Nebraska Department of Environmental Quality

Wastewater Section
Suite 400, The Atrium, 1200 'N' Street
PO Box 98922
Lincoln, NE 68509-8922
Tel. 402/471-4220
Fax 402/471-2909

Authorization to Discharge Under the National Pollutant Discharge Elimination System (NPDES)

This NPDES permit is issued in compliance with the provisions of the Federal Water Pollution Control Act (33 U.S.C. Secs. 1251 *et. seq.* as amended to date), the Nebraska Environmental Protection Act (Neb. Rev. Stat. Secs. 81-1501 *et. seq.* as amended to date), and the Rules and Regulations promulgated pursuant to these Acts. The facility and outfall(s) identified in this permit are authorized to discharge wastewater and are subject to the limitations, requirements, prohibitions and conditions set forth herein. This permit regulates and controls the release of pollutants in the discharge(s) authorized herein. This permit does not relieve permittees of other duties and responsibilities under the Nebraska Environmental Protection Act, as amended, or established by regulations promulgated pursuant thereto.

NPDES Permit No.:	**NE0133680**
IIS File Number	**PCS 999428**
Facility:	**City of Omaha Combined Sewer Overflows**
Permittee	**City of Omaha, Omaha, Nebraska**
Receiving Water	**Papillion Creek and Missouri River Drainage Basins**
Effective Date:	**October 1, 2010**
Expiration Date:	**September 30, 2015**

Pursuant to a Delegation Memorandum dated July 26, 1999 and signed by the Director, the undersigned hereby executes this document on behalf of the Director.

Signed this 10th day of September, 2010

Jay D. Rempe[illegible], Deputy Director, Programs

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Part I. Identification of Outfalls Authorized to Discharge under this Permit

A. Characterization of Combined Sewer Overflow Outfalls

Combined sewer systems (CSS) are wastewater collection systems that are designed to transport sanitary sewage and stormwater in a single pipe to the wastewater treatment facility. In periods of dry weather, the combined sewer system conveys wastewater to the treatment facility. During wet weather events such as rainfall or snowmelt, total flows can exceed the capacity of the collection system or treatment facility. When this occurs the combined sewer system is designed to overflow directly to the receiving stream through combined sewer overflow (CSO) outfalls. The area of the City of Omaha served by a combined sewer system is generally bounded on the east by the Missouri River, the west by 76th Street, the north by Interstate I-680 and on the south by Harrison Street/Douglas County Line. CSO outfalls exist on the Missouri River, Big Papillion Creek, Little Papillion Creek, Blood Creek, Copper Creek, and Cole Creek

This permit specifically authorizes wet weather discharges from the City of Omaha's CSS through CSO outfalls according to the requirements, conditions, and limitations set forth in this permit. CSO outfalls are defined as designated overflow points in the combined sewer system (CSS) designed for the purpose of allowing the discharge of wet weather flows to receiving waters prior to receiving complete treatment in the City's Wastewater Treatment Plants. The CSO Outfalls associated with the Missouri River WWTF (MRWWTF) collection system are listed in Table 1 below and the CSO Outfalls associated with the Papillion Creek WWTF (PCWWTF) collection system are listed in Table 2 below. The MRWWTF CSO Outfall 102 is an approved wet weather bypass outfall of combined wastewater that has received primary treatment but not secondary treatment.

This permit does not address nor authorize treated wastewater discharges from the City of Omaha wastewater treatment facilities or storm water discharges through the separate storm sewer system. The discharge of treated wastewater from the MRWWTF, outfall 001, is authorized according to NPDES Permit NE0036358 and the discharge of treated wastewater from the PCWWTF, outfall 001, is authorized according to NPDES Permit NE0112810. Wet weather discharge from the City of Omaha municipal separate storm sewer system (MS4) is authorized in NPDES Permit NE0133698.

B. Missouri River WWTF Service Area CSO Outfalls

Table 1: Combined Sewer Overflow Outfalls from the Missouri River WWTF Service Area				
Outfall	**Lat/Long**	**Location**	**Treatment Plant**	**Receiving Water**
102	41.20139 -95.92420	Missouri River WWTF Primary Clarifier	Missouri River Plant	Missouri River
103	41.34309 -95.95745	Bridge Street lift station	Missouri River Plant	Missouri River
104	41.33673 -95.95313	Mormon Street	Missouri River Plant	Missouri River
105	41.32484 -95.94566	Minne Lusa Avenue	Missouri River Plant	Outfall channel to Missouri River
106	41.27674 -95.92464	North Interceptor	Missouri River Plant	Outfall channel to Missouri River
107	41.27685 -95.92526	Grace Street	Missouri River Plant	Outfall channel to Missouri River
108	41.26489 -95.92553	Burt-Izard Street	Missouri River Plant	Outfall channel to Missouri River
109	41.25140 -95.91986	1st and Leavenworth	Missouri River Plant	Missouri River
110	41.24801 -95.91782	Pierce Street Lift Station	Missouri River Plant	Missouri River
111	41.24321 -95.91654	Hickory Street lift Station	Missouri River Plant	Outfall channel to Missouri River
112	41.23771 -95.91412	Martha Street	Missouri River Plant	Outfall channel to Missouri River
113	41.23088 -95.91354	Spring Street Lift Station	Missouri River Plant	Missouri River
114	41.22384 -95.91741	Grover Street	Missouri River Plant	Outfall channel to Missouri River
115	41.22078 -95.92019	Riverview Lift Station	Missouri River Plant	Outfall channel to Missouri River.
117	41.21301 -95.92813	Missouri Avenue Lift Station	Missouri River Plant	Outfall channel to Missouri River
118	41.20602 -95.92914	South Omaha - Ohern Street	Missouri River Plant	Missouri River
119	41.19543 -95.92794	Monroe Street Lift Station	Missouri River Plant	Missouri River
121	41.2518 -95.9183	Jones Street	Missouri River Plant	Missouri River

C. Papillion Creek WWTF Service Area CSO Outfalls

Table 2: Combined Sewer Overflow Outfalls from the Papillion Creek WWTF Service Area				
Outfall	**Lat/Long**	**Location**	**Treatment Plant**	**Receiving Water**
201	41.07711 -95.87001	Papillion Creek WWTF Interceptor	Papillion Creek Plant	Missouri River
202	41.28863 -96.02482	72nd and Bedford	Papillion Creek Plant	Cole Creek
203	41.29222 -96.02139	69th and Evans	Papillion Creek Plant	Cole Creek
204	41.29931 -96.01801	63rd and Ames	Papillion Creek Plant	Cole Creek
205	41.23513 -96.01219	64th and Dupont	Papillion Creek Plant	Outfall channel to Little Papillion Creek
207	41.20272 -95.98020	44th and Y Street	Papillion Creek Plant	Blood Creek to Big Papillion Creek
208	41.20073 -95.98177	45th and T Street	Papillion Creek Plant	Blood Creek to Big Papillion Creek
209	41.07711 -95.98062	44th and Harrison	Papillion Creek Plant	Copper Creek to Big Papillion Creek
210	41.25009 -96.02087	72nd and Mayberry	Papillion Creek Plant	Little Papillion Creek
211	41.2403 -95.0167	69th and Pierce	Papillion Creek Plant	Little Papillion Creek
212	41.2401 -96.0169	69th and Woolworth	Papillion Creek Plant	Little Papillion Creek

Part II. CSO Outfall 102 Requirements

A. Interim Requirements for CSO Outfall 102– Effective until September 30, 2015

The Interim Requirements for CSO Outfall 102 listed below shall be in effect until September 30, 2015. On and after September 30, 2015, the Final Requirements for CSO Outfall 102 in Part II (B) of this permit shall be in effect.

The bypass of combined wastewater through CSO Outfall 102 at the MRWWTF is approved only when all of the following conditions are fulfilled. Approval for discharge through Outfall 102 may be modified or revoked by the NDEQ if there is a substantial increase in the volume or characteristics of the pollutants being introduced into the POTW that is not consistent with the objectives of the LTCP.

1. Secondary treatment is provided for an instantaneous flow rate of up to 42 MGD (65 cfs) at the MRWWTF and the City is in compliance with secondary permit limits for CBOD and TSS in the MRWWTF NPDES Permit NE0036358.
2. Discharge through CSO Outfall 102 is approved only for combined wastewater during wet weather events.
3. Discharge through CSO Outfall 102 shall receive treatment to include solids and floatables removal and disposal, plus primary treatment.
4. The effluent discharged through Outfall 102 is monitored according to the requirements set forth in Table 3 below.

Table 3: Interim Requirements for CSO Outfall 102

Parameters	Storet#	Units	Limit		Monitoring Frequency	Sample Type
			Value			
Flow Rate	50050	MGD	Report		Each discharge event [b]	Metered
Total Flow	82220	MG	Report		Each discharge event [b]	Metered
Duration of Discharge	81381	Hours	Report		Each discharge event [b]	Metered
Total Suspended Solids	00530	mg/L	Report		Each discharge event [b]	Composite
Biochemical Oxygen Demand	00310	mg/L	Report		Each discharge event [b]	Composite
Dieldrin	39380	mg/L	Report		Annually	Composite
Polychlorinated Biphenyls	39516	mg/L	Report		Annually	Composite
Parameters	**Storet #**	**Units**	**Limit**		**Monitoring Frequency**	**Sample Type**
			Geometric mean [c]			
E. coli [a]	31648	# 100 mL	Report		Each discharge event [b]	Grab
Parameters	**Storet #**	**Units**	**Limit**		**Monitoring Frequency**	**Sample Type**
			Minimum	**Maximum**		
pH	00400	SU	Report	Report	Each discharge event [b]	Grab

Footnotes
(a) E. coli monitoring and limits apply annually only during the recreational season (May 1 through Sept. 30).
(b) Each discharge event is defined as the time period from when precipitation begins to when all CSO or bypasses have stopped and flow into the plant has returned to normal dry weather levels.
(c) All E. coli results shall be geometrically averaged if more than one sample is taken during the discharge event.

B. Final Requirements for CSO Outfall 102 - Effective on and after September 30, 2015

The final requirements for CSO Outfall 102 listed below shall be in effect on and after September 30, 2015.

The bypass of combined wastewater through CSO Outfall 102 at the MRWWTF is approved only when all of the following conditions are fulfilled. Approval for discharge through Outfall 102 may be modified or revoked by the NDEQ if there is a substantial increase in the volume or characteristics of the pollutants being introduced into the POTW that is not consistent with the objectives of the LTCP.

1. Secondary treatment is provided for an instantaneous flow rate of up to 64 MGD (99 cfs) at the MRWWTF and the City is in compliance with secondary permit limits for CBOD and TSS in the MRWWTF NPDES Permit NE0036358.
2. Discharge through CSO Outfall 102 is approved only for combined wastewater during wet weather events.
3. Discharge through CSO Outfall 102 shall receive treatment to include solids and floatables removal and disposal, primary treatment, and disinfection when required.
4. The effluent discharged through Outfall 102 is monitored and limited according to the requirements set forth in Table 4 below.

Table 4: Final Requirements for CSO Outfall 102

Parameters	Storet#	Units	Limit Value	Monitoring Frequency	Sample Type
Flow Rate	50050	MGD	Report	Each discharge event [b]	Metered
Total Flow	82220	MG	Report	Each discharge event [b]	Metered
Duration of Discharge	81381	Hours	Report	Each discharge event [b]	Metered
Total Suspended Solids	00530	mg/L	Report	Each discharge event [b]	Composite
Biochemical Oxygen Demand	00310	mg/L	Report	Each discharge event [b]	Composite
Dieldrin	39380	mg/L	Report	Annually	Composite
Polychlorinated Biphenyls	39516	mg/L	Report	Annually	Composite

Parameters	Storet #	Units	Limit Geometric mean [c]	Monitoring Frequency	Sample Type
E. coli [a]	31648	# 100 mL	126	Each discharge event [b]	Grab

Parameters	Storet #	Units	Limit Maximum	Monitoring Frequency	Sample Type
Total Residual Chlorine [d]	50060	mg/L	0.137	Each discharge event [b]	Grab
		kg/day	43.5		

Parameters	Storet #	Units	Limit Minimum	Limit Maximum	Monitoring Frequency	Sample Type
pH	00400	SU	6.5	9.0	Each discharge event [b]	Grab

Footnotes
(a) E. coli monitoring and limits apply annually only during the recreational season (May 1 through Sept. 30).
(b) Each discharge event is defined as the time period from when precipitation begins to when all CSO or bypasses have stopped and flow into the plant has returned to normal dry weather levels.
(c) All E. coli results shall be geometrically averaged if more than one sample is taken during the discharge event.
(d) Monitoring for TRC is required only when chlorine producing chemical is added to the treatment system.

