7000	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Clean Air Purge III				Waterbury Companies,	PO Box 640	Independence, LA	70443		
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Oxy Power Multi-Purpose		Household Cleaning		S.C. Johnson & Son, Inc.		Racine, WI	53403-2236	800-725-6737	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Misty Bolex		Toilet Cleaner		Amrep, Inc.	990 Industrial Park	Marieta, GA	30062	770-422-2071	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		GOJO Natural Orange Pumice Hand		Hand Cleaner		GOJO Industries, Inc.	One GOJO Planza, Suite 500	Akron, OH	44311	330-255-6000	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Husky 702 No Rinse Damp Mop Cleaner				Canberra Corp	3610 Holland-Sylvania	Toledo, OH	43615	419-841-6616	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Husky 325 T/N/A Bowl and Bathroom Cleaner		Bathroom Cleaner		Canberra Corp	3610 Holland-Sylvania	Toledo, OH	43615	419-841-6616	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Husky 705 Extra Heavy-Duty Stripper		Wax Stripper		Canberra Corp	3610 Holland-Sylvania	Toledo, OH	43615	419-841-6616	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Husky 1020 Fast Drying High Gloss		Floor Wax		Canberra Corp	3610 Holland-Sylvania	Toledo, OH	43615	419-841-6616	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Oakite Chlor-Tergent	3480			Oakite Products Inc.	50 Valley Road	Berkeley Heights, NJ	07922	908-464-6900	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		BCA 5390 Terminator		Heavy Duty Finish		Water's Edge Technologies,	111-3 Edwards Road	Byhalis, MS	38611	662-838-4013	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Softsoap Liquid Hand		Hand Cleaner		Colgate-Palmolive	191 East Hanover	Morristown, NJ	07960-3151	800-432-8226	
N-FS2-114	Conwood Company, LLC	46 Keel Avenue	Memphis	38107	901-248-1806	Front Street		Orange Energy, Pine-		All Purpose Cleaner		Clorox Sales Company	1221 Broadway	Oakland, CA	94612	510-271-7000	
N-WS3-156	Onyx Medical Corporation	152 Collins Street	Memphis	38112	901-323-6699	Wolf River	Facility only reported that they use Simple Green	Simple Green									
N-FS1-145	Owen Corning	704 Corrine Avenue	Memphis	38107	901-575-2010	Front Street		533 Release Agent			Liquid Release Agent	Ridgeland Chemical, Inc.	P.O. Box 1087	La Grange Park, IL	60526	847-593-0468	





Permit Number	Facility Name	Fac Street Address	Fac City	Fac Zip Code	Fac Phone Number	Interceptor	Facility Info_Notes	Product Name	Prod Chem Name	Product Family Name	Product Type or Class	Prod Manufacturer	Manufacturer Address	Manufacturer City	Manufacturer Zip Code	Manufacturer Phone	Product Info_Notes
N-WS3-158	Velsicol Chemical, LLC	1199 Warford Street	Memphis	38108	901-324-4401	Wolf River		Window Cleaner			Cello 1104	Cello Professional Products,	1354 Old Post Road	Havre de Grace, MD	21078	410-939-1234	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		Simple Green			Cleaner/Degreaser	Sunshine Makers, Inc.	15922 Pacific Coast Highway	Huntington Harbour, CA	92649	800-228-0709	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		VF-77T Liquid Compound	Proprietary Blend	Mixture	Tumbler Lubricant	Vibra Finish Company	8411 Seward Road	Hamilton, OH	45011	513-870-6300	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		Phosphoric Acid			Part Cleaner	GE Analytical Instruments, Inc.	6060 Spine Road	Boulder, CO	80301	303-444-2009	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		Amibrite-100 S.S. Brite Dip			Part Cleaner	Sur-Fin Chemical Corp.	1530 Spence Street	Los Angeles, CA	90023	213-262-8108	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		EPS 4000	Proprietary	Mineral Acid Mixture	Electropolish	Electro Polish Systems	5678 North Brown Deer Road	Brown Deer, WI	53223	414-357-8445	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		Oakite 90			Part Cleaner	Oakite Products, Inc.	675 Central Avenue	New Providence, NJ	07974	800-526-4473	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		Cleaner Catalogue No. 3-720			Part Cleaner	Miltex Instrument Co., Inc.	700 Hicksville Road	Bethpage, NY	11714	516-349-0001	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		CitriSurf 2210	STS-2210		Specialty Cleaner	Stellar Solutions, Inc.	4511 Prime Parkway	McHnery, IL	60050	847-854-2800	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		Citrisurf 2250	STS-2250		Specialty Cleaner	Stellar Solutions, Inc.	4511 Prime Parkway	McHnery, IL	60050	847-854-2800	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		Auto-Chlor A0150	A0150040		Laundry Detergent	Auto-Chlor System	746 Poplar Avenue	Memphis, TN	38105	800-477-3693	
N-WN5-143	Engineered Medical Systems, LLC	3325 Appling Road	Bartlett	38133	901-380-5552	Wolf River		Auto-Chlor MS0300009	4273815		Machine Rinse Aid Plus	Auto-Chlor System	746 Poplar Avenue	Memphis, TN	38105	800-477-3693	
N-WS4-180	Methodist Healthcare - Laundry Service Center	2655 Chelsea Avenue	Memphis	38108	901-323-2574	Wolf River	Facility is commercial laundry that uses laundry surfactants at a reported rate of 6 ounces per 100 pounds of soiled linen, with a water	Power Blast			Laundry Detergent	Gurther Industries, Inc.	15475 South LaSalle Street	South Holland, IL	60473	708-331-2550	
N-WS4-180	Methodist Healthcare - Laundry Service Center	2655 Chelsea Avenue	Memphis	38108	901-323-2574	Wolf River	Facility is commercial laundry that uses laundry surfactants at a reported rate of 6 ounces per 100 pounds of soiled linen, with a water	Power Jolt			Laundry Detergent Alkali	Gurther Industries, Inc.	15475 South LaSalle Street	South Holland, IL	60473	708-331-2550	

