



The Choice for Collection System Solutions

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September 12, 2014

Mr. Vydas Juskelis, P.E.  
Public Works Director  
Village of Villa Park  
20 S. Ardmore Avenue  
Villa Park, Illinois 60181-2696

**SUBJECT: Proposal for Professional Engineering Services  
Village of Villa Park Combined Sewer Overflow (CSO) Long-Term Control Plan (LTCP)**

Dear Mr. Juskelis:

RJN Group, Inc. (RJN) is pleased to submit this proposal to provide professional engineering services to the Village of Villa Park (Village) for the combined sewer overflow (CSO) Long-Term Control Plan (LTCP).

#### **Project Understanding and Approach**

Approximately one-third of the Village of Villa Park is served by its combined sewer system. Since the 1970s, however, the Village has progressively separated its four combined sewer basins, and at present, combined sewers collect direct runoff from only a quarter of the land area within these basins.

The Village's base wastewater flows from both the combined and separated sewer areas are served by the Salt Creek Sanitary District (SCSD) treatment facility, which has limited capacity for treating wet-weather flows. In 1984, the Village completed construction of a relief sewer system and a wet-weather flow treatment facility (WWFTF) designed to convey and treat ten times average dry-weather flow (ADWF) during wet-weather events. While these improvements significantly reduced the frequency and pollutant concentrations of the Village's CSO discharges to Salt Creek, the need for permitted CSO outfalls has remained.

The Illinois Environmental Protection Agency (IEPA) has required the Village to report each incidence of a CSO or operation of the WWFTF and has permitted the Village an annual limit of four (4) CSO discharges. However, due to the frequent incidence of large storm events over the past decade, the Village has exceeded this limit in some years. Therefore, as a condition of the WWFTF NPDES permit renewal, the IEPA has mandated that the Village develop a long-term control plan (LTCP) to reduce the frequency of CSO discharges at its four permitted CSO outfalls within eighteen (18) months of the issuance of the permit.

It is possible that upon development of the LTCP, additional services may be required for implementation of the plan, including further negotiations with IEPA. As this work is contingent upon the nature of the LTCP, it is expected that these services be provided under a future agreement, if necessary. It is also our understanding that modifications to the effluent sampling limits and procedures

are not a condition of the NPDES permit renewal, and therefore services related to effluent sampling are not included in this proposal.

### **Scope of Services**

RJN has worked extensively with the Village since the 1970s studying its sewerage and drainage systems, including an ongoing hydraulic modeling study of the combined sewer system. The following scope of services is proposed to build off previous related studies and to complete the objectives outlined by the NPDES permit conditions.

#### **Year One (FY 2014)**

##### **Phase 1 – Data Collection and Review**

1. Facility Plan Review
  - a. Develop an inventory of the Village combined sewer infrastructure and service areas in the combined sewer basins.
  - b. Review the Village's sewer use ordinance, and complete the Certification of Sewer Use Ordinance Review.
  - c. Review the operation of the Salt Creek Sanitary District (SCSD) treatment facility during average flow conditions and wet-weather conditions.
  - d. Establish conveyance capacity of combined sewer and CSO sewer systems.
  - e. Establish available capacity of the CSO WWFTF and SCSD treatment facilities to treat combined sewer flows during wet-weather events.
2. WWFTF and CSO Activation History
  - a. Review Village CSO Operation and Maintenance Plan.
  - b. Review Village CSO tracking and reporting procedures.
  - c. Obtain and review Discharge Monitoring Reports (DMRs) and other Village records of WWFTF operation and CSO events.
  - d. Determine storm recurrence intervals of past CSO events, and establish activation frequency at each of the four CSO outfall locations.
  - e. Review Village records of reported basement backups and manhole overflows to determine the frequency and locations of recurring CSOs throughout the combined sewer collection system.
  - f. Review the Village's compliance with the Nine Minimum Controls, and identify potential areas of deficiency.
3. Public Sector Prioritization
  - a. Review Village maintenance records of the public sewer system in the combined sewer basins.
  - b. Review the Village's CSO Operation and Maintenance Plan

- c. Identify critical sewer mains and structures based on condition and consequence of failure.
  - d. Conduct detailed structural conditions assessments of approximately 40 manholes in critical locations.
4. Private Sector I/I Source Identification
- a. Review data from previous SSES investigations and building department records to establish an updated inventory of private sector I/I sources.
  - b. Develop a flow balance based on historical I/I source data to estimate the I/I contributions of remaining sources following separation.
  - c. Process and incorporate collected data into the GIS.