Part III. CSO Discharge Monitoring Requirements at Selected Outfalls

The following selected CSO outfalls 105, 106, 107, 108, 202, and 205 shall be monitored as set forth in Table 5 below at least once per year. Samples shall be collected after all inlets to the combined sewer system prior to discharge to the receiving stream. The City may propose alternative monitoring locations to replace the CSO outfalls listed in Table 5 below. The proposed changes may be implemented without a permit modification if approved by the NDEQ.

Table 5: Monitoring Requirements for Outfalls 105, 106, 107, 108, 202, and 205

Parameters	Storet#	Units	Information	Monitoring Frequency [(a)]	Sample Type
Total Flow	82220	MG	Report	Annually[(a)]	Calculated or Metered [(a)]
Duration of Discharge	81381	Hours	Report	Annually[(a)]	Calculated or Metered
Floating Solids or Visible Foam	45613	Presence or Absence	Report	Annually[(a)]	Visual Inspection
Total Suspended Solids	00530	mg/L	Report	Annually[(a)]	Grab
Biochemical Oxygen Demand	00310	mg/L	Report	Annually[(a)]	Grab
Total Nitrogen	00600	mg/L	Report	Annually[(a)]	Grab
Total Phosphorous	00665	mg/L	Report	Annually[(a)]	Grab
Conductivity	00094	µmho/cm	Report	Annually[(a)]	Grab
Temperature	00010	°C	Report	Annually[(a)]	Grab
Dissolved Oxygen	00300	mg/L	Report	Annually[(a)]	Grab
E. coli	50278	# 100 mL	Report	Annually[(a)]	Grab
pH	00400	SU	Report	Annually[(a)]	Grab

Footnotes
(a) Sampling shall take place during a discharge event at least once per year for each outfall.

Part IV. Nine Minimum Controls (NMC)

The City of Omaha shall submit documentation in the Annual Report (Part VII) according to the conditions and requirements specified below. The NMCs are operations and procedures that will reduce combined sewer overflows and their effects on receiving water quality that do not require significant engineering studies or major construction and are consistent with the complete LTCP.

A. Proper Operation and Maintenance (O & M)

Proper operation and maintenance of the CSS and CSO outfalls consists of a program to ensure that O & M procedures are periodically reviewed, updated, and documented. A major emphasis of O & M activities shall be on the elimination of dry weather overflows.

The City of Omaha shall include revisions and additions to the City of Omaha O & M procedures in the Annual Report submitted to NDEQ.

B. Maximize Use of the Collection System for Storage

The City shall continue to implement their program to maximize the use of the collection system for storage.

The City of Omaha shall, as appropriate, review the CSS to identify any locations where minor modifications can be made to increase in-system storage. These modifications shall be implemented as soon as practicably possible and documented in the Annual Report submitted to NDEQ.

C. Review and Modification of Pretreatment Programs

Minimize the impacts of discharges into the CSS from nondomestic sources.

As new significant industrial users are added to the CSS system, the City of Omaha shall determine what impact their dischargers would have on the quality and quantity of CSO discharges during wet weather events. A summary of new significant industrial users and measures taken the City to address any discharges during wet weather will be documented in the Annual Report.

D. Maximization of Flow to the POTWs for Treatment

Maximization of flow to the POTWs involves simple modifications to the CSS and treatment plant to enable as much wet weather flow as possible to reach the treatment plant.

The City of Omaha shall, as appropriate, evaluate and implement simple modifications to the CSS and procedures at the treatment plants to maximize flow to the POTWs. Any modifications shall be documented in the Annual Report.

E. Prohibition of CSOs during Dry Weather

Dry weather overflows from the City of Omaha combined sewer system are prohibited.

The City of Omaha shall document all dry weather overflows and the measures taken to correct the cause of the overflow in the Annual Report. Substantial dry weather overflows shall be reported to the NDEQ as soon as possible. (See Part VIII).

F. Control of Solid and Floatable Materials in CSOs

The control of solid and floatable materials in CSOs is intended to reduce visible floatables and solids using relatively simple measures.

The City of Omaha shall, as appropriate, reassess and implement site-specific processes to control solids and floatables in CSOs using relatively simple measures. If reassessment is appropriate, the conclusions and implementation of control measures shall be documented in the Annual Report.

G. Pollution Prevention

Pollution prevention is intended to keep contaminants from entering the CSS and accordingly the receiving waters by way of the CSOs.

The City of Omaha shall document any new pollution prevention measures enacted by the City in the Annual Report.

H. Public Notification

Public notification is intended to inform the public of location of CSO outfalls, occurrences of CSOs, plus health and environmental effects of CSOs.

The City of Omaha shall document any revision or updates to public notification procedures in the Annual Report plus any public announcements related to CSO discharges.

I. Monitoring to Characterize CSO Impacts and the Efficacy of CSO Controls.

Monitoring to Characterize CSO impacts involves inspections and other simple methods to determine the occurrence and apparent impact of CSOs.

The City of Omaha shall document any additional CSOs discovered by the City during routine inspections in the Annual Report. Characterization of the CSS system and the impact of the CSO discharges shall be regulated according to the requirements in the LTCP.

Part V. Long Term Control Plan (LTCP)

The City of Omaha submitted the complete LTCP to the NDEQ on Sept. 25, 2009, in fulfillment of the Permit requirements and the *CSO Control Policy*. The LTCP was subsequently approved by the NDEQ on February 10, 2010.

The City of Omaha shall submit documentation and reports applicable to the LTCP in the Annual Report (Part VII) according to the conditions and requirements specified below.

A. Characterization, Monitoring, and Modeling of the CSS

Protocols for characterization, monitoring, and modeling of the CSS is included in Section 2 of the LTCP *Baseline Conditions/Study Basins Descriptions*. This section of the LTCP addresses the response of the CSS to various precipitation events, identified the number, location, frequency, and characteristics of CSOs, and identified water quality impacts that resulted from CSOs.

The City of Omaha shall continue to characterize, monitor, and model the CSS as set forth in the LTCP. A narrative summary of changes to the characterization, monitoring, and modeling of the CSS as construction projects and sewer separation projects are implemented shall be included in the Annual Report.

B. Public Participation Plan

A public participation strategy that was used throughout the LTCP development and implementation is included in Section 5 of the LTCP *Public Participation Process.*

The City of Omaha shall continue to employ a public participation process throughout implementation of the LTCP and document public participation activities in the Annual Report.

C. Consideration of Sensitive Areas

The identification of sensitive areas to which the CSOs discharge is included in Section 2 of the LTCP *Baseline Conditions/Study Basins Description*. Sensitive areas include water with threatened or endangered species and their designated critical habitat, waters with primary contact recreation, public drinking water intakes, and any other areas identified by the City of Omaha or the NDEQ in coordination with other State or Federal Agencies.

By October 1, 2014, the City of Omaha shall submit a report to the NDEQ on reassessment of overflows to sensitive areas in those cases where elimination or relocation of the overflow is not included in the LTCP. The reassessment shall be based on consideration of new or improved techniques to eliminate or relocate overflows or changed circumstances that influence economic achievability.

D. Evaluation of Alternatives

The process that the City of Omaha undertook to identify, screen, evaluate, and select CSO control technologies and alternatives for the Missouri River and the Papillion Creek watersheds is included in Section 3 of the LTCP *CSO Control Alternatives Evaluation*. This process resulted in a group of selected CSO controls that includes two retention treatment basins, upgrades to the MRWWTF, replacement force mains , a deep tunnel for storage, green solutions, and sewer separation projects which are anticipated to satisfy both presumption approach and demonstration approach of the *CSO Control Policy* and will not preclude meeting WQS.

Any significant changes or revisions to the controls set forth in the LTCP shall be submitted to the NDEQ for review by October 1, 2014 according to the Part VIII(F) *Revisions to the Long Term Control Plan*.

E. Cost/Performance Considerations

An evaluation of the benefit cost ratios for CSO control levels and financial capability analysis is included in Section 3 *Control Alternative Evaluation* and Section 6 *Financial Capability Evaluation* of the LTCP. The City determined the most cost effective level of treatment and presented a financial plan that is sufficient to fund the CSO program through the year 2014.

The City of Omaha shall submit a financial report to the NDEQ by October 1, 2014; that sets forth a strategy to obtain sufficient revenue to fund the CSO program through at least the year 2020 that includes funding for the specific projects in the *Implementation Schedule*, Section 7 of the LTCP.

F. Operational Plan

The City of Omaha submitted a preliminary wet weather operational strategy plan that provides an overview of the collective operation of the combined sewer overflow controls to be implemented by the City in Section 8 *Monitoring Program and CSO Wet Weather Operations Plan* of the LTCP.

The City of Omaha shall update the wet weather operational strategy plan as CSO controls are constructed and sewers are separated. By September 30, 2015, the City of Omaha shall submit a wet weather protocol for discharge through CSO 102 that includes operational procedures to maximize wet weather flows through this outfall, provide disinfection, and chlorination/dechlorination.

G. Maximizing Treatment at the Existing POTW Treatment Facilities

An evaluation of the feasibility of expanding wet weather treatment at both the MRWWTF and the PCWWTF is included in Section 3.0 of the LTCP *CSO Control Alternatives Evaluation.* Major projects are included in the LTCP during the next 5 years to maximize treatment of combined wastewater at the MRWWF. Expansion of the treatment capacity of the PCWWTF is scheduled after this permit term.

The City of Omaha shall continue to evaluate opportunities to maximize treatment at the WWTFs as part of the adaptive management strategy for implementation of the LTCP. A summary of any new approaches identified to maximize treatment of combined wastewater at the WWTFs shall be included in the Annual Report.

H. Implementation Schedule

An implementation schedule that complies with the October 1, 2024 deadline for completing the CSO project is included in Section 7.0 of the LTCP *Implementation Schedule*. The construction and sewer separation projects will be implemented in phases some of which will be operationally complete by the end of this permit term.

The construction and sewer separation projects that will be designed, constructed, or operationally completed during the current permit term are included in Part VI *Compliance Schedule for Implementation of CSO Control Projects* of this permit which is the enforceable mechanism for implementation of these controls. The City of Omaha shall include progress reports on implementation of the CSO construction and sewer separation projects set forth in the compliance schedule in the Annual Report.

I. Post-Construction Compliance Monitoring Program

An outline of a post-construction compliance monitoring program is included in Section 8 of the LTCP *Monitoring Program and CSO Wet Weather Operations Plan* plus a draft document *Water Quality Monitoring for the Implementation Monitoring Plan (IMP)* was included with CSO NPDES permit application received March 29, 2010.

1. Part III of this permit *CSO Discharge Monitoring Requirements at Selected Outfalls* requires that the City monitor selected CSO outfalls for various parameters, the results of which shall be included in the Annual Report.
2. Instream monitoring data shall be conducted that is consistent with the *Implementation Monitoring Plan*. The data for this monitoring shall be included in the Annual Report.
3. Verification of sewer separation projects will be used to confirm that the desired level of separation was achieved. The City of Omaha may use various approaches to verify sewer separation including visual verification, water quality monitoring, or flow monitoring. The results of studies performed that support the deactivation of a CSO point shall be included in the Annual Report.

Part VI. Compliance Schedule for Implementation of CSO Control Projects

Upon issuance of this permit, the City of Omaha shall implement the compliance schedule below for construction projects set forth in the Long Term Control Plan (LTCP). This schedule may be modified in accordance with NDEQ Title 119 and written notice from the NDEQ. The City of Omaha shall include a yearly summary of construction activities, actions, and other measures applicable to this compliance schedule in the Annual Report (Part VII).

The following definitions shall apply to compliance schedule dates:

- Bid Year – The year when the bidding process for a specific project is started.
- Begin Final Design – The date when a Notice to Proceed is issued to a design consultant, or in the case of a design that is completed by City staff, the date when work is started by City staff.
- Commence Construction – When a Notice to Proceed is issued to the contractor.
- Complete Construction – When a major project or sewer separation project is substantially complete.
- Operationally Complete – When a major CSO project is substantially complete, is ready for its intended use, and has been made ready to operate by the City.

