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Metropolitan Sewer District

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March 31, 2010

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Jeff Cummins, Acting Director
Division of Enforcement
Department of Environmental Protection
300 Fair Oaks Lane
Frankfort, KY 40601

Subject: Jeffersontown Water Quality Treatment Center
Blending Elimination Plan
Civil Action No. 3:08-cv-00608-CRS

Attention Chiefs and Director:

The Louisville and Jefferson County Metropolitan Sewer District (MSD) has developed this plan to eliminate the practice of "blending" at the Jeffersontown Water Quality Treatment Center (WQTC), in accordance with Paragraph 26 (c) of the Amended Consent Decree filed with the Federal Court on March 9, 2009.

BACKGROUND

Located in eastern Jefferson County, the Jeffersontown WQTC was formerly named the Jeffersontown Wastewater Treatment Plant (WWTP) which is how it is referred to in the Amended Consent Decree. The WQTC is currently rated at 4.0 million gallons per day (MGD) annual average flow. During wet weather events flows to the WQTC can approach 20 MGD, which exceeds both the hydraulic and treatment capacity of the existing secondary treatment process units. To prevent the discharge of untreated wastewater from the headworks of the facility, MSD currently provides partial treatment (screening, grit removal, primary sedimentation) to a portion of the wet weather flows, and then "blends" this partially treated flow with effluent from the secondary treatment process. The blended flow is then disinfected by ultra-violet light and discharged to Chenoweth Run.

Requirements of the Amended Consent Decree

While the practice of blending reduces pollutant discharges during wet weather flows, regulatory agencies have determined that the routing of flows around the secondary treatment system does not meet the intent of the regulations enforcing the Clean Water Act. To address this, the Amended Consent Decree Paragraph 26 (c) requires:

"...appropriate alternatives for both the complete elimination of the Jeffersontown WWTP and long term upgrades to the Jeffersontown WWTP should elimination not be practical or achievable."

"...expeditious implementation and completion schedules not extending past December 31, 2015..."

and,

"No later than March 31, 2010, MSD must select and commit to perform pursuant to this Amended Consent Decree one of the alternatives for either the elimination or long term upgrade of the Jeffersontown WWTP...and inform Cabinet/EPA of its selection."

The purpose of this report is to document the process used to select the approach for eliminating blending at the WQTC, and to describe the approach and the schedule for implementing.

Comprehensive Performance Evaluation and IOAP

The Comprehensive Performance Evaluation (CPE) performed for the Jeffersontown WQTC in 2009 evaluated a number of plant upgrade alternatives to eliminate blending. The Integrated Overflow Abatement Plan (IOAP) incorporated the preferred plant upgrade alternative into an overall evaluation that also considered eliminating the Jeffersontown WQTC and diverting flows to other locations for treatment and discharge. The IOAP found that complete elimination of the WQTC was both practical and achievable, and recommended an approach that pumps flow to the Hikes Lane Interceptor. Dry weather flow is then routed to the Morris Forman WQTC, and wet weather flow can be routed to the Derek R. Guthrie WQTC.

When this plan was presented to the public during review of the final draft IOAP, strong reaction was received from residents of southwest Jefferson County, suggesting that MSD re-consider sending all wet weather flows to the Derek R. Guthrie WQTC. MSD agreed to investigate refinements to the blending elimination plan and review the final recommendation prior to committing to an approach as required by the Amended Consent Decree.

EVALUATION OF ALTERNATIVES

The evaluation process used to select the final approach to eliminate blending at the Jeffersontown WQTC is documented in the following text.

Decision Process

During development of the IOAP, MSD developed a decision model based on a risk-management approach to protecting key community values as identified by the Wet Weather Team Stakeholder Group. This decision model was used to evaluate, select, and prioritize the projects required to mitigate sewer overflows. This decision model was well received by stakeholders, regulators, and the general public. It was determined that a similar process would be used to select the final blending elimination approach as well.

