Update on Consent Judgment Activities

Paducah McCracken Joint Sewer Agency

March 16, 2010

PADUCAH McCRACKEN JSA JOINT SEWER AGENCY

JSA Consent Judgment

- Consent Judgment Addresses
  - Combined Sewer Overflows (CSOs)
  - Sanitary Sewer Overflows (SSOs)
- Other CSO utilities
  - In Kentucky: Owensboro, Frankfort, Henderson, Ashland, Louisville, Pikeville, Maysville, Sanitation District No. 1 (south of Cincinnati)
  - 772 CSO communities in the United States

Major Requirements of the Consent Judgment

- Early Action Plan
  - Nine Minimum Controls Compliance
  - Capacity, Management, Operations, and Maintenance Self Assessment
  - Sanitary Sewer Overflow Response Protocol
  - Capital Improvements Project List ⟵
- Sanitary Sewer Overflow Plan (SSOP) ⟵
- Long Term Control Plan (LTCP) ⟵

Early Action Plan: Capital Improvements Projects

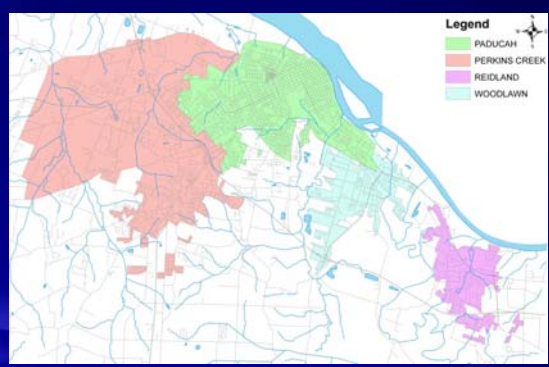
- All work to be completed by June 2010
- Projects:
  - Woodlawn Interceptor Phase III – completed 2007
  - Increase Paducah WWTP wet weather capacity from 9 MGD to 18 MGD – completed in 2009
  - Separate Perkins Creek Int. from Combined Sewer Network – completed 2009
  - Spent approx. $7.0M on Consent Judgment Capital Improvements since 2007

Early Action Plan: Capital Improvements Projects

- Perform $700,000 of rehabilitation during FY 2007 and FY 2008 – completed over $1.6M of rehabilitation since FY07, with more scheduled for 2010
- Since 2007:
  - Gravity Main Cleaning – 487,000 lf
  - Root Cutting – 40,000 lf
  - Video Inspection – 514,000 lf
  - Cured-in-Place Pipe – 39,000 lf
  - Point Repairs – 385 ea
  - Manhole Rehabilitation – 183 ea

Sanitary Sewer Overflow Plan (SSOP)

- Includes Reidland, Woodlawn, Lone Oak and portions of Paducah that drain into Perkins Creek Pump Station
- Submitted March 5, 2010
- Consent Judgment specifies two timetables
  - 8 years from Sept. 5, 2007 to remediate known SSOs
  - 8 years from discovery to remediate unknown recurring SSOs



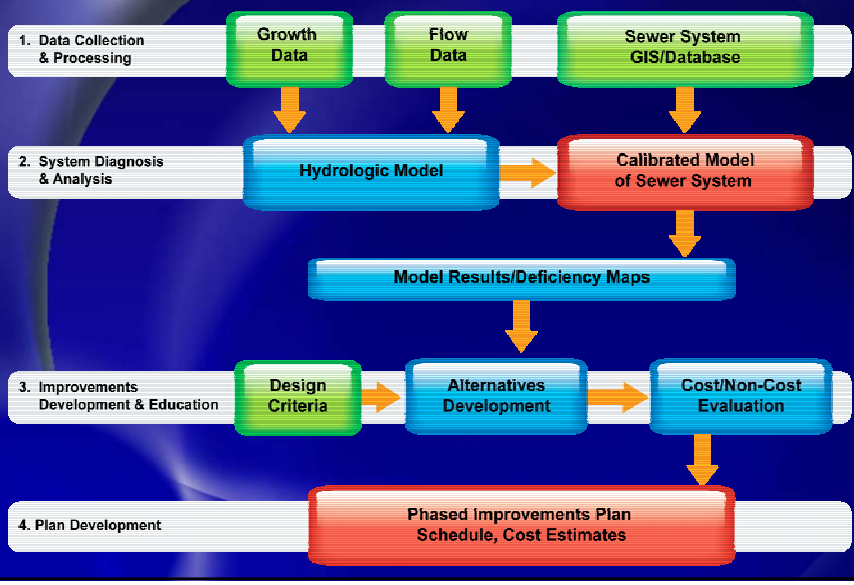
Sanitary Sewer Overflow Plan (SSOP)