A. Schedule for Phase 1 Major Projects of the LTCP

September 30, 2015
On or before September 30, 2015; the City of Omaha shall complete the construction and evaluation of the projects listed below so that these projects are operationally complete.

Projects

1. Ohern/Monroe Industrial Flow Area Sewer Separation

   The city of Omaha shall separate industrial wastewater flows in the Ohern/Monroe area and direct high strength industrial waste directly to the MRWWTF for secondary treatment.

2. Industrial Lift Station, Force Main, and Gravity Sewer

   The City of Omaha shall construct a new lift station in the Ohern/Monroe area (site of a previous industrial pretreatment facility know as the Paunch Plant) to pump high strength industrial wastewater through a force main and gravity sewer to the MRWWTF.

3. Leavenworth Lift Station Replacement

   The City of Omaha shall construct a new Leavenworth Lift Station to replace the existing lift station at that location. The peak pumping rate of the new lift station shall be at least 43 MGD when the new South Interceptor Force Main is in operation.. The existing Hickory and Pierce Street Lift Stations will be abandoned, with flows being redirected to this new lift station.

4. South Interceptor Force Main (SIFM)

   The City of Omaha shall replace the existing SIFM with a new SIFM which will extend from the valve vault south of I-480 to the MRWWTF and will serve Burt-Izard, Leavenworth, Riverview, and Missouri Avenue Lift Stations.

5. Missouri River Improvements

The City of Omaha Missouri River Wastewater Treatment Facility (WWTF) shall be modified as described below so that the WWTF can provide secondary treatment of a flow rate of up to 64 MGD and primary treatment of an influent peak hour flow rate of 150 MGD during wet weather events by means of a new headworks facility, primary clarifiers, and a new disinfection basin.

a. Headwork Facility. A new headworks facility at the Missouri River WWTF shall be constructed with a sustained peak hour flow rate of 150 MGD.
b. Primary Clarifier Improvements. A new primary clarifier splitter structure shall be constructed to split influent flow to the existing primary clarifiers and improvements will be made to the existing primary clarifiers.
c. CSO 102 Disinfection. A chlorine contact basin shall be constructed to disinfect that portion of the effluent from the primary clarifiers that is discharged through CSO Outfall 102 rather than being treated by the WWTF's secondary treatment system. The system shall also include the capability to dechlorinate the effluent from CSO 102. By September 30, 2015; the discharge through CSO Outfall 102 shall be able to meet the final limits for E. coli and Total Residual Chlorine set forth in Table 4.
d. Industrial Treatment Train. A new headworks and two new primary clarifiers shall be constructed to separately treat the high-strength industrial flow. Effluent from the primary clarifiers shall flow to the WWTF's exiting Transfer Lift Station for pumping to the secondary treatment system.

B. Schedule for Phase 2 Major Projects of the LTCP

December 31, 2011
On or before December 31, 2011; the City of Omaha shall commence construction of at least one of the projects listed below.

Projects

1. Aksarben Village Phases A and B

The City of Omaha shall separate combined sewers in the Saddle Creek area at Aksarben Village

2. Bohemian Cemetery

The City of Omaha shall separate combined sewers in the Saddle Creek area at the Bohemian Cemetery.

3. Retention Treatment Basin at CSO 205

The City of Omaha shall construct a Retention Treatment Basin at CSO 205, located at 64th and Dupont, to provide disinfection and equivalent to primary treatment for a peak hour effluent discharge flow rate of up to 315 MGD of combined wastewater.

C. Schedule for Phase 3 Major Projects of the LTCP

December 31, 2013
On or before December 31, 2013; the City of Omaha shall commence construction of at least one of the projects listed below.

Projects

1. Sewer Separation from Miller Park to Pershing (CSO Outfall 105 Project)
2. Minne Lusa Stormwater Conveyance Sewer (CSO Outfall 105 Project)
3. JCB Stormwater Conveyance Sewer (CSO Outfall 105 Project)
4. Minne Lusa Storz Detention Basin Improvements (CSO 105 Project)
5. Paxton Blvd. Stormwater Conveyance Sewer (CSO Outfall 105 Project)
6. CSO105- Minne Lusa Avenue Storage Facility – Phase 1

D. Schedule for Phase 1 Sewer Separation Projects of the LTCP

December 31, 2011
On or before December 31, 2011; the City of Omaha shall complete the construction of sewer separation projects listed below.

Projects

1. Webster Street Phase 2 (Burt Izard CSO 108-3A)
2. 42nd and X (OPW 50986) (Papillion Creek South CSO 209-1)
3. 24th and Ogden (OPW 51487) (Minne Lusa CSO 105-8)

E. Schedule for Phase 2 Sewer Separation Projects of the LTCP

September 30, 2015

On or before September 30, 2015; the City of Omaha shall complete the construction of the sewer separation projects listed below.

Projects

1. South Interceptor (CSO 113-1, Spring Street)
2. Bridge Street (CSO 103-1, 36th Street)
3. Burt-Izard (CSO 108-3B, Nicholas Street Phase 1)
4. South Interceptor (CSO 112-1, Martha Street Phase 1)
5. Burt-Izard (CSO108-3, Nicholas & Webster Separation Phase 1)
6. Papillion Creek North (CSO 211-1, Separation)
7. Burt Izard (CSO 107-2, 26th & Corby Phase 1)

F. Schedule for Phase 3 Sewer Separation Projects of the LTCP

December 31, 2014

On or before December 31, 2014, the City of Omaha shall initiate the bidding process for the sewer separation projects listed below.

Projects

1. South Interceptor (CSO 117-1, Missouri Avenue Phase 1))
2. Burt-Izard (CSO 108-3, Nicholas and Webster Separation Phase 2)
3. Burt-Izard (CSO 108-3B, Nicholas Street Phase 2)
4. Cole Creek (CSO 204, Phase 1)
5. South Interceptor (CSO 117-1, Missouri Avenue Phase 2)
6. Burt-Izard (CSO 107-2, 26th and Corby Phase 2)
7. Ohern/Monroe (CSO119-6, Gilmore Avenue Phase 1)
8. Cole Creek (CSO 204 Phases 2 and 3)

Part VII. Annual Report

The City of Omaha shall submit an Annual Report to the NDEQ within 30 days following October 1, 2011 and within 90 days following each yearly (Oct 1–Sept. 30) anniversary of this permit that provides a summary of actions, activities, and measures taken by the City of Omaha to fulfill the requirements of this permit. The Annual Report shall contain at a minimum the following sections.

A. Nine Minimum Controls

Reports, documentation, dry weather overflow events, and evaluations as required for each of the *Nine Minimum Controls* in Part IV of this permit.

B. Reports and Documentation Applicable to the Long Term Control Plan

Reports and documentation required in the *Long Term Control Plan* as set forth in Part V of this permit.

C. Compliance Schedule for Implementation of CSO Control Projects

A summary of construction activities, actions, and other measures completed according to the *Compliance Schedule for Implementation of CSO Control Projects* set forth in Part VI of this permit.

D. CSO Outfall Monitoring Data

A summary of monitoring data from MRWWTF Outfall 102 and monitoring data for selected CSO outfalls as required in Parts II and Part III of this permit.

E. Instream Monitoring Data

A summary of instream monitoring data consistent with the *Implementation Monitoring Plan* objectives to include monitoring station identification, stream identification, the list of parameters along with the monitoring results.

F. Other Information

Other information that may be included in the Annual Report to include “measures of success” such as reduction in the number of overflow events, reduction in the number of CSO outfalls, or other indicators or improvements of receiving water quality.

Part VIII. Other Conditions and Requirements

A. Narrative Requirements Applicable to the Long Term Control Plan

The selected CSO controls shall be implemented, operated, and maintained as set forth in the Long Term Control Plan (or approved modification thereof) submitted to the NDEQ September 25, 2009 and approved by the NDEQ February 110.2010.

B. Narrative Requirements Applicable to CSO Discharges

The following narrative requirements are applicable to CSO discharges from the City of Omaha combined sewer system to the receiving water during wet weather events.

1. The CSO discharges shall not be toxic to aquatic life in surface waters of the State outside the mixing zones allowed in NDEQ Title 117, *Nebraska Surface Water Quality Standard*.
2. The CSO discharges shall not contain floating, suspended, colloidal, or settleable materials that produce objectionable films, colors, turbidity, deposits, or noxious odors in the receiving stream or waterway.
3. The CSO discharges shall not contain pollutants at concentrations or levels that cause the occurrence of undesirable or nuisance aquatic life in the receiving stream.

C. Reopener Clause

This permit may be modified or revoked and reissued for cause.

D. Notification and Approval

Approval from the NDEQ shall be obtained in advance by the City of Omaha for any of the following actions.

1. The addition of any new combined sewer outfalls to the CSS.
2. Any modifications, improvements, or additions to the CSS that expands the CSO service area.
3. The addition of storm water or surface inlets to the combined sewer system that would result in expansion of the existing CSS service area.

E. Immediate Reporting Requirements

The City of Omaha shall report within 24 hours to the NDEQ verbally upon becoming aware of any of the following events. A follow-up written report on any of these events shall be submitted by the City to the NDEQ within five days after the verbal report.

1. A substantial dry weather overflow event and the actions taken by the City to mitigate the impact of the overflow and correct the problem.
2. Indication that the discharge from any CSO outfall may be causing distress to fish, aquatic life, plant life, wildlife, or livestock.
3. Any sizeable spill, leak, or contamination in the CSS that could adversely impact CSO discharges.

F. Revision of the Long Term Control Plan (LTCP)

The LTCP may require revision to reflect new information, new technology, or other changes that become evident during the LTCP implementation process. Proposed significant revisions to the LTCP shall be submitted by October 1, 2014 for review and approval by the NDEQ. Significant revision to the LTCP generally means modification of the major CSO projects and milestone dates in Chapter 7, *Implementation Schedule*, of the LTCP.

G. Biosolids Disposal

The City of Omaha shall dispose of biosolids obtained from the combined sewer system and/ or CSO outfalls in accordance with NDEQ Title 119, Chapter 12 and 40 CFR, Part 503.

Nebraska Department of Environmental Quality
Wastewater Section

1200 'N' Street, Suite 400, The Atrium
PO Box 98922
Lincoln, NE 68509-8922
Tel. 402/471-4220
Fax 402/471-2909

Fact Sheet
City of Omaha Combined Sewer Overflow
Omaha, Nebraska
NPDES NE0133680

June 25, 2010

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Attachment: Excel spreadsheet *wlashtcl.xls*

A. Proposed Action - Tentative Determination

On the basis of a preliminary staff review, the Nebraska Department of Environmental Quality has made a tentative determination to reissue with changes the NPDES Permit NE0133680 to the City of Omaha for Combined Sewer Overflows (CSO) based on the requirements and conditions set forth in the draft permit. The Department proposes to issue the permit for a 5 year term from October 1, 2010 through September 30, 2015.

B. Applicant and Facility Information

Applicant:	City of Omaha
Address	1819 Farnam Street, Omaha, Nebraska 68183
Other Information:	The City of Omaha wastewater treatment service and collection system is a publicly owned utility (SIC Number 4952), which receives and treats domestic wastewater. The collection system in some sections of the City of Omaha is combined so that both sanitary wastewater and stormwater runoff share a common conveyance and outfall.

C. Review of the City of Omaha Combined Sewer System and CSO Control Plan

1. Introduction

A combined sewer system (CSS) is a collection system owned by a state or municipality which conveys domestic and industrial wastewater plus storm water through a single pipe system to a Publicly Owned Treatment Works (POTW). A combined sewer overflow (CSO) is the discharge from a CSS, during a wet weather event, at a point prior to the POTW. CSOs are point sources subject to NPDES permit requirements including technology based and water quality based requirements of the Clean Water Act (CWA). Overflow discharges from combined sewer systems during rain events result in the release to the receiving waters of untreated sanitary sewage plus pretreated industrial wastewater and stormwater runoff. Therefore it can be expected that combined sewer overflows will contain pollutants that are present in domestic and industrial wastewater as well as those present in urban stormwater runoff. Many different types of contaminants may be present which may include pathogens, oxygen-demanding pollutants, suspended solids, nutrients, toxics and floatable matter. Therefore, CSOs can cause a variety of adverse impacts on the physical characteristics of surface water, impair the viability of aquatic habitats, and pose a potential threat to drinking water supplies. CSOs have been shown to be a major contributor to use impairment and aesthetic degradation of many receiving waters. These discharges have the potential to have an adverse effect on the receiving water quality and degrade the beneficial uses of the receiving waters.

