PLAN OF ACTION

CITY OF BOLIVAR

March 24, 2008
Revised: August 29, 2008

We are pleased to provide this Plan Of Action (POA) for your consideration and approval. The City of Bolivar has already taken some actions, began the process of other actions and has attempted to meet all the criteria of a POA pursuant to the Order for Compliance on Consent.

Action items that have been completed or are currently in process:

- **WWTP Expansion**. The City has awarded a $1.86 million dollar construction project to Smith and Edwards of Mountain Grove, MO. This project will increase the amount of sludge storage capacity of the plant, in addition to pumping and control changes that will enhance our ability to manage high flow events. The project will also replace the current generator set with generation capacity and controls to effectively operate the plant during a power outage. The work is scheduled to be completed by the end of 2008.

- **Cleaning and Video of Sewer Lines**. In January 2007, the City purchased and began operation of a cleaning and video sewer machine. This operation is assigned two permanent employees, and will only be delayed when current flow conditions exceed the effectiveness of the inspection equipment. We have currently cleaned and / or videoed over 30% of our collection system. The technicians are tasked with grading each section of main and identifying significant failures that must be corrected immediately, or other deficiencies that should be looked at to determine where it should be placed in a priority ranking system. This process will continue until all lines have been inspected and should be completed no later than December 2010. After that time, we will continue to inspect a minimum of 10% of the system each year.

- **Flow Monitoring**. We have completed a first round of flow monitoring on trunk lines feeding into the WWTP. Those results, combined with other factors, have led us to the understanding of I&I issues throughout the system, with the most significant flows originating from mains draining through town from the southwest portion of our City limits. Additional flow monitoring will be done in this area during 2008 to better define the higher flow rates within this area and giving city crews a starting point to begin addressing our entire system. Flow monitoring will be an annual event per the attached schedule.

- **SCADA Control and Monitoring**. We have purchased, and will begin the backbone installation of a SCADA system. The initial phase of installation and startup should be completed by November 2008. By September 2010, we expect to have all lift stations monitored. Monitoring will provide alarm sets to provide notification of pump failures and potential SSOs, monitor pump run times and performance to detect any failures or potential blockages. We will also incorporate electronic flow measurement devices to track real-time gallons pumped to build real data continuously that will aid in flow monitoring during all seasons where a lift station is incorporated into the collection system.

- **Capacity Analysis**. Scott Consulting Engineers, P.C. (SCE) has performed a capacity analysis of our two highest growth mains within the City and the WWTP Influent Pumping Station. By December 2011, we will have analysis performed on the remainder of our significant mains. We currently refer to this analysis when developers propose additional construction to be certain our current infrastructure can handle the additional loading. SCE is tasked with maintaining the continued integrity of this data.

- **Construction Standards and Inspections**. The City adopted a current Construction Specification for Public Improvements standard manual developed by SCE to assure minimal standards are met when construction of sewer main or tapping to mains is performed within developments. Construction Specifications were approved by Water Pollution Control branch of Missouri Department Natural Resources under Review No. 03192007jkf. We have also assigned personnel from each area of our public works to inspect and verify adherence to these standards. This will remain as an ongoing function, with updates to our specifications also being an ongoing process.

- **GIS Mapping**. The City has contracted with Midland GIS to map within survey grade the entire collection system. We have also assigned personnel to manage the data on an as needed basis. Completion of the mapping and delivery to the City is expected by December of 2008. The ability to map SSO's, backups, work orders, etc… is just being realized by the City staff. Midland will also provide the necessary training to our staff to effectively manage the data. We are currently looking at additional software that works well with GIS to aid in the management of our infrastructure. This should be fully implemented by July 2009.

- **Construction/Repair Crew**. One year ago, the City funded a new construction and repair crew with the primary task of dealing with our sewer collection system issues. The City will be funding over $150,000 of equipment and tooling purchases during 2008 for this crew. This crew will be a huge asset to effectively respond in a timely manner to our backup and SSO correction needs.

- **Lift Station Repair and Maintenance**. The Public Works Director has begun a more stringent program of daily inspections and record keeping of all our lift stations. We are now tracking run times, cycling pumps for proper operation, checking for any plugs in pump intakes and physical testing of all controls. Once the SCADA system comes on line, we will have real time data to support our site visit inspections. Lift station inspections are a daily, seven day per week, work item.

- **Vented Manhole Lids**. The City has a large number of vented manhole lids. To date, we have replaced approximately 15% of those lids with solid lids. We anticipate having all vented manhole lids replaced by June 2013. Many of the existing lids are odd sizes and replacement lids have not been located to date. This may require replacing the whole assembly to accomplish the work.

- **Sewer Replacement and Repair.** The Clark to Park Street sewer replacement project was recently completed, which eliminated known sources of excessive inflow and infiltration.

Discussion Responsive to Section 4.b. of the Order for Compliance on Consent.