- A recurring SSO is defined as an overflow that occurs twice within a rolling 12 month period
- Sanitary Sewer Overflow Plan does not commit to funding numbers, only to remediate overflows
- Funding numbers for estimated SSO work will be placed into the Long Term Control Plan for evaluating affordability for CSO remediation techniques

Known Recurring SSOs listed in Consent Judgment

Location	Area	Status
Anita Drive Pump Station	Reidland	Active - Cause is excessive Infiltration/Inflow
Bullard Street	Woodlawn	Eliminated in 2007
Fieldmont Pump Station	Reidland	Potentially Eliminated - Performed manhole rehabilitation within drainage basin in 2007
Hillington Drive	Lone Oak	Eliminated in 2008
Homewood Pump Station	Woodlawn	Active - Cause is excessive Infiltration/Inflow
Milton Pump Station	Lone Oak	Potentially Eliminated - Overflows due to electrical issues
Milliken Pump Station	Woodlawn	Active - Cause is excessive Infiltration/Inflow
Cook Street Pump Station (Clark's River Road)	Woodlawn	Active - Cause is excessive Infiltration/Inflow
Pebblebrook Pump Station	Reidland	Eliminated in 2009
U.S. 45 Pump Station	Lone Oak	Eliminated in 2007
Wexford Court Pump Station	Lone Oak	Eliminated in 2008

Approach for SSOP Development



Alternatives Evaluation for SSO Remediation

- Evaluated under 2-year, 24-hour dormant season storm of 2.93 inches
  - Developed by CDM for local area
- Potential Alternatives
  - Rehabilitation Options to Remove I/I
    - Excavated repairs
    - Cured-in-place pipe lining (CIPP)
    - Manhole rehabilitation
  - Line Size or Pumping Improvements
  - Storage

Identified Wet Weather Areas for Remediation

- Reidland
  - Anita Drive Pump Station
  - Fieldmont Pump Station
  - Main 18” Interceptor Drainage Basin
- Woodlawn
  - Cook Street Pump Station
  - Homewood Pump Station
  - Milliken Pump Station

Identified Wet Weather Areas for Remediation (continued)

- Lone Oak
  - Gatewood Drive Pump Station
  - Ross Avenue Pump Station
- West Paducah
  - Perkins Creek/Crooked Creek Interceptor

SSOP Strategy for Phasing Projects

- Perform Rehabilitation
  - Monitor the effectiveness
  - Rehabilitation efforts will be increased over current annual efforts
- Perform line size and/or pumping improvements
  - Monitor effectiveness
- Construct storage facilities, as needed / if required