2. General Description of the Omaha Combined Sewer System (CSS)

The City of Omaha treats domestic wastewater in two separate treatment works, the Missouri River Wastewater Treatment Facility (MRWWTF) and the Papillion Creek Wastewater Treatment Facility (PCWWTF). The City's wastewater treatment system encompasses a total service area of 275 square miles and a population base of 600,000. Within its corporate limits, the City owns, operates and maintains approximately 2,000 linear miles of sewer lines serving 400,000 residents in approximately a 130 square mile area. This includes approximately 850 linear miles of combined sewers in a 43 square mile area.

Combined sewer systems are designed to carry sanitary sewage and storm water in single wastewater collection system. During dry weather, all of the flow from the CSS is directed to the wastewater treatment facility. In periods of rainfall or snowmelt, the total flow may exceed the capacity of the combined sewer system or the treatment facilities. When this occurs the CSS is designed to overflow directly to the receiving waters. These overflow outfalls are referred to as Combined Sewer Overflows (CSOs).

There are currently 29 CSOs existing in the Omaha Combined Sewer System plus an approved CSO related bypass discharge from the primary clarifiers at the Missouri River WWTF. There are currently 19 CSOs overflowing to the Missouri River and 10 CSOs overflowing to tributaries of Papillion Creek. The location of these CSO outfalls and the water body to which they discharge is identified in Part I of the permit. The area of the City served by the combined sewer system is generally bounded on the east by the Missouri River, the west by 76th Street, the north by Interstate I-680, and on the south by Harrison Street/Douglas County Line. CSO outfalls exist on the Missouri River, Big Papillion Creek, Little Papillion Creek, Blood Creek, Copper Creek, and Cole Creek.

3. Historical CSO Corrective Action by the City of Omaha

Prior to the October 1, 2002 issuance of the CSO Permit the City began a program to evaluate and control CSO events thereby improving water quality conditions in the receiving waters for the discharges from the City combined sewer collection system and WWTFs. According to the City, the program activities included, but are not limited to;

- Between 1990 and 2002, the City spent $36.85 million on sewer separation projects, of which $10.5 million was spent on projects that directly reduced the number or magnitude of the CSOs or improved their quality. The sewer separation program is ongoing.
- Installation of mechanical bar screens at CSO 108 - Burt Izard and for the combined overflows from CSO 107 - Grace Street and CSO 106 - North Interceptor. These screens remove floatables and other large debris from the overflows. The cost of these screens was $6.4 million.

Since the 2002 issuance of the first CSO Permit, the City has complied with CSO Permit control activity requirements. The projects completed between 2002 and 2007 have included the following tasks.

- The City has eliminated four CSO discharge outfalls. These are CSO 116 - Homer Street at a cost of $2.80 million, CSO 209 - 44th and Harrison Street at a cost of $650,000, CSO 206 (43rd and S) at a cost of $921,860 and CSO 104 (Mormon Street) at a cost of $7.62 million.
- The City has spent $33.1 million on sewer separation projects of which $12.4 million was spent on projects that directly reduced the number or magnitude of the CSOs or improved the quality of discharge.
- As part of the ongoing sewer separation projects noted in the items above, the City has installed multiple storm water detention facilities. These facilities can result in a reduction in the CSOs as well as an improvement of the water quality of the overflows. Continued maintenance of these facilities is estimated at $1.4 million per year.
- The City has developed a model of the combined sewer system that is being used to evaluate alternatives for CSO controls. The cost of model development, flow monitoring, and technical assistance for development of submittals to NDEQ is approximately $990,000.
- The City hired a program manager to assist in the development of the LTCP. As part of this program, consulting firms have been hired to develop specific basin plans for control of the CSOs. The cost for development of the LTCP was $24.7 million.

Part IV of the 2002 CSO Permit required through specified CSO control activities that the City reduce the impacts of CSO discharges. CSO control activities as set forth in the CSO Permit include five primary components:

- implementation of the Nine Minimum Controls,
- submission of documentation to show that the Nine Minimum Controls Plan have been implemented,
- a schedule for the development of a LTCP,
- baseline CSO monitoring requirements, and
- annual report requirements

The City has developed and implemented the Nine Minimum Controls according to Permit requirements and submitted documentation in the Annual Reports.

In 2002, the City began development and implementation of the LTCP that included;

- The City submitted a Public Participation Plan on October 1, 2004.
- The City submitted a document that summarizes sensitive areas that will be considered in CSO LTCP activities in October 2006.
- The City submitted plans for Characterization, Monitoring and Modeling of the City's Combined Sewer System and Maximizing Flow to the Existing WWTFs in October 2005.
- The City submitted a plan for Evaluation of Alternatives in October 2004.
- The City submitted plans for Cost/Performance Considerations, development of Operational Plans, development of an Implementation Schedule and a Post Construction Compliance Program in October 2006.
- In connection with implementation of the CSO control activities, the City has conducted water quality studies of the Papillion Creek and Missouri River watershed in areas relevant to CSO controls. These studies were conducted by the City's consultant in cooperation with the United States Geological Survey ("USGS") under a $1,270,000 contract with the USGS.

The NDEQ issued a letter to the City of Omaha requiring the submission of a Substantively Complete Long Term Control Plan (SCLTCP) by October 2007 and a final LTCP by October 2009. The deadline for the SCLTCP was successfully met by the City by the submission of the SCLTCP on October 1, 2007.

The City hired a Program Management (PMT) Team in January 2006 to develop the LTCP as well as a team of consultants to evaluate the combined sewer system on a basin specific basis. Teams include the Basin Consultants, the program Management Team, the City of Omaha, the USGS, a Financial Advisor, and a Public Participation Facilitator.

A protocol was developed by the City of Omaha to layout a systematic procedure for developing, screening, and evaluating technologies and alternatives that can be consistently applied across all the basins. This includes the evaluation of basin, multi-basin, watershed, and system wide alternatives, from which the comprehensive LTCP was developed.

The CSO Control Policy recommends an enforceable mechanism such as a Consent Order for the development and implementation of the LTCP. The NDEQ finalized a Consent Order with The City of Omaha on August 8, 2007 that established an enforcement mechanism that will ensure specific dates are met during the implementation of the LTCP. The Consent Order established the following requirements.

- The City shall submit a final LTCP to the NDEQ for review and approval by October 1, 2009.
- The City shall complete implementation of the LTCP by October 1, 2024.
- The City shall submit yearly statue reports on the implementation of the LTCP to the NDEQ.

The second CSO permit was reissued to the City of Omaha on October 1, 2007 for a term of three years and required continued implementation of the Nine Minimum Controls and the development of a final LTCP by October 1, 2009. The Final LTCP was submitted to the NDEQ on September 25, 2009 that presented a schedule for implementation of selected controls to be completed by the October 2024 deadline. The LTCP fulfilled the NPDES permit requirements and is consistent with the EPA CSO Control Policy and the NDEQ Administrative Consent Order (Case No. 2710).

4. Summary of the Complete LTCP

The final LTCP presented a schedule for implementing the selected CSO controls by October, 2024. The LTCP was submitted in two volumes with Volume I containing the City's plan for addressing CSOs and Volume II containing appendices that provide additional information on specific parts of that plan.

The LTCP submitted by the City may be characterized as a current plan to implement effective CSO controls that could be modified in the future based on an adaptive management strategy. The City will adapt the LTCP by reviewing the latest technologies, the performance of the controls as they are implemented, and the health of the watersheds.

The LTCP is presented in 8 sections that address the long term CSO control projects required in the *CSO Control Policy* and in the 2007 NPDES CSO Permit. Reports, evaluations, and actions to be completed by the City applicable to the LTCP document are included in Part V of the draft permit. The elements of the LTCP will continue to apply as the specified controls are implemented. The LTCP sets forth the sequence of construction projects that is to be completed to meet water quality-based requirements of the CWA no later than October 1, 2024. The schedule sets forth implementation phases, the selected control projects under each phase, and the years when the phases are expected to start and be completed.

The selected CSO controls are projected to comply with both the Presumption Approach and the Demonstration approach of the *CSO Control Policy* and will not preclude achieving water quality standards. A summary of the selected CSO controls is presented below.

- Missouri River Wastewater Treatment Facility upgrades will increase secondary treatment to 64 MGD with equivalent to primary treatment of up to 150 MGD. Combined wastewater discharged through bypass CSO Outfall 102 will receive primary treatment and chlorination/dechlorination that will result in meeting water quality standards for E. coli. Other improvements include a new South Interceptor Force Main, Industrial Lift Station, new primary clarifiers, new headworks, and additional odor control.
- Sewer Separation projects are phased through the implementation period and will result in reduced flow of storm water into the CSS. The sewer separation projects will also provide replacement of aging infrastructure plus reduce backups into basements.
- A Deep Tunnel that will be constructed 170 feet underground with a diameter of 17 feet and a length of 5.4 miles that will be utilized to capture combined wastewater during a wet weather event. The Deep Tunnel with capture combined wastewater from several CSO outfalls which will then be conveyed to a wastewater treatment system.
- Two Retention Treatment Basins (RTB) will be constructed as part of the LTCP. One RTB will be located at the MRWWTF site and will provide treatment of the combined wastewater conveyed to the Deep Tunnel. The other RTB will be located in the Saddle Creek Area (CSO outfall 205) and will be able to treat combined wastewater of up to a flow rate of 315 MGD. Both RTBs will provide equivalent to primary treatment, disinfection of the wastewater, followed by dechlorination.
- Two storage tanks with one located in the Minne Lusa area and the other located in the Cole Creek area will provide storage of combined wastewater.
- Green solution projects will also be incorporated into the LTCP to provide reduction in stormwater runoff into the CSS during wet weather events.

The cost estimate for these controls is estimated to be $1.66 billion dollars (in April 2009 dollars) which includes contingencies based on a risk evaluation. Following implementation of the selected CSO controls approximately 94% of the combined wastewater will be controlled and no more than four untreated CSO events will occur in each watershed per year. Nine CSO outfalls will be deactivated and at least 85% of the combined wastewater will be treated as required by the Presumption Approach of the *CSO Control Policy*. Upon completion of the construction in 2024, water quality modeling indicates the Missouri River will be in compliance with E. coli criterion during the recreational season and the remaining CSOs will not preclude the Papillion Creek from being in compliance.

D. Receiving Streams

CSO outfalls exist on the Missouri River, Big Papillion Creek, Little Papillion Creek, Blood Creek, Copper Creek, and Cole Creek. The beneficial uses applied to these receiving waters and impairments, if any, are identified below. The beneficial uses and water quality criteria that apply to these streams are set forth in NDEQ Title 117 – *Nebraska Surface Water Quality Standards.* Information on impaired usage of these stream segments was obtained from the *2008 Water Quality Integrated Report* prepared by the NDEQ in compliance with the requirements of § 303(d) of the Clean Water Act.

1. Missouri River – Segment MT1-10000 of the Missouri Tributaries River Basin

The beneficial use of Aquatic Life is impaired on this segment of the Missouri River. Parameters of concern include dieldrin and PCBs. Fish consumption advisory has also been issued for this segment of the Missouri River.

Water Quality Usage Designations for Segment MT1-10000

Aquatic Life**;** Warmwater A

Agricultural Water Supply**;** Class A

Industrial Water Supply

Public Drinking Water Supply

Recreation

Aesthetics

Key Species**;**

Endangered Species**;**	*Pallid Sturgeon, Sturgeon Chub*
Threatened Species**;**	*Lake Sturgeon*
Recreational Species**;**	*Blue Catfish, Channel Catfish, Flathead Catfish, Paddlefish*

2. Big Papillion Creek – Segments MT1-10110 and MT1-10120 of the Missouri Tributaries River Basin

The beneficial use of Recreation is impaired in both of these segments of Big Papillion Creek. Both segments are impaired due to E. coli which is the parameter of concern.

Water Quality Usage Designations for Segments MT1-10110 and MT1-10120

Aquatic Life**;** Warmwater A

Agricultural Water Supply**;** Class A

Recreation

Aesthetics

Key Species**;** *None Listed*

3. Little Papillion Creek – Segments MT1-10111 and MT1-10112 of the Missouri Tributaries River Basin

The beneficial use of Recreation is impaired in segment MT1-10111 of Little Papillion Creek. Segment MT1-10111 is impaired due to E. coli which is the parameter of concern. Segment MT1-10112 is not listed as impaired.