Permit Number	Facility Name	Fac Street Address	Fac City	Fac Zip Code	Fac Phone Number	Interceptor	Facility Info_Notes	Product Name	Prod Chem Name	Product Family Name	Product Type or Class	Prod Manufacturer	Manufacturer Address	Manufacturer City	Manufacturer Zip Code	Manufacturer Phone	Product Info_Notes
N-WS4-180	Methodist Healthcare - Laundry Service Center	2655 Chelsea Avenue	Memphis	38108	901-323-2574	Wolf River	Facility is commercial laundry that uses laundry surfactants at a reported rate of 6 ounces per 100 pounds of soiled linen, with a water	NDT Conditioner			Water Conditioner	Gurther Industries, Inc.	15475 South LaSalle Street	South Holland, IL	60473	708-331-2550	
N-WS4-180	Methodist Healthcare - Laundry Service Center	2655 Chelsea Avenue	Memphis	38108	901-323-2574	Wolf River	Facility is commercial laundry that uses laundry surfactants at a reported rate of 6 ounces per 100 pounds of soiled linen, with a water	NDT Sour Plus			Liquid Laundry Sour	Gurther Industries, Inc.	15475 South LaSalle Street	South Holland, IL	60473	708-331-2550	
N-WS4-180	Methodist Healthcare - Laundry Service Center	2655 Chelsea Avenue	Memphis	38108	901-323-2574	Wolf River	Facility is commercial laundry that uses laundry surfactants at a reported rate of 6 ounces per 100 pounds of soiled linen, with a water	NDT Softener			NDT Softner	Gurther Industries, Inc.	15475 South LaSalle Street	South Holland, IL	60473	708-331-2550	
N-FS4-173	Happy Day Laundry and Cleaners	1649 Union Avenue	Memphis	38104	901-274-0246	Front Street	Facility did not submit MSDS, but only that	Tide Laundry Detergent									
N-WN5-172	Gyrus ENT, LLC	2925 Appling Road	Bartlett	38133	901-373-0219	Wolf River		Foam Clean Assure			Foaming Antibacterial	Triple S	2 Executive Park Drive	Billercia, MA	01862	800-323-2251	Ingredients were not listed
N-WN5-172	Gyrus ENT, LLC	2925 Appling Road	Bartlett	38133	901-373-0219	Wolf River		Pine-Sol		Clear Amber Liquid with		Clorox Professional	1221 Broadway	Oakland, CA	94612	510-271-7000	
N-WN5-172	Gyrus ENT, LLC	2925 Appling Road	Bartlett	38133	901-373-0219	Wolf River		AFBC Topmost			Disinfectant Cleaner	Topmost Chemical	PO Box 18913	Memphis, TN	38118	901-352-7278	
N-WN5-172	Gyrus ENT, LLC	2925 Appling Road	Bartlett	38133	901-373-0219	Wolf River		AF315			Neutral PH Disinfestant/Deter	Beico Corporation	1001 Brown Avenue	Toledo, OH	42507	419-241-2156	
N-WN5-172	Gyrus ENT, LLC	2925 Appling Road	Bartlett	38133	901-373-0219	Wolf River		Simple Green All Purpose				Sunshine Makers, Inc.	15922 Pacific Coast Highway	Huntington Harbour, CA	92649	800-228-0709	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Floorstar Glaze Restorer 2			Floor Care	Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38120	800-756-5656	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	GOJO Green Certified Foam Hand Cleaner				GOJO Industries, Inc.	One GOJO Plaza, Suite 500	Akron, OH	44311	330-255-6000	No Ingredients listed
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	CEB74405 Premium Foam Soap				Corporate Express	1 Environmental Way	Broomfield, CO	80021	888-238-6329	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Odorgo Room Deodorant Pro				Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38120	800-756-5656	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Shine-Up Lemon	04441		Furniture Care	Johnson Diversy	2401 Bristol Circl	Oakville, Ontario	L6H 6P1	800-668-3131	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Floor Star Power Strip Finish			Floor Stripper	Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38118	800-756-5656	