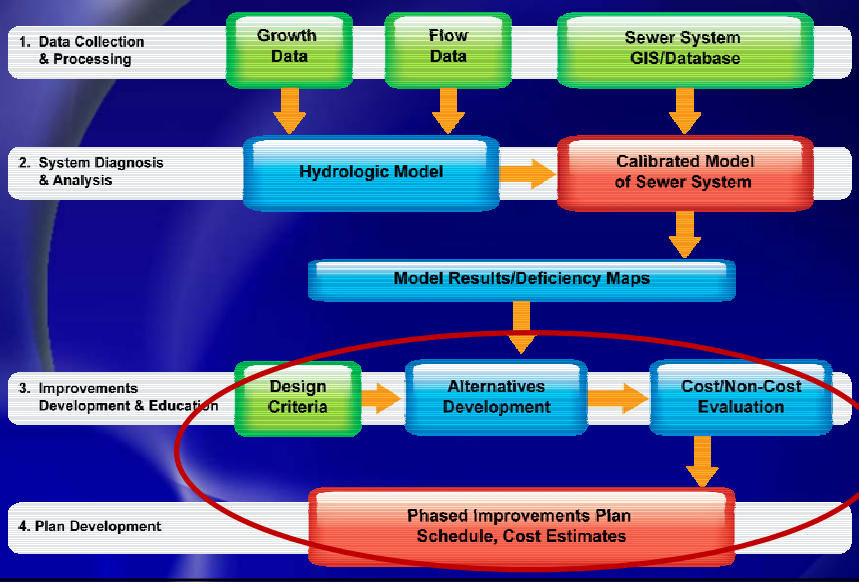
Known Improvement Projects under SSOP

- Continue with Investigation and Rehabilitation
  - Perform more annually and concentrate the rehabilitation to remove I/I.
- Massac Creek Interceptor Phase One
  - KY 305/KY 358 to Info Age Park
- Massac Creek Interceptor Phase Two
  - Info Age Park to South Lone Oak
- Pumping Improvements to Ross, Homewood, Cook, Milliken, and Anita Drive
- Line Size Improvements in Canterbury Hills and around Hwy 62/Calvert Drive Intersection

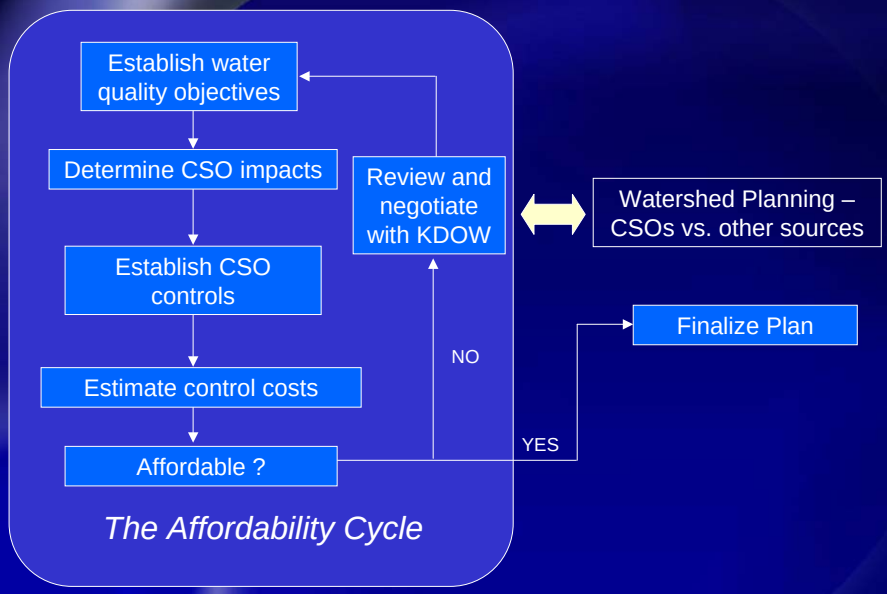
Long-Term Control Plan

- Similar to SSOP
  - Characterization, monitoring, and modeling of the combined sewer system
  - Alternatives evaluation
- Differs from SSOP
  - Addresses combined sewer overflows
  - Consideration of sensitive areas
  - Includes public participation component
  - Balance of cost/performance considerations
  - Water quality