Water Quality Usage Designations for Segments MT1-10111 and MT1-10112

Aquatic Life**;** Warmwater B

Agricultural Water Supply**;** Class A

Recreation (for segment MT1-10111 only)

Aesthetics

Key Species**;** *None Listed*

4. Cole Creek – Segments MT1-10111.1 of the Missouri Tributaries River Basin

The beneficial uses of Recreation and Aquatic Life are impaired in Cole Creek segment MT1-10111.1. Cole Creek is impaired due to E. coli and dissolved oxygen. The parameters of concern are E. coli and Unknown.

Water Quality Usage Designations for Segment MT1-10111.1

Aquatic Life**;** Warmwater B

Agricultural Water Supply**;** Class A

Recreation

Aesthetics

Key Species**;** *None Listed*

5. Blood Creek –Tributary of Big Papillion Creek in the Missouri Tributaries River Basin

Blood Creek is an undesignated stream and is not on the list of impaired waters.

Water Quality Usage Designations

Aquatic Life**;** Acute Warmwater B

Agricultural Water Supply**;** Class A

Aesthetics

Key Species**;** *None Listed*

6. Copper Creek –Tributary of Big Papillion Creek in the Missouri Tributaries River Basin

Copper Creek is an undesignated stream and is not on the list of impaired waters.

Water Quality Usage Designations

Aquatic Life**;** Acute Warmwater B

Agricultural Water Supply**;** Class A

Aesthetics

Key Species; *None Listed*

E. Antidegradation Review

An antidegradation review was performed for purposes of developing the permit pursuant to 40 CFR 131.12. The results of the evaluation indicate that the receiving streams listed in Part D of this permit in the Missouri River and Papillion Creek drainage basins have habitat for aquatic life. The designated uses of the receiving streams were considered during permit development. The implementation projects in the draft permit are protective of the Clean Water Act § 101(a)(2) fishable/swimmable goals and will improve the existing water quality in the receiving streams by reducing the volume of combined sewer overflows and by disinfection of combined wastewater discharged from CSO Outfall CSO 102.

F. Overview of EPA CSO Control Policy

1. Regulatory Basis

A National Pollutant Discharge Elimination System (NPDES) permit is required for CSOs since these releases are discharges from point sources that are regulated under the Clean Water Act (CWA). Federal regulations concerning the NPDES program are set forth in 40 CFR Part 122 and State of Nebraska Regulations are set forth in NDEQ Titles 117 and 119. Section 402 of the Federal Water Pollution Control Act (33 U.S.C. 1342) was amended on December 15, 2000 to include the following Section:

> (q) Combined Sewer Overflow.
>
> (1) REQUIREMENTS FOR PERMITS, ORDERS, AND DECREES - Each permit, order, or decree issued pursuant to this Act after the date of enactment of this subsection for a discharge from a municipal combined storm and sanitary sewer shall conform to the Combined Sewer Overflow Control Policy signed by the Administrator on April 11, 1994.

Based on this amendment to the CWA, the draft permit for the City of Omaha CSO NPDES Permit will conform to the *Combined Sewer Overflow Control Policy* of April 11, 1994.

2. Principles and Objectives of CSO Control Policy

To address the challenges of CSO discharges, EPA issued a *National Combined Sewer Overflow Control Strategy* on August 10, 1989 (54 FR 37370). This document reaffirmed that CSOs are point source discharges subject to the NPDES permit requirement to CWA requirements. The document set forth three objectives:

- Ensure that if CSOs occur, they are only as a result of wet weather.
- Bring all wet weather CSO discharge points into compliance with the technology based and water quality based requirements of the CWA.
- Minimize the impacts of CSOs on water quality, aquatic biota, and human health.

The *Combined Sewer Overflow (CSO) Control Policy* Notice of 1994 reiterates the objectives of the 1989 Strategy and further defines requirements. The requirements and conditions in this draft permit are based on *CSO Control Policy* of 1994. The intent of *CSO Control Policy* is to provide guidance to permittees with CSOs, NPDES permitting and enforcement authorities, and State water quality standards (WQS) authorities. The Policy also provides guidance to ensure coordination among the appropriate parties in planning, selecting, designing, and implementing CSO management practices and controls to meet the requirements of the CWA and to ensure public involvement during the decision making process. Four key principles of the Policy ensure that CSO controls are cost effective and meet the objectives of the CWA. These key principles are:

- Providing clear levels of control that would be presumed to meet appropriate health and environmental objectives.
- Providing sufficient flexibility to municipalities to consider the site-specific nature of CSOs and to determine the most cost effective means of reducing pollutants and meeting CWA objectives and requirements.
- Allowing a phased approach to implementation of CSO controls considering a community's financial capability.
- Review and revision as appropriate, of water quality standards and their implementation procedures when developing CSO control plans to reflect the site-specific wet weather impacts of CSOs.

The *CSO Control Policy* also defines expectations for permittees, State WQS authorities, and NPDES permitting and enforcement authorities. These expectations include the following:

- Permittees should immediately implement the nine minimum controls (NMC), which are technology-based actions or measures designed to reduce CSOs and their effects on receiving water quality as soon as practicable but no later than January 1, 1997.
- Permittees should give priority to environmentally sensitive areas.
- Permittees should develop long-term control plans (LTCP) for controlling CSOs. A permittee may use one of two approaches: 1) demonstrate that its plan is adequate to meet the water quality-based requirements of the CWA ("demonstration approach"), or 2) implement a minimum level of treatment (e.g., primary clarification of at least 85 percent of the collected combined sewage flows) that is presumed to meet the water quality based requirements of the CWA, unless data indicate otherwise ("presumption approach").
- WQS authorities should review and revise, as appropriate, State Water quality Standards (WQS) during the CSO long-term planning process.
- NPDES permitting authorities should consider the financial capability of permittees when reviewing CSO control plans.

The control of CSOs has proven to be extremely complex due to the difficulty in quantifying CSO impacts on receiving water quality and the site-specific variability in volume, frequency, and characteristics of CSOs. Also, the financial consideration to control CSOs can be significant for most communities. A phased approach is implemented with the ultimate goal of achieving compliance with the technology and water quality requirements of the CWA.

G. Basis of Permit Requirements and Conditions

1. Introduction

The permit conforms to the requirements set forth in the *Combined Sewer Overflow (CSO) Policy* signed by the Administrator on April 11, 1994. The principles of the Policy ensure that CSO controls are cost effective while meeting the objectives of the Clean Water Act. The key principles are providing clear levels of control, providing flexibility to determine the most cost effective means to meet the CWA requirements, allowing a phased approach to implementing the controls, and revision of water quality standards, if appropriate, to reflect site-specific impacts of CSOs. The *CSO Control Policy* allows the NPDES permitting authority to establish a timetable for completion of the LTCP on a case-by-case basis to account for the complexity of the planning process.

The City of Omaha submitted the complete LTCP to the NDEQ on Sept. 25, 2009, in fulfillment of the Permit requirements that was subsequently approved by the NDEQ on February 10, 2010. The LTCP sets forth a phased schedule that complies with the October 1, 2024 deadline for completing the CSO project as set forth in the Consent Order, Case No. 2710, signed on August 8, 2007. The Phase II requirements for implementation of a LTCP are set forth in the *CSO Control Policy* in Part IV(B)(2). According to the *CSO Control Policy* a Phase II permit should contain the following 7 constituents;

- Requirements to implement the technology-based controls including the Nine Minimum Controls.
- Narrative requirements which insure that the selected CSO controls are implemented, operated, and maintained as described in the LTCP.
- Performance standards for the selected CSO controls that specify either a Presumption Approach or a Demonstration Approach that will not preclude the attainment of water quality standards (WQS).
- Requirements to implement a water quality assessment program to demonstrate compliance with WQS, protection of designated uses, and effectiveness of CSO controls.
- Requirements to reassess overflows to sensitive areas in those cases where elimination or relocation of the overflow is not physically possible or economically achievable.
- Conditions establishing requirements for maximizing the treatment of wet weather flows at the POTW treatment plant.
- Reopener clause authorizing the NPDES authority to reopen and modify the permit if CSO controls fail to meet WQS or protect designated uses.

According to the *CSO Control Policy*, implementation of CSO controls may be phased based on the relative importance of and adverse impacts upon WQS and designated uses, as well as the permittee's financial capability and its previous efforts to control CSOs. Three permit cycles will be required to completely fulfill the Phase II conditions since the LTCP will not be completely implemented until 2024. Each of the Phase II conditions is addressed in the draft permit however complete fulfillment of all Phase II conditions will not be achieved until 2024.

2. Outfall Identification (Part I of the Permit)

The locations of the 29 CSO outfalls identified by the City of Omaha are listed in Part I of the permit as both a latitude/longitude and approximate street address. Restrictions on creating additional CSO outfalls and/or expanding the CSO service area are specified in Part VIII of the Permit. There is some allowance for the Department to approve such additions or expansions, but any such approval would need to be made contingent upon compliance with NDEQ Title 123 and other permit requirements, which would include compliance with NMC and LTCP requirements. The NMC also requires that the City report any additional CSOs discovered during routine inspections.

3. CSO Outfall 102 Requirements (Part II of the Permit)

Discharge from the primary clarifiers at the MRWWTF, CSO Outfall 102, is continued in the draft permit and is approved by the Department during wet weather events to reduce pollution resulting from CSOs and to maximize the delivery of combined sewer flows during wet weather to the WWTF for treatment. Discharge through Outfall 102 will minimize the impacts of CSOs to sensitive areas and will provide additional protection for water quality, aquatic biota, and human health. The conditions for a CSO related bypass is set forth in the *CSO Control Policy.* According to the Section III Part 7 of the *CSO Control Policy*, anticipated CSO bypasses of secondary treatment can be approved based on the requirements in 40 CFR 121.41(m)(4) which are listed below.

- The discharge is unavoidable to prevent severe property damage
  Upon completion of upgrades by September 30, 2015; the MRWWTF will be able to provide secondary treatment for flows up to 64 MGD which is 36 MGD greater than typical dry weather flows of 28 MGD. Also, headworks improvements will provide the capability of primary treatment to 150 MGD with the difference in flow disinfected and dechlorinated prior to discharge. Since this is a pumped force main system, the ability to pump to the maximum flow rate of the headworks is dependent on rainfall distribution. Additional improvements to the lift stations are planned to increase the frequency of utilization of the 150 MGD peak hour capacity of the headworks but those improvements are outside the timeframe of this permit. Secondary treatment at the MRWWTF will be properly operated and maintained, however flows greater than 64 MGD through secondary treatment would wash out the treatment system which constitutes severe property damage.
- There is no feasible alternative to the bypass discharge
  The CSO control technologies selected for evaluation and incorporation into the LTCP were reviewed by a team of experts who evaluated technologies that could potentially be applicable to the City. The technologies included source control, collection system control, storage, and treatment. Benefit to cost ratios for individual alternatives were applied to the evaluation of strategies that resulted in discharge of excess wet weather flow through CSO Outfall 102 identified as a beneficial alternative.

  A review of the discharge monitoring data and compliance inspections by NDEQ shows that the MRWWTF has been properly operated and maintained. The MRWWTF treats an average of 28 MGD during dry weather flow conditions. The treatment facility will be upgraded to provide secondary treatment of up to 64 MGD during wet weather events with a portion of this flow consisting of high-strength industrial wastewater that will be delivered separately to the plant for full secondary treatment. Up to 180 MGD will receive primary treatment during wet weather events with the difference between primary and secondary treatment disinfected and discharged through Outfall 102. The combined wastewater bypassed will meet state water quality standards.

  Because of space limitations at the MRWWTF site, the Department has determined that it is technically infeasible to provide any additional secondary treatment at the existing facilities for wet weather flows greater than 64 MGD. The MRWWTF is situated within the city limits of Omaha on a comparatively narrow strip of land that is bound on the east side by the Missouri River and on the west by precipitous bluffs. The space available at the site has been reduced by the construction of a viaduct at 13th Street to Gibson Road which is in the vicinity of the plant plus a preliminary assessment shows that a portion of the site is unavailable due to wetlands delineation. Space at the site must further be allocated for future nutrient removal facilities. It is anticipated that State Water Quality Standards will contain nutrient criteria for Total Nitrogen and Total Phosphorus in the term of the Consent Order that will require extensive upgrades to the MRWWTF. The remaining space at the site must be carefully apportioned for denitrification filters and tertiary treatment systems along with upgrade or replacement of the current trickling filter treatment system that will be required to meet nutrient criteria.
- The permittee submitted the required notices
  Public notification requirements are set forth in Part VIII of the draft permit that require the City to inform the NDEQ and the public of CSO events that are likely to cause an adverse impact to public health or the environment.