### Phase 2 – Hydraulic Modeling

1. Field Investigations
- a. Conduct full-descent inspections of approximately 20 manholes to confirm pipe diameters and collect detailed measurements of pipes with non-standard dimensions.
  - b. Coordinate with Village staff to conduct calibrations of CSO level monitors in four (4) locations. Confirm consistency of manual depth measurements with instrument measurements and readouts on the SCADA system display at the WWTF. Perform two (2) calibrations at each level monitoring site.
  - c. Conduct dye testing of the siphon at Highland and Riverside to establish its effective capacity.
  - d. Conduct field measurements of flow through the siphon at the Park Boulevard secondary control structure to determine its effective capacity.
  - e. Process and incorporate field-collected data into the existing XPSWMM model.
2. Model Calibration and Existing Conditions Analysis
- a. Coordinate with Village staff to obtain SCADA data from the WWTF and four CSO monitoring locations from storm events occurring after calibration of the CSO monitors.
  - b. Update key physical model parameters, and refine the calibration as necessary to replicate observed field conditions and level data at the CSO monitoring locations during post-calibration storm events.
  - c. Run the model for design storms of recurrence intervals ranging between 6 months and 100 years to establish the activation frequency of each CSO outfall.
3. Future Conditions Model and Alternatives Development
- a. Review the findings and recommendations of the Village Stormwater Management Addendum.
  - b. Develop up to three (3) physical model alternatives for future conditions using the recommendations of the Stormwater Management Addendum to simulate cost-

effective future separation of combined sewers, complete separation, and/or implementation of green infrastructure.

- c. Run each future condition scenario for a range of storm recurrence intervals, and determine the projected frequency of CSO events.
- d. As necessary, develop additional model scenarios to further reduce the projected frequency of CSO events, including addition of detention storage, green infrastructure, modifications to CSO control structures, real-time controls (RTCs), and expansion of the WWTF treatment capacity.

### Phase 3 – Meetings and Project Management

1. Project Management
  - a. Provide project management and administrative services for all phases and tasks outlined above.
  - b. Provide a progress report to the IEPA regarding project status and implementation schedule.
2. Meetings
  - a. Attend up to three (3) meetings with Village staff per year to discuss project developments and progress.
  - b. Attend up to two (2) public information meetings to discuss any recommended changes to the Village's Pollution Prevention Plan, CSO Operation and Maintenance Plan, and/or public notification program with Village staff and residents, and prepare up to two (2) presentations for public meetings.
  - c. Attend up to two (2) meetings and maintain communication with IEPA regarding project findings, and negotiate acceptable conditions of the LTCP.

**Year Two (FY 2015)****Phase 1 – Analysis of Alternatives and Recommendations**

1. Analysis of Alternatives
  - a. Identify near-term capital improvements for the reduction of CSO events.
  - b. Identify future capital improvements and changes to policies and ordinances for long-term reduction of CSO events.
  - c. Develop planning level cost estimates for feasible alternatives for reducing the frequency of CSO events.
  - d. Evaluate alternatives for pretreatment measures to mitigate the negative impacts of CSO discharges to Salt Creek.
2. Recommendations
  - a. Incorporate recommendations from the Stormwater Management Addendum, as applicable.
  - b. Recommend improvements to CSO reporting and monitoring procedures.
  - c. Recommend priorities for future maintenance of public infrastructure in the combined sewer system.
  - d. Recommend changes in policies and ordinances to accelerate the disconnection of private sector I/I sources.
  - e. Recommend near-term capital improvements for increasing and/or maximizing system capacity.
  - f. Recommend near-term capital improvements for increased attenuation of runoff in unseparated areas.
  - g. Recommend future capital improvements for further mitigation of CSO impacts.
  - h. Recommend measures to mitigate the negative impacts to water quality when CSO discharges occur.