Approach to Long Term Control Plan Development



Affordability Considerations Balance Water Quality Regulations With Cost



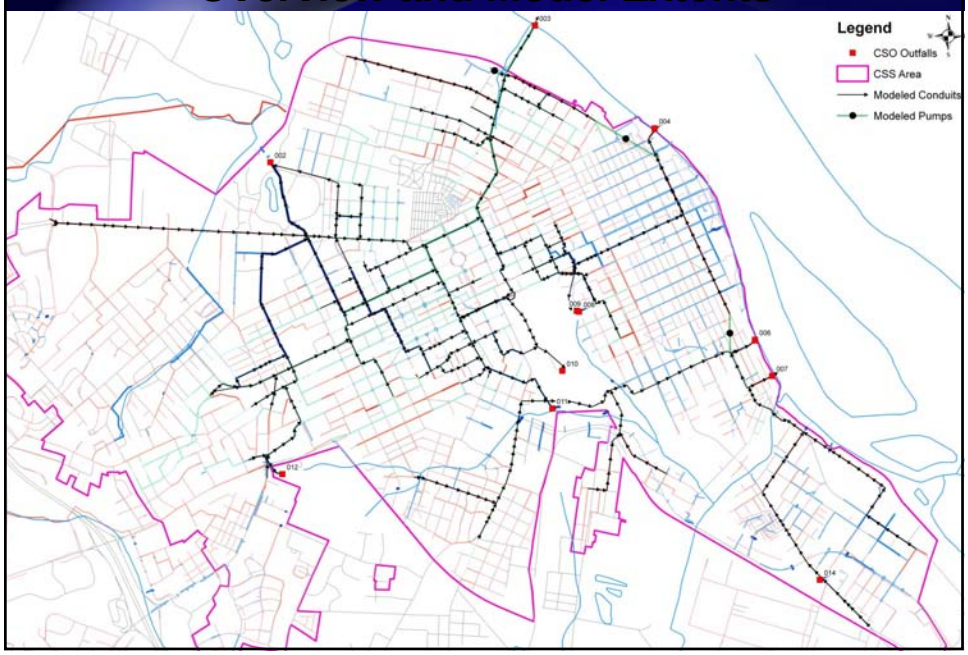
Preliminary Affordability Information

- EPA Affordability Cap
  - Sewer bill of 2% of median household income
- Median Household Income (2000 census)
  - $26,167
- Sewer Bill at Affordability Cap
  - $534/year
- Estimated Current Sewer Bill
  - $240/year
  - Assumes 5,000 gallon average usage

Preliminary Affordability Information (continued)

- Total Bonding Capacity at EPA Affordability Limit
  - $115 million
  - Assumes bond sales starting in 2011
- Additional refinement as SSOP and LTCP programs and schedules are finalized
- Needs to account for increased O&M costs, implementation of CMOM and NMC programs
- Latest CIP to be included prior to finalizing

Overview and Model Extents



Baseline Statistics

Outfall	Description	Average Annual Statistics			
		Duration (hours)	Volume (MG)	Volume from Regulators (MG)	Events (number)
002-A	Noble Park	1758	114	43	68
002-B	Noble Park	1758	115	21	68
002-C	Noble Park	2337	79	60	61
003	Terrell	1251	843	841	50
004	Harrison	1055	83	83	40
006	Husbands	456	32	32	14
007	Husbands	2047	221	221	36
008	Rail yard	1764	75	20	67
009	Rail yard	1954	47	43	58
010	Rail yard	2065	82	13	64
011	Rail yard	970	17	10	85
012	Lone Oak	926	42	41	45
014	Bridge Street	1692	46	7	70
	Total:		1798	1436	

362 MG from separate stormwater discharged to the CSO outfalls

LTCP Approach to Alternatives – Presumptive Approach

- Average of four overflow events per year

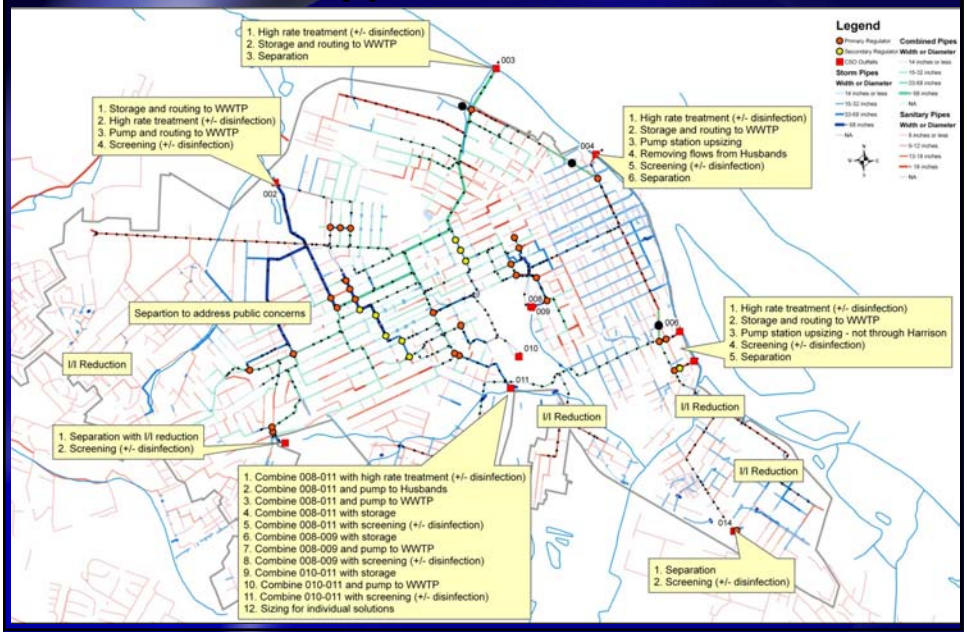
  -- OR --

- Capture for treatment of no less than 85% by volume of the combined sewage collected in the CSS during precipitation events on a system-wide annual basis
  - Percent capture = total flow captured by WWTP during wet weather/ total flow entering the combined sewer system during wet weather
  - Current percent capture: 55%