The bypass of combined wastewater through CSO Outfall 102 at the MRWWTF is only approved by the Department when specific conditions below are fulfilled. Also, approval for discharge through Outfall 102 may be modified or revoked by the Department if there is a substantial increase in the volume or characteristics of the pollutants being introduced into the POTW that is not consistent with the objectives of the LTCP.

- Secondary treatment is provided for a specified flow rate at MRWWTF and the City is in compliance with secondary permit limits for CBOD and TSS in the MRWWF NPDES Permit NE0036358.
- Discharge through CSO Outfall 102 is approved only for combined wastewater during wet weather events.
- Discharge through CSO Outfall 102 shall receive treatment to include solids and floatables removal and disposal, plus primary treatment and disinfection where necessary.
- The effluent discharged through Outfall 102 is monitored and limited according to permit requirements.

The Long Term Control Plan (LTCP) submitted by the City of Omaha presented Major Projects Phase I to be operationally complete by September 30, 2015 which are included in the Compliance Schedule (Part VI of the draft permit). The Phase 1 projects include improvements to the Missouri River WWTF and the collection system that will result in increased capacity for both primary and secondary treatment plus provide disinfection along with dechlorination of the wet weather discharge through CSO Outfall 102. A summary of the projects to be completed in Phase I are presented below.

- Missouri River WWTF Improvements. Plant improvements include new headworks, primacy clarifier modification, plus a new disinfection basin for Outfall 102. The improvements will result in addional combined sewage going through both primary and secondary treatment plus reduction in the E. coli levels discharged to the Missouri River. Secondary treatment will be provided for influent flows of up to 64 MGD with primary treatment to flows up to 150 MGD.
- Industrial Lift Station, Force Main, and Gravity Sewer. These improvements will convey high strength industrial wastewater directly to the MRWWTF for primary treatment in separate clarifiers and secondary treatment in existing facilities that will result in elimination of the high strength industrial wastewater for Outfall 102.
- Industrial Flow Sewer Separation in the Ohern/Monroe Area. This project will separate industrial flow in the area and direct the flows to the new industrial lift station.
- South Interceptor Force Main. A new industrial force main will replace the exiting force main and will allow for increased flows to be directed to the MRWWTF.
- Leavenworth Lift Station. The lift station replacement project will allow additional wastewater flows to be pumped to the new South Interceptor Force Main that will result in increased reliability and pumping capacity for the MRWWTF.

As a result of these improvements, the discharge of combined wastewater through Outfall 102 during wet weather events will be able to meet water quality standards. In Part II(A) of the permit interim requirements for CSO Outfall 102 are effective until September 30, 2015. The interim requirements set forth conditions for discharge through CSO Outfall 102 that include secondary treatment for a flow rate of up to 42 MGD plus monitoring for TSS, BOD, E. coli, and pH.

Final requirements in Part II(B) of the permit for CSO Outfall 102 are effective on and after September 30, 2015 upon completion of upgrades to the MRWWTF and other Phase I major projects listed above. At that time, the secondary treatment capacity for the MRWWTF is increased for an instantaneous flow rate of up to 64 MGD and water quality limits are included for discharge through Outfall 102. Monitoring and limits included in the draft permit for CSO Outfall 102 and their basis is presented below.

a. Basis for the pH Discharge Limits

The hydrogen ion concentration of the effluent discharge is expressed as pH. Monitoring only for pH is continued in the permit until Sept. 30, 2015 at which time limits shall apply

On or after Sept. 15, 2015; a pH range of 6.5 to 9.0 S.U. as set forth in NDEQ Title 117, *Nebraska Surface Water Quality Standards*, will be applied for each discharge event to the effluent through Outfall 102 to ensure water quality protection for aquatic life in the Missouri River.

b. Total Flow and Duration of Discharge

Total flow monitoring in million gallons for each discharge event and duration of discharge in hours for each discharge event is continued in the permit to provide data on the frequency, duration, and magnitude of discharge from CSO Outfall 102.

c. Polychlorinated Biphenyls (PCBs) and Dieldrin

The Missouri River, segment MT1-10000, the receiving water for the CSO Outfall 102 is listed on the NDEQ 2008 Integrated Report 303(d) list of impaired waters for dieldrin and PCBs. Both dieldrin and PCBs are classified as persistent organic pollutants that although banned for many years, are still ubiquitous in the environment. Annual monitoring for dieldrin and PCBs is included in the permit in both Tables 3 and 4 to determine if there is any contribution from the discharge from CSO Outfall 102 to the impairment of Missouri River.

d. Biochemical Oxygen Demand (BOD)

BOD monitoring is continued in the permit in both Tables 3 and 4 to provide information on the concentration of biodegradable organic material discharged to the receiving water during each discharge event. No limits for BOD are established in the permit since according to the *CSO Control Policy* CSOs are not subject to secondary treatment requirements applicable to POTWs.

e. Total Suspended Solids (TSS)

TSS monitoring is continued in the permit in both Tables 3 and 4 to provide information on the concentration of solids discharged to the receiving water during each discharge event. No limits for TSS are established in the permit since according to the *CSO Control Policy* CSOs are not subject to secondary treatment requirements applicable to POTWs.

f. Basis for *E.coli* Limits

The effluent from CSO Outfall 102 at the Missouri River WWTF is discharged to the Missouri River in segment MT1-10000. This segment of the Missouri River is classified as recreational water according to the beneficial uses set forth in NDEQ Title 117, *Nebraska Surface Water Quality Standards.* The recreational use applies to surface waters, which are used, or have a high potential to be used, for primary contact recreational activities. Primary contact recreation includes activities where the body may come into prolonged or intimate contact with the water, such that water may be accidentally ingested and sensitive body organs may be exposed.

Monitoring only for E. coli is continued in the permit until Sept. 30. 2015 in Table 3 at which time limit shall apply. On or after Sept. 30, 2015; an E. coli limit in Table 4 of 126/100 mL for a geometric mean during each discharge event is included in the permit to protect the recreational use of this segment of the Missouri River according to the requirements set forth in NDEQ Title 117. The limit applies only during the recreational season which is annually from May 1 through September 30.

g. Basis for Total Residual Chlorine (TRC) Discharge Monitoring

In NDEQ Title 117, *Nebraska Surface Water Quality Standards*, the water quality criteria for chlorine are regulated as acute and chronic in-stream concentrations with an acute one-hour average concentration not to exceed 0.19 mg/L and a four-day average concentration not to exceed 0.011 mg/L. Recreational seasonal (May –Sept) wasteload allocations (WLAs) for chlorine are developed by NDEQ to ensure that the effluent discharge from the end of the pipe of the treatment system at CSO102 does not exceed these instream criteria. The chlorine WLAs are developed to protect the assigned beneficial uses of the Missouri River. NDEQ Title 117, Chapter 2 requires that all mixing zones be based on critical conditions of minimum dilution, which have been defined as the 1Q10 and 7Q10 flows (design flows). The calculation of the WLAs from the chlorine criteria is based on stream design flows, receiving stream design parameters, effluent design flow parameters, and receiving stream information. The maximum design flow rate through CSO Outfall 102 of 100 MGD, upon completion of the upgrades, was used as the effluent flow rate for the calculation to provide maximum protection of the Missouri River. The calculation resulted in an acute chlorine WLA of 0.137 mg/L and a chronic WLA of 0.270 mg/L. (see attachment *wlashtcl.xls*).

TRC permit limits for the discharge from Outfall 102 are developed from the WLAs taking into account the proximity of Outfall 001 at the MRWWTF and the fact that the discharge through Outfall 102 is noncontinuous (or batch).

Permit limitations for chlorine are usually established from the WLAs according to the procedures given in the *Technical Support Document for Water Quality-based Toxics Control* (TSD) for continuous discharge of pollutants with limitations expressed as a maximum and monthly average. The discharge through CSO Outfall 102 is a batch discharge that will exhibit significant variation in flow rate, total volume, and duration of discharge depending on the nature of the wet weather event. According to the modeling performed by the City, discharges will seldom exceed two days in duration which means that a monthly average limit is not a meaningful limitation. Noncontinuous discharges, such as the discharge through Outfall 102, can be limited and particularly described according to factors set forth in 40 CFR 122.45(e). These factors include frequency, total mass, maximum rate of discharge of pollutants, and limitation of pollutant by mass, concentration or other measures. Based on these factors, both a maximum concentration limit and mass limit for TRC both of which apply to each discharge event are included in the permit. Applying a concentration limit will appropriately control the dechlorination treatment process plus a mass limit for total chlorine will protect aquatic life and other beneficial uses of the Missouri River.

The acute WLA of 0.137 mg/L is established in the permit as the maximum concentration for discharge event since the acute WLA is more stringent than the chronic WLA. Mass can be calculated from the maximum effluent flow rate of 100 MGD and the concentration limit of 0.137 mg/L to give 51.85 kg. Before mass limits can be established at CSO Outfall 102, the potential chlorine background from the MRWWTF must be considered. The MRWWTF outfall 001 is approximately 1300 ft upstream of CSO Outfall 102. Data submitted by the City of Omaha showed that the 90^{th} percentile mass of chlorine discharged from the MRWWTF during the last two years is 8.31 kg/day. Subtracting the chlorine background from 51.85 kg gives a mass limit of 43.5 kg TRC for each discharge event.

The concentration limit of 0.137 mg/L and the mass limit of 43.5 kg for TRC are included in the permit for each discharge event from CSO Outfall 102 and are maximum limits that cannot be exceeded at any time. The TRC limits will apply on or after Sept. 30, 2015 upon completion of the upgrades to the MRWWTF and are included in Table 4 of the permit.

4. CSO Discharge Monitoring Requirements at Selected Outfalls (Part III of the Permit)

A condition of the CSO Control Policy is to bring all wet weather CSO discharges points into compliance with the technology-based and water quality-based requirements of the Clean Water Act. Technology based controls for CSOs are implemented on a best professional judgment basis to include the Nine Minimum Controls. Water quality based effluent limits are established in permits in accordance with the requirements and criteria set forth in NDEQ Title 117 – *Nebraska Surface Water Quality Standards*.

Monitoring of CSO discharges is an essential feature of the Characterization of the CSO required in the LTCP. Determining the pollutant concentration of CSO discharges is necessary in determining the impact of the CSOs on the receiving stream. Also, LTCP component (9) Post Construction Compliance Monitoring Program includes effluent monitoring to verify compliance with water quality standards and protection of designated uses.

The LTCP submitted by the City in Section 8 *Monitoring Program and CSO Wet Weather Operations Plan* contains preliminary plans for an Implementation Monitoring Plan and a Post Construction Monitoring Plan. The purpose of these Plans is to collect data and document the effectiveness of the CSO control measures. The City also submitted *Water Quality Monitoring for the Implementation Monitoring Plan* (March 23, 2010) as an attachment to the NPDES permit application. This document contains protocols for CSO outfall monitoring and in-stream monitoring plus sampling procedures, analytical procedures, data assessment and field safety instructions.

The CSO outfall monitoring will be conducted once per year in coordination with instream monitoring if possible. The objective of outfall monitoring and instream monitoring is to provide information on CSO impacts to the receiving stream during implementation of the LTCP. A goal of these Plans is to confirm the environmental benefits attributable to CSO control measures. Dry weather sampling of the receiving stream will also be performed to provide base line information. The data obtained from this monitoring will be essential in addressing water quality goals, potential water quality impairment, and receiving waterbody assessments.

The selected CSO outfalls and the receiving stream will be monitored for pH, conductivity, temperature and dissolved oxygen in the field plus TSS, BOD, and E. coli by laboratory methods. Six outfalls were selected for monitoring that includes both discharges into the Missouri River and Papillion Creek drainage basins. Outfalls 105, 106, 107, and 108 flow to the Missouri River basin and outfalls 202 and 205 flow to the Papillion Creek basin. The list of outfalls is a continuation of the sites in the current permit except monitoring at Outfall 202 (72nd and Bedford) has replaced monitoring at outfall 203 (69th and Evans) because of accessibility issues.