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N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Floor Star Premium 25 Finish				Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38118	800-756-5656	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Green for Floors				Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38118	800-756-5656	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Green for GPC				Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38118	800-756-5656	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Green for Oxidizing Cleaner				Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38118	800-756-5656	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Green for Restrooms				Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38118	800-756-5656	No ingredients listed.
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Green for Scrub & Shine			Polish	Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38118	800-756-5656	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Green for Floor Finish Remover DS				Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38118	800-756-5656	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Green for Floor Finish			Floor Finish	Service Master Clean	860 Ridge Lake Blvd.	Memphis, TN	38118	800-756-5656	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Sodium Hydroxide	50% NaOH		Process Chemical	Ideal Chemical	PO Box 18698	Memphis, TN	38181-0699	901-363-7720	
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Phosphoric Acid	75% H3PO4	Nutrient Grade	Process Chemical	ICL Performance Products, LP		Carondelet (St Louis), MO			
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Sodium Hypochlorite Solution	12.5% Sodium Hypochlorite		Process Chemical	Brenntag Mid-South, Inc.	1405 Highway 136 West	Henderson, KY	42420-0020	270-830-1200	Water Treatment Chemical
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	ElimineX	Chlorinated High Alkaline Liquid Cleaner		Foaming Drain Cleaner	Suma/Johnson Diversy	2401 Bristol Circle	Oakville, Ontario	L6H 6P1	800-668-3131	Used in process area
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Roubaix			Liquid General Purpose Cleaner	JohnsonDiversy	2401 Bristol Circle	Oakville, Ontario	L6H 6P1	800-668-3131	Used to clean Package Room
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Divosan			Non-Foaming Liquid Peroxyacetic	JohnsonDiversy	2401 Bristol Circle	Oakville, Ontario	L6H 6P1	800-668-3131	Sanitizer used in process room
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	IO Pucks			Drain Cleaner and Deodorant	JohnsonDiversy	2401 Bristol Circle	Oakville, Ontario	L6H 6P1	800-668-3131	Drain cleaner used in process room
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Diton B	Chlorinated Cleaner			JohnsonDiversy	3630 East Kemper Road	Cincinnati, OH	45241-2046		Used for Packaging Room Cleanup
N-WO1-140	American Yeast Corporation	2405 North Second Street	Memphis	38127	901-358-4788	Direct Discharge to Plant	Facility is located directly adjacent to	Divosan MH VT11			Disinfectant	JohnsonDiversy					Used for process cleanup
N-WS1-119	Nex Air, LLC	1211 North McLean Blvd.	Memphis	38108	901-729-5550	Wolf River		4027ES Smothly Body				Delta Foremost	3915 Air Park Street	Memphis, TN	38118	901-363-4340	No ingredients lists
N-WS1-119	Nex Air, LLC	1211 North McLean Blvd.	Memphis	38108	901-729-5550	Wolf River		Boraxo Powdered Hand Soap	Mixture			The Dial Corporation	15101 North Scottsdale Road	Scottsdale, AR	85254-9934	888-468-6673	
N-WS1-119	Nex Air, LLC	1211 North McLean Blvd.	Memphis	38108	901-729-5550	Wolf River		Clean by Peroxy	0035		Janitorial	Spartan Chemical	110 Spartan Drive	Maumee, OH	43537	800-537-8990	Used for cleaning
N-WS1-119	Nex Air, LLC	1211 North McLean Blvd.	Memphis	38108	901-729-5550	Wolf River		NABC Non-Acid Disinfectant Bathroom			Janitorial	Spartan Chemical Company, Inc.	110 Spartan Drive	Maumee, OH	43537	800-537-8990	

Permit Number	Facility Name	Fac Street Address	Fac City	Fac Zip Code	Fac Phone Number	Interceptor	Facility Info_Notes	Product Name	Prod Chem Name	Product Family Name	Product Type or Class	Prod Manufacturer	Manufacturer Address	Manufacturer City	Manufacturer Zip Code	Manufacturer Phone	Product Info_Notes
N-WS1-119	Nex Air, LLC	1211 North McLean Blvd.	Memphis	38108	901-729-5550	Wolf River		Pine-Sol			Cleaner	The Clorox Company	1221 Broadway	Oakland, CA	94612	510-271-7000	
N-WS1-119	Nex Air, LLC	1211 North McLean Blvd.	Memphis	38108	901-729-5550	Wolf River		Formost 1663 Ram Drain Opener				Delta Foremost Chemical	3915 Air Park Street	Memphis, TN	38118	901-363-4340	
N-WS1-119	Nex Air, LLC	1211 North McLean Blvd.	Memphis	38108	901-729-5550	Wolf River		Foremost 4038-ES Grit Blitz				Delta Foremost	3915 Air Park Street	Memphis, TN	38118	901-363-4340	No ingredients listed
N-WS1-119	Nex Air, LLC	1211 North McLean Blvd.	Memphis	38108	901-729-5550	Wolf River		Professional Lysol Brand Diinfectant Foam Cleaner			Aerosol Disinfectant Cleaner	Reckitt Benckiser North America, Inc.	399 Interpace Parkway	Parsippany, NJ	07054-0225	703-527-3887	
N-WS4-104	Southern Cotton	2782 Chelsea Avenue	Memphis	38108	901-454-7315	Wolf River		EC Expo	Proprietary Mixture			Ideal Chemical and Supply	4025 Air Park Street	Memphis	38181-0698	901-363-7720	
N-WS4-104	Southern Cotton	2782 Chelsea Avenue	Memphis	38108	901-454-7315	Wolf River		Foamer A	Mixture			G.S. Robins and Company	126 Chouteau Avenue	St. Louis, MO	63102	314-621-5155	All ingredients are listed as
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Razor's Orange A-Peel				Razor Chemical Company, Inc.	1305 North Hills Blvd., #119	North Little Rock, AR	72114	501-771-2800	General Cleaning and Disinfection
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Citrus Breeze II				Razor Chemical	1305 North Hills Blvd., #119	North Little Rock, AR	72114	501-771-2800	General Cleaning and Disinfection
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		BioVex				Bio-Cide International, Inc.	2845 Broce Drive	Norman, OK	73072	800-323-1398	General Cleaning and Disinfection
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Eco-Star Detergent I				Ecoblab, Inc.	370 North Wabash Street	St. Paul, MN	55102	800-553-8683	Laundry Service
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Eco-Star Destainer									Laundry Service
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Eco-Star Builder C NP				Ecoblab, Inc. Textile Care Division	370 North Wabash Street	St. Paul, MN	55102	800-553-8683	Laundry Service
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Tri-Star So Fresh				Ecoblab, Inc.	370 North Wabash Street	St. Paul, MN	55102	800-553-8683	Laundry Service
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Eco-Star Sour VII									Laundry Service
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Solid Powder			Solid High Caustic Warewash	Ecoblab, Inc.	370 North Wabash Street	St. Paul, MN	55102	800-553-8683	Kitchen Dishwashing
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Lime-A-Way									Kitchen Dishwashing
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Jet Dry	Mixture of surfactants of 5%			Ecoblab, Inc.	370 North Wabash Street	St. Paul, MN	55102	800-553-8683	Kitchen Dishwashing
N-FS2-153	Criminal Justice Center, Shelby County	201 Poplar Avenue	Memphis	38103	901-545-2422	Front Street		Clear Foaming Antimicrobial Soap			Hand Soap	Action Chemical		Memphis, TN	38101	901-522-8783	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Redi Steamy Concentrate			Extraction Cleaner	Topmost Chemical	PO Box 18913	Memphis, TN	38118	901-363-7278	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Liberate			Very Aggressive No.	Topmost Chemical	PO Box 18913	Memphis, TN	38118	901-363-7278	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		PDF Speedway	Aqueous Solution of Glycol Ethers		Cleaner						
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Best Impressions			Metal Interlocked	Topmost Chemical	PO Box 18913	Memphis, TN	38118	901-363-7278	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Glass Shine			Glass and Surface	Topmost Chemical	PO Box 18913	Memphis, TN	38118	901-363-7278	