**Phase 2 – Report, Deliverables, and Project Management**

1. Report
  - a. Provide a report that is to be used as the basis for the Village's LTCP.
  - b. Summarize work completed, critical findings and recommendations, including prioritization for future separation of combined sewer areas, removal of private sector I/I sources, pretreatment measures, capacity improvements, and modifications to system controls.
  - c. Provide cost estimates for recommended capital improvements and I/I mitigation efforts.
  - d. Provide recommended updates to Village sewer use policies, as necessary.

- i. Provide recommended updates and additions to the Village's CSO Operation and Maintenance Plan.
  - j. Assess how recommendations will further Village compliance with the Nine Minimum Controls.
  - e. Address all Special Conditions of the NPDES permit as they relate to the combined sewer areas and to the recommended improvements.
  - f. Submit report to the Village for review and comment, and revise as necessary.
2. Deliverables
- a. Provide up to six (6) hard copies of the final report and an electronic copy in PDF format for Village review, in addition to the number of copies required for submission to the IEPA.
  - b. Deliver GIS data collected during this project to the Village, as desired.
  - c. Deliver the XPSWMM combined sewer model and database to the Village, as desired.
3. Project Management and Meetings
- a. Provide project management and administrative services for all phases and tasks outlined above.
  - b. Attend up to three (3) meetings with Village staff per year to discuss project developments and progress.
  - c. Attend up to two (2) public meetings to discuss the findings of the project with Village staff and residents, and prepare up to two (2) presentations for public meetings.
  - d. Attend up to two (2) meetings and maintain communication with IEPA regarding project findings, and negotiate acceptable conditions of the LTCP.

**Schedule**

It is required by the IEPA that the Village develop and begin implementation of the LTCP within 18 months of the issuance of the NPDES permit renewal. It is therefore a requirement that the proposed work be completed by October 2015.

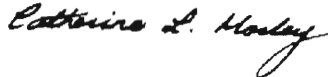
**Fee**

The proposed Scope of Services will be invoiced on a time and materials basis with a not-to-exceed maximum billing of \$78,070 for Year 1 (FY 2014) and \$56,910 for Year 2 (FY 2015). A detailed cost breakdown for each year is provided in Attachments A and B. Work outlined under Year 2 (FY 2015) and detailed in Attachment B will require a separate Notice to Proceed.

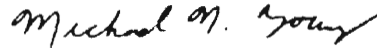
It is our pleasure to submit this proposal to the Village of Villa Park. Please feel free to contact Vinnie at (630) 682-4700 x375 if you would like to discuss this proposal or have any questions.

We are looking forward to the opportunity to work with the Village on this very important project.

Sincerely,  
RJN Group, Inc.



Catherine L. Morley, P.E.  
Project Manager




Michael N. Young, P.E.  
Principal



Vincent J. Bergl, P.E.  
Project Engineer

VILLAGE OF VILLA PARK

Accepted by:   
Title : Village Manager  
Date : October 27, 2014

Village of Villa Park  
 Combined Sewer Overflow (CSO) Long-Term Control Plan (LTCP) - Year 1 (FY 2014)