Inspection System – 4.b.i. The City has a cleaning and video crew that performs routine and systematic inspections of the collection system and the construction/repair crew handles all work order related items filed by the inspection crew.

Information Collection and Utilization – 4.b.ii. The information described in paragraphs (1), (3), (4), and (7) is identified and documented in the *Self Reporting Form for Wastewater Bypasses* the forms submitted to EPA/MDNR after each event. We log that information into our spreadsheet as part of our tracking system. Once the GIS is operational, that data will be transferred to our mapping program to effectively utilize and monitor the frequency of events in a defined area.

(2) This will be accomplished with year flow monitoring in addition to the data produced from the SCADA system relative to flow rates and correlation with wet weather events. Flow monitoring will be a yearly scheduled work item.

(5) By December 2009, the City will have an individual on staff that will be tasked with inspecting and searching for unauthorized connections (downspouts, sump pumps, floor drains). We anticipate this to be an ongoing job due to the constant attempts of property owners in dealing with their private property water issues.

(6) All bypass events are currently being documented and reported to EPA/DNR. We currently do not have any dry weather capacity issue relative to bypass events. The current I&I issue drives those events.

4.b.iii By December 2009, the City will have an individual on staff that will be tasked with inspecting and searching for unauthorized connections (downspouts, sump pumps, floor drains). We anticipate this to be an ongoing job due to the constant attempts of property owners in dealing with their private property water issues.

4.b.iv Our proposed program is a ten-year reoccurring program. Every year we plan to identify a collection basin that is roughly a 10% portion of our collection system. During that year we will flow monitor, smoke test, clean and video the identified area. After analysis of the data, a course of action will be determined for the most serious deficiencies discovered. A cost projection will be developed for the following fiscal year to repair the most serious deficiencies and work will commence and be completed the following year. During the course of each year's inspections, the city may discover through flow monitoring or by other indicators localized areas of significant SSO's, inflow and infiltration or blockages that indicate a growing problem in a previously analyzed area. The city may alter its priorities and address these areas through corrective actions described in the following year's scope of work. Once the program is in full operation, each fiscal year will see no less than 10% of the system getting a full evaluation and another 10% receiving any maintenance/upgrade determined as needed by the evaluation.

4.b.v The program to identify SSO's will be handled with the current reporting and tracking system in addition to the GIS mapping technology. The reduction in SSO's will be accomplished by the measures identified to limit inflow and infiltration. Reduction in SSO's at lift stations will be accomplished with the integrated inspection process and SCADA monitoring and alarm systems. These processes will provide far greater operational reliability, in addition to constant reliable electronic monitoring.

4.b.vi Identification of bypass events at the WWTP is currently taking place under the reporting and tracking system. By December 2009, the City will:

A. Conduct a study to estimate the wet weather capacity of the WWTP by examining each unit and all interconnecting plant piping. This will include recommendations and costs for treating flows in excess of plant capacity. (We need to determine what the upper limit of flow will be for design purposes.)

B. Develop design criteria and an opinion of cost for a high flow pumping station to pump in parallel with the existing influent pumping station to meet projected wet weather flow.

PLAN OF ACTION SCHEDULE

2007

- Completed Park to Clark Sewer Replacement project
- Town Branch and Southeast Sewer Capacity Study
- Purchased Sewer Video equipment
- Began sewer video investigations
- Designed WWTP Improvements for greater sludge handling capacity
- Performed preliminary flow monitoring in trunk sewers near WWTP
- Developed Construction Specifications for Public Improvements to establish a minimum standard for sewer line construction

2008

- $1.86 million WWTP expansion
- Additional flow monitoring on trunk lines feeding WWTP
- Initial phase of installation and testing of SCADA system completed by November
- GIS mapping of our entire collection system completed by December
- City funded equipment and tooling purchases for new construction crew of over $150,000 throughout year

2009

- Personnel training and additional software that works with GIS fully implemented by July
- Additional employee to inspect and search for unauthorized connections. Anticipated ongoing job.
- Study to estimate the wet weather capacity of the WWTP conducted by December
- Develop design criteria and opinion of cost for high flow pumping station

2010

- Expected to have all lift stations monitored with alarm sets by September
- Daily cleaning and video inspection of mains and inspection of manholes until anticipated completion time no later than December (after that, minimum of 10% of our system each year)

2011

- Capacity analysis completed on significant mains by December

2013

- All vented manhole lids replaced by June

RECURRENT ANNUAL PLAN OF ACTION

Our proposed program is a ten-year reoccurring program. Every year we plan to identify a collection basin that is roughly a 10% portion of our collection system. Once the program is in full operation, each fiscal year will see 10% of the system getting a full evaluation and another 10% receiving any maintenance determined as need by an evaluation. The following will be performed annually:

April
Wet weather flow monitoring

July & August
Dry weather flow monitoring & smoke testing

September
Review of flow data to determine method of repair, replace or up size

October
Prepare budget for coming year