Permit Number	Facility Name	Fac Street Address	Fac City	Fac Zip Code	Fac Phone Number	Interceptor	Facility Info_Notes	Product Name	Prod Chem Name	Product Family Name	Product Type or Class	Prod Manufacturer	Manufacturer Address	Manufacturer City	Manufacturer Zip Code	Manufacturer Phone	Product Info_Notes
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Fiber Pro Red and Brown Out			Tanin Treatment and	Betco Corporation	1001 Brown Avenue	Toledo, OH	43607	419-241-2156	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Sure Cure			Water Based Urethane	Betco Corporation	1001 Brown Avenue	Toledo, OH	43607	419-241-2156	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Refresh Gel Deodorant			Deodorant	Fresh Products	4010 South Avenue	Toledo, OH	43615	419-531-9741	No Ingredients listed
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Lavender Lotion Wash			Sanitizer	Triple S	2 Executive Park Drive	Billerca, MA	01862	800-323-2251	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Conquer			Liquid Bateria / Digester /	Topmost Chemical	PO Box 18913	Memphis, TN	38118	901-363-7278	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Clorox Hand Sanitizing Spray			Clean Alcohol Solution with Fresh, Clean	The Clorox Company	1221 Broadway	Oakland, CA	94612	510-271-7000	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Hard as Nails			Hard Film Floor Finish	Betco Corporation	1001 Brown Avenue	Toledo, OH	43607	419-241-2156	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Dura Scrub			Liquid Cream Cleanser	Topmost Chemical	PO Box 18913	Memphis, TN	38118	901-363-7278	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Rest Stop			Acid Free RTU Disinfectant Restroom	Betco Corporation	1001 Brown Avenue	Toledo, OH	43607	419-241-2156	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Whallop			Cleaner	Drummond American	600 Coporate Woods	Vernon Hills, IL	60061	847-913-9313	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Magic Clean			Cleaner	Central Kentucky	129 Lee Oak Drive	Hodgenville, KY	42748		
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Enviro-Kleen Industrial Degreaser/Cleaner			Emulsified Detergent-Dispersant	Coastline, Inc.		Toledo, OH & Chicago, IL		800-553-3644	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Recon Plate Cleaner	Glycol Compound		Mild Detergent Wash	Rycoline Products, Inc.	5540 Northwest	Chicago, IL	60630	773-775-6755	
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		877 Plate Finisher			Plate Gum, for industrial use	Eastman Kodak	343 State Street	Rochester, NY	14650	800-242-2424	Used for plate gum
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Auto Wash 265		Detergent	Ultra Low VOC Blanket &	RBP Chemical Technology,					
N-FS2-137	Commercial Appeal, The	495 Union Avenue	Memphis	38103	901-529-2455	Front Street		Prosall Sterling			Stainless Steel Cleaner	Chase Products					
N-LS3-146	Runyon Industries	4300 Millington Road	Memphis	38127	901-353-4484	Loosahatchie River		Heavy Duty Degreaser		Alkaline	430	KO Manufacturing,	PO Box 3574	Springfield, MO	65808	417-866-8000	
N-LS3-146	Runyon Industries	4300 Millington Road	Memphis	38127	901-353-4484	Loosahatchie River		WT-Antifoam 41	Proprietary Mixture	Polydimethylsiloxane		Ideal Chemical and Supply	4025 Air Park Street	Memphis, TN	38181	901-363-7720	
N-LS3-146	Runyon Industries	4300 Millington Road	Memphis	38127	901-353-4484	Loosahatchie River		Soft Soap									
N-LS3-146	Runyon Industries	4300 Millington Road	Memphis	38127	901-353-4484	Loosahatchie River		Pine-Sol									
N-LS3-146	Runyon Industries	4300 Millington Road	Memphis	38127	901-353-4484	Loosahatchie River		Cascade Dishwashing Powder									
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		MIT 1032		Proprietary Blend		Southwest Engineers	39478 Highway 190 East	Slidell, LA	70461	985-643-1117	
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		Procor 2032				Southwest Engineers					
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		Chemex 3801 Aintiseptic Hnad Cleaner				Chemex, Inc.	1357 Hiestan Place	Memphis, TN	38104	901-272-2431	
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		Pathways Solid Drain Sanitizer			Sanitizer	Ecolab, Inc.	370 N. Wabasha Street	St. Paul, MN	55102	800-352-5326	
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		J-11			100% Plant Extract	Biocatalyst Corp	Rt. 1, Box 336A	Campbellsburg, KY	40011	800-551-9545	