In addition to the parameters listed above, monitoring for total phosphorus and total nitrogen are continued in the permit along with observation of floating solids or visible foam. Duration of discharge and total flow are also continued, however flow meters are currently not installed at these outfalls so total flow and duration of discharge are estimated based on precipitation data and the use of the collection system computer models. Chemical oxygen demand (COD) and chloride have been removed from the monitoring requirements because these parameters are not included in the monitoring plan.

The City may propose an alternative monitoring program or monitoring locations to replace the current permit requirements. Any such proposed changes shall be subject to review and approval by the NDEQ in accordance with modification and minor modification requirements in 40 CFR 122.62 and 40 CFR 122.63.

5. Nine Minimum Controls (Part IV of the Permit)

Previous CSO permits for the City of Omaha emphasized the implementation of the NMCs according to the requirements set forth in *CSO Control Policy* based on BPJ plus development of the LTCP. The NMCs are controls that can reduce CSOs and their effects on receiving water quality that do nor require significant engineering studies or major construction and can be implemented in a relatively short time.

The emphasis of this Phase II draft permit is on implementation of the long-term control plan submitted by the City. Ultimately, most of the components of the NMC should be fully integrated into the LTCP. The NMCs are technology-based requirements of Phase II CSO permits that will continue to apply to the City of Omaha as the LTCP is implemented. Reports, evaluations, and actions undertaken by the City related to the NMCs are summarized below and are to be included in the Annual Report.

a. Proper operation and regular maintenance programs for sewer system and the CSOs

The draft permit requires the continued proper operation and maintenance programs for the sewer system and all CSO outfalls to reduce the magnitude, frequency, and duration of overflows. On going actions taken by the City of Omaha to address O&M procedures shall be documented in the Annual Report.

b. Maximum use of the collection system for storage

The draft permit requires that the City of Omaha identify locations where minor modifications can be made that would result in significant increases to in-system storage and are consistent with future LTCP controls. Any minor modifications by the City shall be documented in the Annual Report.

c. Review and modification of the pretreatment requirements to assure CSO impacts are minimized.

As new significant industrial users are added to the CSS, the City shall document the new nondomestic dischargers, evaluate the impact of these dischargers to the quality and quantity of CSOs, and document the outcome in the Annual Report.

d. Maximization of flow to the POTWs for treatment

The draft permit requires that the City continue an ongoing process of maximizing the flows to the POTWs. Any changes to current procedures or modifications shall be documented in the Annual Report.

e. Prohibition of CSOs during dry weather

The draft permit prohibits dry weather overflows (DWO) from CSO outfalls. Reporting of substantial dry weather overflows to NDEQ are required as soon as possible and all DWOs must be documented in the Annual Report.

f. Control of solid and floatable materials in CSOs.

The draft permit requires that the City periodically evaluate and implement site-specific control of solids and floatable using relatively simple measures that are consistent with the LTCP. The evaluation and implementation shall be documented in the Annual Report.

g. Pollution prevention

The draft permit requires that the City document any new pollution prevention measures enacted by the City in the Annual Report. A summary of pollution prevention activates in included in the City's MS4 Annual Report which may be referenced in the CSO Annual Report.

h. Public notification to ensure that the public receives notification of CSO occurrences and impacts

The draft permit requires that the City document any revision or updates to public notification procedures in the Annual Report.

i. Monitoring to characterize CSO impacts and the efficacy of CSO controls

The draft permit requires that the City document any additional CSOs discovered in the Annual Report.

6. Long Term Control Plan (Part V of the Permit)

The City of Omaha submitted a complete LTCP to the NDEQ on September 25, 2009 in fulfillment of permit requirements and the *CSO Control Policy*. The LTCP was subsequently approved by the NDEQ on February 10, 2010. A compliance schedule for implementation of the selected CSO controls is set forth in Part VI of the permit. The elements of the LTCP listed below will continue to apply as the specified controls are implemented. Reports, evaluations, and actions to be completed by the City applicable to the LTCP document are included in Part V of the permit. The basis for continuing LTCP requirements are specified below.

a. Characterization, Monitoring, and Modeling of the CSS.

Protocols for characterization, monitoring, and modeling of the CSS are included in Section 2 of the LTCP *Baseline Conditions/Study Basins Descriptions*. This section of the LTCP addresses the response of the CSS to various precipitation events, identified the number, location, frequency, and characteristics of CSOs, and identified water quality impacts that resulted from CSOs.

The permit requires that the City of Omaha to continue to characterize, monitor, and model the CSS as set forth in the LTCP. A narrative summary of changes to the characterization, monitoring, and modeling of the CSS as construction projects and sewer separation projects are implemented is required to be included in the Annual Report.

b. Public Participation Plan.

A public participation strategy that was used throughout the LTCP development and implementation is included in Section 5 of the LTCP *Public Participation Process.*

The permit requires that City of Omaha to continue to employ a public participation process throughout implementation of the LTCP and document public participation activities in the Annual Report.

c. Consideration of Sensitive Areas.

The identification of sensitive areas to which the CSOs discharge is included in Section 2 of the LTCP *Baseline Conditions/Study Basins Description.* Sensitive areas include water with threatened or endangered species and their designated critical habitat, waters with primary contact recreation, public drinking water intakes, and any other areas identified by the City of Omaha or the NDEQ in coordination with other State or Federal Agencies.

The permit requires that the City of Omaha submit a report to the NDEQ by October 1, 2014 on reassessment of overflows to sensitive areas in those cases where elimination or relocation of the overflow is not included in the LTCP. The reassessment is required to be based on consideration of new or improved techniques to eliminate or relocate overflows or changed circumstances that influence economic achievability.

d. Evaluation of Alternatives.

The process that the City of Omaha undertook to identify, screen, evaluate, and select CSO control technologies and alternatives for the Missouri River and the Papillion Creek watersheds is included in Section 3 of the LTCP *CSO Control Alternatives Evaluation.* This process resulted in an a group of selected CSO controls that includes two retention treatment basins, upgrades to the MRWWTF, replacement of force mains, a deep tunnel for storage, green solutions, and sewer separation projects. The selected projects are anticipated to satisfy both presumption approach and demonstration approach of the *CSO Control Policy* and will not preclude meeting WQS.

Any significant changes or revisions to the specified controls set forth in the LTCP is required to be submitted to the NDEQ for review by October 1, 2014 according to conditions set forth in the Part VIII(F) of the permit - *Revisions to the Long Term Control Plan.*

e. Cost/Performance Considerations.

The City of Omaha submitted a financial plan in Section 6 of the LTCP *Financial Capability Evaluation* that is sufficient to fund the CSO program through at least 2014.

The permit requires the City of Omaha to submit a financial report to the NDEQ by October 1, 2014 that sets forth a strategy to obtain sufficient revenue to fund the CSO program through at least the year 2020 that includes funding for the specific projects in the *Implementation Schedule* Section 7 of the LTCP.

f. Operational Plan.

The City of Omaha submitted a preliminary wet weather operational strategy plan that provides an overview of the collective operation of the combined sewer overflow controls to be implemented by the City in Section 8 *Monitoring Program and CSO Wet Weather Operations Plan* of the LTCP.

The City of Omaha is required to update the wet weather operational strategy plan as CSO controls are constructed and sewers are separated. By September 30, 2015, the City of Omaha is required to submit a wet weather protocol for discharge through CSO 102 that includes operational procedures to maximize wet weather flows through this outfall, provide disinfection, and chlorination/dechlorination.

g. Maximizing Treatment at the Existing Treatment Plants.

The City evaluated projects for maximizing treatment at the MRWWTF and the PCWWTF in the LTCP that resulted in major construction projects during the next five years at the MRWWF to treat a greater volume of combined wastewater plus eventual expansion of the treatment capacity of the PCWWTF.

The City intends to use an adaptive management strategy for implementation of the LTCP which means continually evaluating new technologies, the performance of the controls, and the health of the watersheds as the LTCP is implemented. Any new approaches identified during this process for maximizing treatment at the existing WWTFs is required to be included in the Annual Report.

h. Implementation Schedule.

An implementation schedule that complies with the October 1, 2024 deadline for completing the CSO project is included in Section 7.0 of the LTCP *Implementation Schedule*. The construction and sewer separation projects will be implemented in phases some of which will be operationally complete by the end of this permit term

The construction and sewer separation projects that will be designed, constructed, or operationally completed during the current permit term are included in Part VI *Compliance Schedule for Implementation of CSO Control Projects* of this permit which is the enforceable mechanism for implementation of these controls. The City of Omaha is required to include progress reports on implementation of the CSO construction and sewer separation projects set forth in the compliance schedule in the Annual Report.

i. Post Construction Compliance Monitoring Program.

An outline of a post-construction compliance monitoring program is included in Section 8 of the LTCP *Monitoring Program and CSO Wet Weather Operations Plan* plus a draft document *Water Quality Monitoring for the Implementation Monitoring Plan (IMP)* was included with CSO NPDES permit application received March 29, 2010.

Part III of this permit *CSO Discharge Monitoring Requirements at Selected Outfalls* requires that the City monitor selected CSO outfalls for various parameters, the results of which is required to be included in the Annual Report.

Instream monitoring data shall be conducted that is consistent with the *Implementation Monitoring Plan*. The data for this monitoring is required to be included in the Annual Report.

Verification of sewer separation projects will be used to confirm that the desired level of separation was achieved. The City of Omaha may use various approaches to verify sewer separation including visual verification, water quality monitoring, or flow monitoring. The results of studies performed that support the deactivation of a CSO point is required to be included in the Annual Report.

7. Compliance Schedule for Implementation of CSO Control Projects (Part VI of the Permit)

The draft permit for the City of Omaha CSS and CSOs is based on the *Combined Sewer Overflow Control Policy* of April 11, 1994 which has been incorporated into the CWA. The City of Omaha has completed development of the CSO LTCP and has selected controls necessary to meet CWA requirements. In Part IV B(2) of the *CSO Control Policy*, conditions are set forth for Phase II CSO permits for implementation of the LTCP. Among these conditions are requirements which insure that the selected CSO controls are implemented, operated, and maintained as described in the long-term CSO control plan. The *CSO Control Policy* affirms that the permitting authority should include an enforceable mechanism for implementation of the long-term CSO control plan. The NDEQ has included a compliance schedule in the permit for implementation of the selected CSO control projects that have critical milestone dates within the 5 year permit term.

Compliance schedule conditions are set forth in Chapter 16 of NDEQ Title 119 – *Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System*. Compliance schedule requirements set forth in NDEQ Title 119 state that the permit may, when appropriate, specify a schedule for compliance leading to compliance with CWA and regulations. One milestone date, without interim dates, for each project, is included in the compliance schedule due to the complexity and variety of the various selected CSO controls. The regulations in NDEQ Title 119 Chapter 16 allow for submission of annual reports in place of interim dates in a compliance schedule as long as the projected completion date is indicated.

The *Implementation Schedule* in Section 7 of the LTCP sets forth the City of Omaha's sequence of construction projects that is to be completed that will meet water quality-based requirements of the CWA no later than October 1, 2024. The schedule sets forth implementation phases, the selected control projects under each phase, and the years when the phases are expected to start and be completed. The compliance schedule in the permit is developed from the Major CSO Control Phases and Milestones listed in Table 7-1 of the LTCP and Sewer Separation Phases and Milestones listed in Table 7-2 of the LTCP. The projects included in the compliance schedule are listed below.

a. Phase 1 Major Projects of the LTCP – MRWWTF and Collection System Improvements

The Phase 1 major project will provide increased treatment capacity through the primary and secondary treatment processes at the MRWWTF. The modifications will allow primary treatment of up to a flow rate of 150 MGD and increased secondary treatment of up to a flow rate of up to 64 MGD. During wet weather events, wastewater that has undergone primary treatment but not secondary treatment will be disinfected, dechlorinated and discharged thorough CSO Outfall 102. Concurrently with the MRWWTF improvements, the Industrial Lift Station project will allow the conveyance of high strength industrial wastewater directly to the MRWWTF for secondary treatment thereby improving the quality of CSO discharges. The replacement of the South Interceptor Force Main and the replacement of the Leavenworth Lift Station will allow additional wastewater flows to the MRWWTF.