  -- OR --

- Elimination or removal of pollutants that would be captured under above percent capture

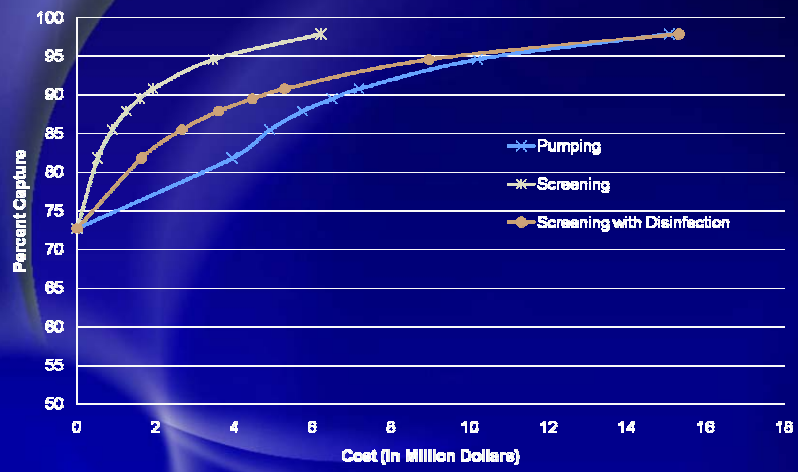
Overall Approach to Alternatives



Example Alternatives Process – Outfall 002 – Noble Park

- Potential Alternatives
  - High rate treatment
  - High rate treatment with disinfection
  - Storage and route to WWTP
  - Pump and route to WWTP
  - Screening
  - Screening with disinfection
  - Separation
- Evaluated to determine cost effectiveness and level of control achievable

Example Alternatives Process – Outfall 002 – Noble Park



Comparative Costs at 85% Capture

	Low Probability of Approval		Higher Probability of Approval		Worst Case Scenario	
Outfall	Description	Cost*	Description	Cost*	Description	Cost*
002	Screening	$0.9M	Screening with Disinfection	$2.7M	Pump and route to WWTP	$4.9M
003	High Rate Treatment	$5.9M	High Rate Treatment with Disinfection	$8.5M	High Rate Treatment with Disinfection	$30.8M
004**	Screening	$0.5M	Pump Station Upsizing	$3.3M	Pump Station Upsizing	$3.3M
006, 007	Screening	$1.0M	Screening with Disinfection	$5.4M	Pump and route to WWTP	$14.5M
008, 009	Screening	$0.8M	Screening with Disinfection	$2.3M	Pump and route to WWTP	$10.2M
010	Screening	$0.5M	Screening with Disinfection	$1.6M	Pump and route to WWTP	$8.9M
011	Screening	$0.15M	Screening with Disinfection	$0.40	Pump and route to 010	$1.3
012	Screening	$0.15M	Screening with Disinfection	$0.6M	Separation with RDII Reduction	$21.6M
014	Screening	$0.7M	Screening with Disinfection	$2.1M	Separation	$7.8M
	Subtotal:	$10.6M		$26.9M		$103.3M
	30% Contingency Cost:	$3.2M		$8.1M		$31.0M
	25% Cost for Legal, Admin, and Eng Services:	$3.5M		$8.7M		$33.6M
	Total:	$17.3M		$43.7M		$167.9M

* Costs do not include O&M

**Methodology results in percent capture > 90%, costs based on improvements sized at 5 mgd

Long Term Control Plan – Upcoming Activities

- Public Involvement
  - Meet with KDOW to discuss approach on March 17th
  - Presentation to City and County Officials
  - Public involvement meetings to present alternatives
  - Additional round of meetings to present final program
- Continue with financial analysis
- Continue with refinement of alternatives
- LTCP due September 2010

Questions and Discussion