Permit Number	Facility Name	Fac Street Address	Fac City	Fac Zip Code	Fac Phone Number	Interceptor	Facility Info_Notes	Product Name	Prod Chem Name	Product Family Name	Product Type or Class	Prod Manufacturer	Manufacturer Address	Manufacturer City	Manufacturer Zip Code	Manufacturer Phone	Product Info_Notes
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		ZEP FS AMINE Z			Sanitizer, Disinfectant, Deodorizer	Zep, Inc.	1310 Seaboard Industrial Blvd.	Atlanta, GA	30318	877-428-9937	
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		Purity FG WO White Mineral Oil 15, 35, 90				Petro-Canada					
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		Sodium Hypochlorite Sanitizer & Cleaner				Innophos	PO Box 8000 / 259 Prospect Plains Road	Cranbury, NJ	08512	609-495-2495	
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		Hot Stuff		Alkaline Detergent	Cleaning Compound	Power Cleaning Equipment,	2549 Lamar Avenue	Memphis	38114	901-743-7303	
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		SANI-T-10 / 1210.4800			Janitorial	Spartan Chemical Company, Inc.	1110 Spartan Drive	Maumee, OH	43537	800-537-8990	
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		Sparchlor Chlorinated Sanitizer /			Janitorial	Spartan Chemical Company, Inc.					
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		High Acid Cleaner FP			Janitorial	Spartan Chemical Company, Inc.					
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		Caustic Cleaner FP / 3189			Janitorial	Spartan Chemical Company, Inc.					
N-WS3-120	Fineberg Packing Company		Memphis		901-458-2622	Wolf River		Chlorinated Degreaser			Janitorial	Spartan Chemical Company, Inc.					
N-FS2-171	Crothall Laundry	245 South Camilla	Memphis	38104	901-521-7140	Front Street		Mikro-Quat			Quaternary Detergent	Ecolab, Inc.					
N-FS2-171	Crothall Laundry	245 South Camilla	Memphis	38104	901-521-7140	Front Street		Kindet			Commercial Liquid Laundry	Ecolab, Inc.					
N-LN2-112	Osmose, Inc.	152 Collins Street	Millington	38053	901-357-1703	Loosahatchie River		Ancocide 4050 / 1T2z		Bromonated Cyanoacetami		Chem-Aqua, Inc.	PO Box 152170	Irving, TX	75015		
N-LN2-112	Osmose, Inc.	152 Collins Street	Millington	38053	901-357-1703	Loosahatchie River		Ancool 3190 / 46TZ		Phosphate and Polymer		Chem-Aqua					
N-LN2-112	Osmose, Inc.	152 Collins Street	Millington	38053	901-357-1703	Loosahatchie River		Mr. Clean			Liquid All-Purpose	Procter & Gamble, Inc.	PO Box 355, Station "A"	Toronto, Ontario	M5W 1C5	800-465-2945	
N-LN2-112	Osmose, Inc.	152 Collins Street	Millington	38053	901-357-1703	Loosahatchie River		Softsoap Clear Liquid Hand Soap			Formulated Liquid Hand Soap	Colgate-Palmolive Company	300 Park Avenue	New York, NY	10022		
N-LN2-147	Lemm Services, Inc. - Memphis Transloading	1280 Big Orange Road, Suite 200	Cordova	38018	901-624-1325	Loosahatchie River		Clorox Regular Bleach				The Clorox Company	1221 Broadway	Oakland, CA	94612	510-271-7000	
N-LN2-147	Lemm Services, Inc. - Memphis Transloading	1280 Big Orange Road, Suite 200	Cordova	38018	901-624-1325	Loosahatchie River		Pine-Sol Brand Cleaner			Clear Amber Liquid with Characteristic Pine Odor	Uline	2200 South Lakeside Drive	Waukegan, IL	60085		
N-LN2-147	Lemm Services, Inc. - Memphis Transloading	1280 Big Orange Road, Suite 200	Cordova	38018	901-624-1325	Loosahatchie River		Tide Liquid Laundry Detergent				Procter & Gamble	5299 Spring Grove Avenue	Cincinnati, OH	45217		



# Appendix J

## State Projects

## **APPENDIX J**

### **I. STATE PROJECTS**

A. Under Paragraph 23 of the Consent Decree, the City of Memphis (“Memphis”) has agreed to pay one half of the civil penalty in State Projects approved by the State of Tennessee. As such, the total amount to be allocated toward State Projects is \$645,000 hereinafter referred to as the “State Project Funds.”

B. Memphis shall implement State Project A – Color Study in accordance with the approved Scope of Work and shall implement State Project B – Geographical Information System (GIS) for Memphis’ sewer collection system in accordance with the requirements and schedule set forth herein.

C. Part II (State Project A - Color Study) and Part III (State Project B – GIS), below, set forth provisions pertaining to the two State Projects. Memphis shall fund the State Projects for a total funding of \$645,000. The priority State Project for Memphis to undertake under this Consent Decree is State Project A - Color Study. Memphis shall provide an initial funding of \$200,000 as provided in Section II.B, below and shall provide such additional funding as necessary to implement the approved work plan up to a maximum of \$400,000. All funds remaining from the total State Project Funds of \$645,000 shall be used for the State Project B – GIS. Should Memphis implement the approved scope of work and undertake State Project A - Color Study for less than \$200,000, the remaining funds shall be used for the State Project B – GIS.