Attachment A - Summary of Engineering Services Fees

Task No.	Task Description	QC	PM	PE	EI/GIS	FT	CL	Total Hours	Direct Costs	Total Cost
<b>Phase 1 - Data Collection and Review</b>										
	Task 1 Facility Plan Review	-	20	28	20	-	-	68	\$ -	\$ 7,980
	Task 2 WWFTF and CSO Activation History	-	8	24	32	-	-	64	\$ -	\$ 6,640
	Task 3 Public Sector Prioritization	-	20	32	32	48	8	140	\$ 25	\$ 13,065
	Task 4 Private Sector I/I Source Identification	-	20	40	40	-	8	108	\$ -	\$ 11,480
	<b>Phase 1 Subtotal</b>	-	<b>68</b>	<b>124</b>	<b>124</b>	<b>48</b>	<b>16</b>	<b>380</b>	<b>\$ 25</b>	<b>\$ 39,165</b>
<b>Phase 2 - Hydraulic Modeling</b>										
	Task 1 Field Investigations	-	-	12	16	80	-	108	\$ -	\$ 7,905
	Task 2 Model Calibration and Existing Conditions Analysis	-	4	40	24	-	-	68	\$ -	\$ 7,080
	Task 3 Future Conditions Model and Alternatives Development	-	2	56	40	-	2	100	\$ -	\$ 10,000
	<b>Phase 2 Subtotal</b>	-	<b>6</b>	<b>108</b>	<b>80</b>	<b>80</b>	<b>2</b>	<b>276</b>	<b>\$ 25</b>	<b>\$ 24,985</b>
<b>Phase 3 - Project Management and Meetings</b>										
	Task 1 Project Management and Administration	2	16	20	-	-	8	46	\$ -	\$ 5,590
	Task 2 Meetings	4	20	28	4	-	16	72	\$ 50	\$ 8,330
	<b>Phase 3 Subtotal</b>	<b>6</b>	<b>36</b>	<b>48</b>	<b>4</b>	<b>-</b>	<b>24</b>	<b>118</b>	<b>\$ 50</b>	<b>\$ 13,920</b>
	<b>GRAND TOTAL, BASE SERVICES</b>	<b>6</b>	<b>110</b>	<b>280</b>	<b>208</b>	<b>128</b>	<b>42</b>	<b>774</b>	<b>\$ 100</b>	<b>\$ 78,070</b>

**Legend**  
 QC QA/QC Advisor  
 PM Project/Client Manager  
 PE Project Engineer  
 EI/GIS Engineer Intern / GIS Specialist  
 FT Field Technicians  
 CL Clerical

Direct Costs Include Printing, Mileage, Mailing, Vehicle & Equipment Use, Etc.



Village of Villa Park  
 Combined Sewer Overflow (CSO) Long-Term Control Plan (LTCP) - Year 2 (FY 2015)

Summary of Engineering Services Fees

Task No.	Task Description	Rate						Total Hours	Direct Costs	Total Cost
		QC	PM	PE	EI/GIS	FT	CL			
		\$ 175	\$ 160	\$ 110	\$ 85	\$ 65	\$ 60			
<b>Phase 1 - Analysis of Alternatives and Recommendations</b>										
Task 1	Analysis of Alternatives	2	24	32	40	-	4	102	\$ -	\$ 11,350
Task 2	Recommendations	4	16	48	24	-	2	94	\$ -	\$ 10,700
	<b>Phase 3 Subtotal</b>	<b>6</b>	<b>40</b>	<b>80</b>	<b>64</b>	<b>-</b>	<b>6</b>	<b>196</b>	<b>\$ -</b>	<b>\$ 22,050</b>
<b>Phase 2 - Report, Deliverables, and Project Management</b>										
Task 1	Draft Report	2	16	40	32	-	8	98	\$ -	\$ 10,510
Task 2	Final Report	4	16	32	24	-	8	84	\$ 50	\$ 9,350
Task 3	Project Management and Administration	2	16	20	-	-	8	46	\$ -	\$ 5,590
Task 4	Meetings	4	24	32	4	-	16	80	\$ 50	\$ 9,410
	<b>Phase 4 Subtotal</b>	<b>12</b>	<b>72</b>	<b>124</b>	<b>60</b>	<b>-</b>	<b>40</b>	<b>308</b>	<b>\$ 100</b>	<b>\$ 34,860</b>
	<b>GRAND TOTAL, BASE SERVICES</b>	<b>18</b>	<b>112</b>	<b>204</b>	<b>124</b>	<b>-</b>	<b>46</b>	<b>504</b>	<b>\$ 100</b>	<b>\$ 56,910</b>

**Legend**  
 QC QA/QC Advisor  
 PM Project/Client Manager  
 PE Project Engineer  
 EI/GIS Engineer Intern / GIS Specialist  
 FT Field Technicians  
 CL Clerical

Direct Costs Include Printing, Mileage, Mailing, Vehicle & Equipment Use, Etc.