The compliance schedule in the permit requires that the Phase 1 major projects be operationally compete by September 30, 2015. Operationally complete means when a major CSO project is substantially complete, is ready for its intended use, and has been made ready to operate by the City.

b. Phase 2 Major Projects of the LTCP – Saddle Creek Retention Treatment Basin

The Phase 2 major project is the construction of a retention treatment basin (RTB) at 64th and Dupont (CSO 205) that will provide disinfection/dechlorination and equivalent to primary treatment for a currently projected peak effluent discharge flow rate of up to 315 MGD of combined wastewater. Sewer separation projects in the Bohemian Cemetery and Aksarben Village area are also included in this project to reduce influent flow of combined wastewater to the Saddle Creek RTB.

The compliance schedule in the permit requires that the City of Omaha commence construction of at least one of the Phase 2 projects by December 31, 2011. Commence construction means that final design and the bidding process has been completed and that the Notice to Proceed has been given to a construction contractor. The Phase 2 major projects are scheduled to be operationally complete by December 31, 2018.

c. Phase 3 Major Projects of the LTCP – Minne Lusa Stormwater Conveyance and Storage Basin

The Phase 3 major projects is the construction of the Minne Lusa storage facility that will collect combined wastewater from the Minne Lusa area (CSO 105) and store it for later treatment at the MRWWTF. The project will also entail a large amount of sewer separation in the Minne Lusa area along with the construction of the Minne Lusa Stormwater Collector Sewer that will provide conveyance capacity of separated stormwater from the Minne Lusa area.

The compliance schedule in the permit requires that the City of Omaha commence construction of at least one of the Phase 3 projects by December 31, 2013. Commence construction means that final design and the bidding process has been completed and that the Notice to Proceed has been given to a construction contractor. The Phase 3 major projects are scheduled to be operationally complete by December 31, 2019.

d. Phase 4 Major Projects of the LTCP – Deep Tunnel and Missouri River RTB plus Miscellaneous Projects

The final major projects of the LTCP consist of construction of the Missouri River RTB and the construction of the Deep Tunnel along with drop shafts for storage of combined wastewater. The Deep Tunnel is projected to be 170 feet deep with an inside diameter of 17 feet and a length of 28,600 feet with 5 drop shafts for conveyance of combined wastewater. A lift station and force main will be used to transfer the combined wastewater in the Deep Tunnel to the Missouri River RTB for treatment and discharge. The Missouri River RTB will provide primary treatment and disinfection/dechlorination for a flow rate of up to 52 MGD. Other projects scheduled for Phase 4 include the Cole Creek Storage tank (CSO 204) and the final phase of the Minne Lusa Storage Tank (CSO 105).

The compliance schedule does not address any of the Phase 4 projects since these are not projected to begin until December 31, 2017 which is after this permit term. These projects are scheduled to be operationally complete by September 30, 2024 which will conclude the major projects of the LTCP.

e. Sewer Separation Projects in the LTCP

There are a considerable number of sewer separation projects in the LTCP that are divided into seven phases for completion. Each phase contains a number of projects that were developed based on sequencing with other LTCP projects and financial capability. Some of these projects are currently under construction, some are in the design phase, while others are scheduled near the completion of the LTCP in 2024. The sewer separation projects will result in elimination of some CSOs, reduce the frequency of overflows, reduce the volume of combined wastewater, and reduce sewer backups. Information concerning the sewer separation projects is included in Appendix T of the LTCP, *Description of sewer Separation Projects*, and in *Refinement Task 21-Sewer Separation Basin and Project Listing, Volume 1- Missouri River Watershed, Volume 2 - Papillion Creek Watershed*.

The compliance schedule in the permit gives requirements for the first three sewer separation phases each of which encompass a number of individual projects. The projects listed in Sewer Separation Phase 1 are required to be completed by December 31, 2011, the projects listed in Sewer Separation Phase 2 are required to be competed by September 30, 2015, and the projects listed in Sewer Separation Phase 3 are required to be started by December 31, 2014. The start date for these projects is defined as the earliest bid date for the project and completion is defined as completion of construction. Complete construction for sewer separation projects is defined as the year when final completion of the project has been accomplished by a construction contractor.

Four additional sewer separation phases are identified in the LTCP that are scheduled to be bid and completed after September 30, 2015 and therefore are not addressed in this permit.

8. Annual Report (Part VII of the Permit)

The requirement to submit an Annual Report has been continued in the permit however the submission date has been changed to report on permit events that take palace annually from October 1 through September 30 instead of January 1 through December 30. This change is based on the effective date of the permit (October 1) and is also consistent with the reporting requirements of the Consent Order (Case No. 2710). The City of Omaha is required to submit the first Annual Report of this permit to the NDEQ within 30 days following October 1, 2011 and within 90 days following each yearly (Oct 1–thru Sept. 30) anniversary of this permit.

The Compliance Schedule in Part VI of the permit requires that the City of Omaha submit a yearly summary of construction activities, actions, and other measures applicable to the compliance schedule in the Annual Report. Compliance schedule conditions are set forth in Chapter 16 of NDEQ Title 119 – *Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System.* The regulations in NDEQ Title 119 Chapter 16 allow for submission of annual reports in place of interim dates in a compliance schedule as long as the projected completion date is indicated. The Annual Report requirements in Part VII of the permit satisfy the compliance schedule reporting requirements in NDEQ Title 119.

The Nine Minimum Controls (NMC) in Part IV of the permit requires that the City of Omaha report all dry weather overflows in the Annual Report along with any modifications, reviews or reassessments pertaining to the NMCs.

In Part V of the permit, requirements are set forth for updating portions of the LTCP which are to be documented in the Annual Report. Some sections of the LTCP require separate reports that are to be submitted once in the permit term as stand alone documents before the date required.

CSO Outfall 102 monitoring requirements are included in Part II of the permit which are to be reported on Discharge Monitoring Reports (DMR) supplied by the Department. A summary of CSO Outfall 102 monitoring results is also required to be included in the Annual Report along with monitoring results for selected CSO outfalls included in Part III of the permit.

A summary of instream monitoring data consistent with the *Implementation Monitoring Plan* objectives to include monitoring station identification, stream identification, and the list of parameters along with the monitoring results is required to be submitted in the Annual Report.

The City of Omaha may also include measures of success in the Annual Report that may include improved instream water quality, a decrease in volume of CSO discharges, or other quantifiable indicators that illustrate trends and results over time.

9. Other Conditions and Requirements (Part VIII of the Permit)

a. Narrative Requirements Applicable to the Long Term Control Plan

The requirement that the selected CSO controls be implemented, operated, and maintained as set forth in the LTCP is included in the permit based on the Phase II permit narrative requirements in *the CSO Control Policy*.

b. Narrative Requirements Applicable to CSO Discharges

The narrative limits on toxicity, noxious odors, objectionable materials, and undesirable aquatic life is in accordance with the narrative water quality criteria set forth in NDEQ Title 117. The requirement that the CSO discharges not be toxic to aquatic life is according to the narrative water quality provision in Part IV 2(c) of the *CSO Control Policy*. The NDEQ recognizes that these narrative requirements will not be fully attained until the LTCP has been completely implemented in 2024.

c. Reopener Clause

A reopener clause allowing the NDEQ to modify or revoke and reissue the permit is included in the permit in accordance with regulations set forth in NDEQ Title 119 and 40 CFR 122.

d. Notification and Approval

Notification and approval requirements are included in the permit to provide notification to the NDEQ if additional CSO outfalls are proposed or if there is any construction or modification to the CSS that is not consistent with the LTCP. This requirement is consistent with the *CSO Control Policy* and also is in accordance with the requirements set forth in NDEQ Title 123 *Rules and Regulations for Design, Operation and Maintenance of Wastewater Treatment Works.*

e. Immediate Reporting Requirements

Reporting to the NDEQ of violations of the permit, substantial dry weather overflow, impact to the receiving waters, or spills to the CSS is in accordance with the enforcement and compliance requirements set forth in the *CSO Control Policy*. Substantial dry weather overflows includes an overflow that does not occur during a wet weather event, and is likely to continue for 24 hours, results in an overflow volume over 100,000 gallons, overflows containing pollutants in concentrations that presents a threat to human health or the environment, or are in a location that presents a threat to human health or the environment.

f. Revision of the Long Term Control Plan

The City of Omaha intends to use an adaptive management approach for the implementation of the LTCP which is a process to continually evaluate new technologies, the performance of the controls as they are implemented, and the health of the watersheds. This approach may require revision of the LTCP to reflect new information, new technology, or other changes that become evident during the implementation process. Proposed significant revisions to the LTCP are required to be submitted by October 1, 2014 for review and approval by the NDEQ. Significant revision to the LTCP generally means modification of the major CSO projects and milestone dates in Chapter 7, *Implementation Schedule,* of the LTCP.

g. Biosolids Disposal

The sludge requirements for monitoring and disposal are in accordance with 40 CFR Part 503 *Standards for the Use or Disposal of Sewage Sludge*. EPA Region VII administers the sludge regulations for the City of Omaha.

H. Supporting Documentation

The following documents and regulations were used in the preparation of the draft permit:

1. NDEQ Title 117, *Nebraska Surface Water Quality Standards*, July 31, 2006.
2. NDEQ Title 118, *Ground Water Quality Standards and Use Classifications*, March 27, 2006.
3. NDEQ Title 119, *Rules and Regulations Pertaining to the Issuance of Permits under the National Pollutant Discharge Elimination System*, May 16, 2005.
4. NDEQ Title 123, *Rules and Regulations for Design, Operation and Maintenance of Wastewater Treatment Works.*
5. NDEQ Title 197, *Rules and Regulations for the Certification of Wastewater Treatment Facility Operators in Nebraska*, January 24, 1993.
6. Technical Support Document for Water Quality-based Toxic Control (EPA 505/2-90-001 PB91-127415, March, 1991.
7. 40 CFR, Part 122, 124, and 125, NPDES Regulations.
8. 40 CFR, Part 503, Sludge Regulations.
9. Environmental Protection Agency; *Combined Sewer Overflow (CSO) Control Policy; Notice* Federal Register, Vol. 59, No. 75, page 18688, April 19, 1994.
10. Permit application forms 1 and 2A from the City of Omaha for combined sewer system overflows signed March 26, 2010.
11. *City of Omaha Long Term Control Plan for the Omaha Combined Sewer Overflow Control Program* Volumes I and II, October 1, 2009 submitted to the NDEQ on September 25, 2009.
12. NDEQ files for the City of Omaha combined sewer system overflows, NPDES NE0133680.
13. The Nebraska Department of Environmental Quality, *Water Quality Integrated Report*, March 2008.
14. Letter Re: "*Comments and Question on the City of Omaha's Combined Sewer Overflow (CS)) Long Term Control Plan (LTCP)"* signed by the NDEQ on Jan. 08, 2010.
15. Letter Re: "*City of Omaha Long Term Control Plan (LTCP) Approval"* signed by the NDEQ on Feb. 10, 2010.

I. Information Requests

Inquiries concerning the draft permit, its basis or the public comment process may be directed to:

Sharon Brunke Tel. 402/471-8830 or 402/471-4220 Fax: 402/471-2909

A TDD operator is available at 711

Copies of the application and other supporting material used in the development of the permit are available for review and copying at the Department's office between 8:00 a.m. and 5:00 p.m. on weekdays.

Office Location: The Atrium, 1200 N Street, Suite 400; Lincoln, NE

Mail Address: NPDES Permits Unit, Nebraska Department of Environmental Quality,
PO Box 98922; Lincoln, Nebraska 68509-8922

J. Submission of Formal Comments or Requests for Hearing

The date on which the public comment period ends is specified in the public notice. During the public notice period, the public may submit formal comments or objections, and/or petition the Department to hold a public hearing concerning the issuance of the draft permit. All such requests need to: be submitted in written form, state the nature of the issues to be raised, and present arguments and factual grounds to support them. The Department shall consider all written comments, objections and/or hearing petitions, received during public comment period**,** in making a final decision regarding permit issuance.

Formal comments, objections and/or hearing requests need to be submitted to:

Sharon Brunke; NPDES Permits Unit

Mailing Address: Nebraska Department of Environmental Quality
P.O. Box 98922
Lincoln, Nebraska 68509-8922

Location Address: Nebraska Department of Environmental Quality
The Atrium, 1200 N Street, Suite 400
Lincoln, Nebraska