D. Memphis may use contractors or consultants in planning and implementing the State Project.

E. With regard to each State Project, Memphis certifies the truth and accuracy of each of the following:

a. That the cost information range for State Project A - Color Study provided to TDEC in connection with TDEC’s approval of the State Project is a good faith estimate of the cost to implement the State Project.

b. That, as of the date of executing this Decree, Memphis is not required to perform or develop the State Project by any federal, state, or local law or regulation and is not required to perform or develop the State Project by agreement, grant, or as injunctive relief awarded in any other action in any forum.

c. That Memphis has not received and will not receive credit for the State Project in any other enforcement action.

d. That Memphis will not receive any reimbursement for any portion of the State Project from any other person.

F. During the time Memphis conducts the Color Study, it shall submit to TDEC a quarterly report describing the status of Memphis' compliance or non-compliance with the Scope of Work and, if applicable, the reasons for non-compliance. TDEC shall give a reasonable period of time to correct any deficiencies or non-compliance. A few examples of deficiencies and non-compliance are (but not limited to): failure to conduct the Color Study in accordance with the Scope of Work; failure to fully consider the factors which can impact perceptions of "objectionable color" as set forth in II.B; and failure to conduct the Color Study in accordance with the agreed upon Methodology. Memphis shall submit quarterly reports beginning thirty (30) Days after the first full three month period following the Effective Date, and thirty (30) Days after each subsequent three month period thereafter until final approval of the Color Study by TDEC.

G. a. Failure to comply with the deadlines set forth herein Appendix J may result in the assessment of stipulated penalties under Section IX.34(d) (Stipulated Penalties). For purposes of State Project A – Color Study, a violation is limited to a failure to meet in a timely manner the requirements set forth in the Schedule (II.C) for Nos. 1, 3, and 5 and failure to submit the quarterly reports in a timely manner. For State Project B – GIS, a violation is limited to a failure to meet in a timely manner the requirements set forth in the Schedule (III.C) for No. 2.

b. Notwithstanding paragraph I.G.a, above, Memphis shall not be subject to a stipulated penalty under Section IX.34(d) for failure to timely meet the requirements set forth in the State Project A – Color Study Schedule (II.C) for Nos. 1 and 3 if Memphis finalizes the study and submits it to TDEC within thirty-one (31) months after the Effective Date of the Consent Decree. If TDEC approval takes more than thirty (30) days, the thirty-one month period shall be tolled during such time. Stipulated penalties shall not be assessed, if any, until such time as Memphis finalizes the study and submits it to TDEC. Based on the underlying circumstances involving the complexity of a color study, the State and Memphis may agree to such additional time as they deem appropriate.

H. State Project Completion Reports. In accordance with the schedule set forth herein for each State Project or within thirty (30) Days after the date set for completion of the State Project, Memphis shall submit a State Project Completion Report to TDEC for review and comment. Memphis shall provide a courtesy copy to the Environmental Protection Agency ("EPA") and to the Tennessee Clean Water Network for informational purposes. The State Project Completion Report shall contain all of the following information:

- a. A detailed description of the State Project as implemented.
- b. A description of any problems encountered in completing the State Project and the solutions thereto.
- c. An itemized list of all eligible State Project costs expended.
- d. Certification that the State Project has been fully implemented pursuant to the provisions of this Decree.

e. A description of the environmental benefits resulting from implementation of the State Project.

I. TDEC may require the submission of such plans, specifications, technical reports, and other information as deemed necessary to carry out the provisions of the Tennessee Water Quality Control Act (Act) or to carry out the rules and regulations adopted pursuant to such Act; in addition to that described in the preceding Paragraph, in order to evaluate Memphis' State Project Completion Report.

J. Within sixty (60) days after receiving the State Project Completion Report for Project A – Color Study, TDEC shall notify Memphis whether or not Memphis has completed the State Project A – Color Study in accordance with the approved scope of work. Within sixty (60) days after receiving the State Project Completion Report for Project B – GIS, TDEC shall notify Memphis whether or not Memphis has completed the State Project B - GIS in accordance with the requirements and schedule set forth herein. If the time for completion of State Projects A and B has passed (and an extension of time is not provided), and Memphis has not spent at least \$645,000 on State Projects A and B in accordance with this Appendix J, Memphis shall pay the difference between \$645,000 and the actual amount spent on the State Projects within sixty (60) days of TDEC's written request. If Memphis fails to make such payment by check, payable to the "State of Tennessee", within sixty (60) days of such request, stipulated penalties may be assessed under Section IX.34(d) (Stipulated Penalties) of this Consent Decree for each day after the sixty (60) day period that such payment is late.

K. Notwithstanding any provision to the contrary, TDEC and Memphis may agree to provide Memphis additional time to complete State Project A and/or B.

L. TDEC and Memphis recognize that Memphis' decision on disinfection could make the potential need to further control color unnecessary. Notwithstanding any provision to the contrary, TDEC and Memphis may agree at any time that Memphis need not complete the color study as provided in this Appendix. In such case, the Part II (State Project A: Color Study) requirements and any associated stipulated penalties shall no longer apply and any unused State Project Funds shall be used for State Project B – GIS (thereby resulting in State Project B being funded by the amount of \$645,000 minus the amount spent on State Project A – Color Study).