Special Conditions

system are operated to delay storm entry into the system; and,

- h. The treatment and collection systems are operated to maximize treatment.

Sewer Use Ordinances

- 9 The Permittee, within six (6) months of the effective date of this Permit, shall review and where necessary, modify its existing sewer use ordinance to ensure it contains provisions addressing the conditions below. If no ordinance exists, such ordinance shall be developed and implemented within six (6) months from the effective date of this Permit. Upon completion of the review of the sewer use ordinance(s), the Permittee shall submit two (2) copies of a completed "Certification of Sewer Use Ordinance Review", one (1) with original signatures. Copies of the certification form can be obtained on line at <http://www.epa.state.il.us/water/permits/waste-water/forms/sewer-use.pdf>. The Permittee shall submit copies of the sewer use ordinance(s) to the IEPA one (1) month from the revision date. Sewer use ordinances are to contain specific provisions to:
- a. Prohibit introduction of new inflow sources to the sanitary sewer system;
  - b. Require that new construction tributary to the combined sewer system be designed to minimize and/or delay inflow contribution to the combined sewer system;
  - c. Require that inflow sources on the combined sewer system be connected to a storm sewer, within a reasonable period of time, if a storm sewer becomes available;
  - d. Provide that any new building domestic waste connection shall be distinct from the building inflow connection, to facilitate disconnection if a storm sewer becomes available;
  - e. Assure that CSO impacts from non-domestic sources are minimized by determining which non-domestic discharges, if any, are tributary to CSOs and reviewing, and, if necessary, modifying the sewer use ordinance to control pollutants in these discharges; and,
  - f. Assure that the owners of all publicly owned systems with combined sewers tributary to the Permittee's collection system have procedures in place adequate to ensure that the objectives, mechanisms, and specific procedures given in Paragraph 8 of this Special Condition are achieved.

The Permittee shall enforce the applicable sewer use ordinances.

Long-Term Control Planning and Compliance with Water Quality Standards

10. A. Pursuant to Section 301 of the federal Clean Water Act, 33 U.S.C. § 1311 and 40 CFR § 122.4, discharges from the CSOs, including the outfalls listed in this Special Condition and any other outfall listed as a "Treated Combined Sewage Outfall", shall not cause or contribute to violations of applicable water quality standards or cause use impairment in the receiving waters. In addition, discharges from CSOs shall comply with all applicable parts of 35 Ill. Adm. Code 306.305(a), (b), (c), and (d).
- B. The Permittee shall develop a Long-Term CSO Control Plan (LTCP) for assuring that the discharges from the CSOs (treated or untreated) authorized in this Permit comply with Paragraph 10.a above and all applicable standards, including water quality standards. Three (3) copies of the LTCP shall be submitted to the IEPA within twenty-four (24) months of the effective date of this Permit. The LTCP shall contain all applicable elements of Paragraph 10.c below including a schedule for implementation and provisions for re-evaluating compliance with applicable standards and regulations after implementation. The LTCP shall be:
1. Consistent with Section II.C.4.a.i of the Policy; or,
  2. Consistent with either Section II.C.4.a.ii, Section II.C.4.a.iii, or Section II.C.4.b of the Policy and be accompanied by data sufficient to demonstrate that the LTCP, when completely implemented, will be sufficient to meet water quality standards.
- C. Pursuant to the Policy, the required components of the LTCP include the following:
1. Characterization, monitoring, and modeling of the Combined Sewer System (CSS);
  2. Consideration of Sensitive Areas;
  3. Evaluation of alternatives;
  4. Cost/Performance considerations;
  5. Revised CSO Operational Plan;
  6. Maximizing treatment at the treatment plant;
  7. Implementation schedule;