M. Disputes concerning satisfactory performance of the State Project and the amount of eligible State Project costs may be resolved under Section XI (Dispute Resolution) of this Decree.

N. Each submission required under this Section shall be signed by an official with knowledge of the State Project and shall bear the certification language set forth in Paragraph 20.

O. Memphis shall include the following language: "This project was undertaken in connection with the settlement of a civil enforcement action, United States et al. v. City of Memphis, taken on behalf of the Tennessee Department of Environment and Conservation under the Tennessee Water Quality Control Act." when submitting the final State Project Completion Report for each State Project to TDEC.

## **II. STATE PROJECT A: COLOR STUDY**

### **A. Background**

The existing NPDES permit for Memphis' Stiles wastewater treatment plan ("WWTP") contains the following narrative requirement pertaining to color:

"The wastewater discharge must not cause an objectionable color contrast in the receiving stream."

Industrial users of Memphis' Stiles WWTP discharge color to Memphis's facility which, as a result, then discharges color from its permitted outfalls. There have been discussions as to whether Memphis's discharge is in contravention of the narrative color requirement. Both TDEC and EPA assert that they have observed an objectionable color contrast. Memphis (as well as its industrial users subject to pass through prohibition) has expressed concern that the narrative standard is subjective and as to whether it provides a definitive goal for permit compliance.

TDEC and Memphis want to assure that Memphis's discharge is in compliance with applicable narrative water quality requirements. The underlying water quality standard for recreation uses provides:

"There shall be no color that...will result in any objectionable appearance to the water, considering the nature and location of the water." (Tenn. Code Ann. §1200-4-3-.03(4)(d)).

Memphis commented on a draft NPDES permit to be reissued to Memphis' wastewater treatment plants requesting that TDEC include numeric limitations. Memphis and TDEC have agreed that for the next permit renewal subsequent to completion of the Color Study, the development of a numerical effluent limitation is preferable.

This proposed State Project has been developed by Memphis under the agreed-upon Consent Decree. This State Project provides for Memphis to undertake a Color Study with the objective of providing information to TDEC to facilitate development of a numerical effluent limitation for color in the Stiles NPDES permit.

Under this proposal Memphis would undertake a study, that it is not otherwise currently legally obligated to undertake, to assist TDEC in the development of a numerical color permit limit. It is expected that this study would have water quality benefits in that it could lead to a numerical NPDES permit limit for color that clearly delineates when Memphis (and its industrial users) are in compliance/noncompliance. As such, it could reduce risks to the environment by giving Memphis and the industrial users generating the underlying color a clear path to remove and treat color, if necessary, using the most reasonable and efficient approaches.

## **B. Scope of Color Study**

In discussions with EPA and TDEC, it has become apparent that there is not a lot of experience in color studies to develop numerical effluent limits based on an underlying narrative water quality standard. The few studies that have been identified were undertaken years ago. While the results and approach used in these studies are set forth in the applicable reports, little information is known about the underlying costs and resource demands.

Based upon the approach used in other studies, Memphis is considering undertaking a “color panel” study. In essence, a “color panel” study is based upon the perceptions of the various participants as to what is objectionable and is not objectionable under various conditions. Thus, the study is not based upon water quality engineering principles but, instead, is more psychologically-based, involving the perceptions of the study’s participants.

While TDEC and Memphis believe that the amount of funding of the study as provided in this Appendix J to be appropriate, the uncertainties associated with such an unusual study necessitates that there be flexibility. As such, the approach provided in this Appendix J to the Consent Decree provides Memphis with latitude to reallocate the State Project Funds initially indicated for the Color Study.

Memphis will initially fund the Color Study in the amount of \$200,000 and, shall provide such additional funding as is necessary to undertake the Color Study but in no event shall Memphis be required to fund the study for more than \$400,000. Nothing herein, however, shall prevent Memphis and TDEC from subsequently agreeing that Memphis may fund the study for an additional amount from the Total State Project Funds as Memphis and TDEC deem appropriate. If the Color Study costs less then Memphis will use the remaining State Project Funds for State Project B.

As the perceptions of the “color panel” are, in essence, being used to determine what is “objectionable” color, it is important that if a color panel study is undertaken, that it addresses varying background conditions. Perceptions of “objectionable” color can be impacted by a number of factors including, but not limited to:

- Background color of the receiving water upstream of Memphis’s discharge
- Seasonal differences
- Receiving water flow levels
- Lighting conditions (e.g., time of day, cloud cover)
- Background riverscape
- River depth and width
- Turbidity
- Turbulence
- Bottom characteristics
- Amount, type and distance of flora

- Observer and viewing locations
- River’s context (e.g., industrial site vs. wooded site)

The study may include site visits of the participants and/or pictures/slides of various conditions. While the study may not address all of these factors, it is recognized that perception can be influenced by a number of site conditions and other factors such that the study would need to include various seasons and be sensitive to the range of other factors potentially affecting perceptions. Moreover, the underlying narrative water quality standard for color is based upon consideration of the nature and location of the receiving water.

The color to be evaluated will be the color of the receiving water upstream and downstream of the discharge.

**C. Schedule**

While TDEC and Memphis are initially agreeing to the following schedule, they both recognize that, due to the inherent uncertainties associated with the undertaking of a Color Study, the schedule should provide for flexibility. As issues arise, Memphis may request additional time. This schedule may be amended by agreement of TDEC and Memphis. TDEC’s agreement to additional time requests, if applicable, shall not be unreasonably withheld.

1.	In collaboration with TDEC, Develop Scope of Work, Goals and Objectives, Methodology (color panel or similar)	90 days after Consent Decree Effective Date, Submit for TDEC approval
2.	Selection Process and Award Contract	150 days after TDEC approval*
3.	Conduct Study	18 months after awarding contract
4.	Share Initial Study Results with TDEC	60 days after completion of study
5.	Finalize Study and Submit to TDEC	60 days after review with TDEC

\*Memphis reserves its rights to reject any and all bids in response to the RFP, after consultation with TDEC. In such case Memphis shall consult with TDEC on Memphis’ future action concerning the State Project. Future action may include but not be limited to rebidding the Color Study; modifying the study parameters; or placing all of the State Project Funds into State Project B. If the study is rebid or the plan modified, then an additional 120 days is automatically provided.

While the City has agreed to undertake the Color Study as described above, the City reserves its rights regarding, among other things, whether TDEC’s development of a numerical permit effluent limitation for color is undertaken in accordance with applicable law and whether the ultimate numerical limit chosen by TDEC is appropriate.



### **III. STATE PROJECT B: GEOGRAPHIC INFORMATION SYSTEM (GIS)**

#### **A. Background**

The existing sanitary sewer record system for Memphis contains more than 17,000 drawings, plans and other records. The Public Works Environmental Engineering Department and City Engineering over the years have developed a “paper-based GIS” which allows them to access much of the information contained on those records through the use of “hard-copy” map books and other mechanisms. While some of these documents are updated on an annual basis, newer technologies are available that can facilitate updates and give better access to information. Also new technologies are now available which can readily allow sewer records to be compared with aerial photos and other utility information. While the existing system functions properly with the current maintenance and administrative personnel, future employees not having this institutional history and familiarity with the sewer system are expected to benefit from translation of Memphis’s sanitary sewer records into an electronic GIS.

This second proposed State Project has been developed by Memphis as an additional mechanism which provides for expenditure of any remaining State Project Funds to be spent by Memphis for State Project B - GIS under this Appendix J after undertaking the State Project A - Color Study. This State Project B - GIS provides for Memphis’s Public Works Environmental Engineering Department to undertake translation of a portion of its sanitary sewer database into a form that can be integrated into Memphis’s overall backbone GIS program. This work will not fund the complete translation and integration of all sanitary sewer data into the GIS system but it will consume any of the \$645,000 State Project Funds not spent on the primary State Project A – Color Study. Once the extent of the primary State Project A – Color Study has been defined sufficiently to determine anticipated cost, Memphis can start spending funds on this State Project B - GIS. Due to the uncertainties associated with the cost of the State Project A - Color Study, the schedule for this State Project B - GIS provides time for Memphis to assess how much additional State Project Funds remain and to spend such funds on the State Project B - GIS. The total expenditure by Memphis for State Project A Color Study and State Project B – GIS will be \$645,000.

Memphis’ Information Services Division (IS) has a contract with the University of Memphis to undertake various GIS work on behalf of Memphis. While the contract does not provide for the inclusion of Department of Public Works sanitary sewer data (as further discussed below), this contract potentially can be used as a vehicle for having such data inputted into a GIS system.

Under this proposal Memphis would undertake to begin implementing the translation of its sanitary sewer record system information into GIS format. While Memphis is not otherwise legally obligated to undertake this work, both TDEC and Memphis agree that it will assist in improving future City sanitary sewer system management. Memphis anticipates that the GIS will potentially result in quicker responses to overflows; more efficient tracking of overflows; and improved efficiency in sanitary sewer system maintenance.

**B. Scope of the GIS Project**

Under this State Project B – GIS, the sanitary sewer plan/record information will begin with the scanning and geo-location of drawings and plans. Memphis will digitize paper maps of the sanitary sewer system into an electronic Geographic Information System (GIS) format. On a basin-by-basin basis, the paper maps will be scanned into images which can be geo-located based on the location of the areas mapped. The sanitary sewer lines (pipes) and points (connections/manholes) will be extracted from the paper map and stored in Memphis’s Enterprise GIS. Attributes of the lines and points will be captured in an attribute data table which can be accessed by the GIS.

Inasmuch as the Consent Decree identifies certain priority areas for assessments as set forth in Appendices E and F, the funds obligated under the State Project will be used first to cover the translation of sanitary sewer information in those same areas. The funds will then be used to cover adjacent portions of Memphis and will continue in an expanding fashion outward from the starting point or in such other fashion as Memphis deems appropriate until the State Project Funds are expended.

While nothing in the Consent Decree requires Memphis to expend funds for the State Project A Color Study and State Project B – GIS beyond \$645,000, Memphis subject to its sole discretion is not precluded from expending additional funds to undertake additional work beyond that provided herein.

**C. Schedule**

While TDEC and Memphis are initially agreeing to the following schedule, both agencies recognize that, due to the inherent uncertainties of executing State Project A, this schedule should provide for flexibility. As issues arise, Memphis may request adjustments to this schedule including possible additional time to complete same. TDEC’s agreement to time adjustments, if applicable, shall not be unreasonably withheld.

1.	Engage City’s GIS contractor to begin work*	120 days after Consent Decree Effective Date
2.	Complete GIS State Project Work	18 months after Completion of State Project A – Color Study
3.	Finalize State Project Completion Report and Submit to TDEC	60 days after work Completion

\*City estimates based upon existing contract between IS and University of Memphis. If contract is terminated or not extended, Memphis will attempt to engage University of Memphis under separate agreement to complete the work or else find another appropriate entity to undertake the work. Additional time shall be provided as necessary.