The decision model used in the Jeffersontown WQTC blending elimination evaluation uses the same set of values as the IOAP. Most of the performance measure evaluation scales and scoring criteria were also retained, with a few exceptions that recognize the differences in the decision required in the blending elimination evaluation. For example, in the Eco-Friendly Solutions value, the IOAP performance measures include a factor that assigns benefit points for alternatives that reduce overall pollutant loadings in the watershed. To better differentiate between blending elimination alternatives, this performance measure was modified to assign benefit points based on how much of the effluent load was diverted to the Ohio River, as compared to diversion to other discharge points still within the overall Floyd's Fork watershed of which Chenoweth Run is a part. As a result of these changes, the benefit scores calculated in this evaluation cannot be used to compare projects described in this report with projects described in the IOAP. The benefit scores used in this report can only be used to compare the alternatives described herein.

Similarly, the project costs for the IOAP were developed using a standardized cost model useful for planning-level estimating. Projects in this report used the IOAP cost model where appropriate, but some components such as pipe lining could be more accurately estimated using unit prices from recent MSD bids. As a result, the costs shown herein cannot be directly compared to costs in the IOAP, and are referred to as "comparative" to clarify their intended use for alternative evaluation.

Public Input on Blending Elimination Alternatives

After development and evaluation of the alternatives, MSD conducted "open house" public meetings in both the Jeffersontown area and in the Valley Station area in southwest Jefferson County. While the meetings did not generate the same level of interest as the previous meetings, residents and other interested parties were able to express ongoing concerns and suggest refinements to the plans presented.

Representatives of the Floyds Fork Future Fund Land Trust (Future Fund) expressed concern about the planned relocation of the proposed "Billtown Road Pump Station" approximately4000 feet south to a more accessible site at Seatonville Road. Figure 1 shows the location of the Billtown Road Pump Station and the boundaries of the proposed service area as defined in the 2000 Cedar Creek Action Plan Update (CCAPU), the currently approved Facilities Plan for the area. Since Future Fund is a non-profit organization formed to purchase land and conservation easements for parks and green space, they are concerned that the relocation of the pump station and the associated expansion of the Cedar Creek WQTC service area could negatively impact their ability to acquire land and easements in the area. While the blending elimination plan may rely on downstream infrastructure provided under the CCAPU, the exact location of the pump station does not impact the blending elimination decision. An update to the Action Plan is currently being prepared that will address potential service area modifications, and providing sewer service to additional properties and potential customers in the watershed. The review process for this Action Plan is the established forum to discuss service area boundaries and pump station locations in the Cedar Creek WQTC basin.

Property owners who live immediately south of the Jeffersontown WQTC along the route of the current Chenoweth Run Force Main noted that Alternative 3 (the lowest cost alternative) showed the elimination of the Jeffersontown WQTC being achieved by a pump station at the current WQTC site

with a force main pumping south along the same route as the Chenoweth Run Force Main to a connection point with the Cedar Creek WQTC collection system. They questioned if a gravity sewer could be used instead, thereby allowing sewer service to be provided to property south of the WQTC currently served only by septic tanks. A preliminary evaluation of the gravity sewer option showed higher construction costs for the gravity sewer design based on the assumption that the existing force main could be reused for the pumped option. Further evaluation showed that the force main would need to be replaced if the pumped option was selected, resulting in essentially equal construction costs for the pumped and gravity options. The gravity option will have lower total present worth costs when operation and maintenance costs are considered. As a result of this evaluation and the public input received at the open house, the connection between the Jeffersontown WQTC site and the Cedar Creek WQTC collection system has been changed to a gravity sewer in the alternatives presented herein.

BLENDING ELIMINATION ALTERNATIVES

Three additional alternative approaches were developed to be compared to the elimination approach presented in the IOAP. The following is a summary of the IOAP solution and the three additional alternatives that were evaluated.

IOAP Approach

The approach presented in the IOAP is illustrated in Figures 2 and 3. Figure 2 summarizes the amount of dry weather flow diverted to the Floyds Fork WQTC and the Morris Forman WQTC. Dry weather flow is used to illustrate the approximate split of flow diversions. Wet weather flow is assumed to be split in approximately the same proportions. As Figure 2 shows, except for a small portion of flow diverted to the Floyds Fork WQTC (an approach common to all Alternatives), all flow is pumped from the existing Jeffersontown WQTC site up to the Hikes Lane Interceptor. Figure 3 shows the preliminary pipe routing used for cost estimating. Table 1 presents the major cost elements and the comparative cost estimate for this approach.

Table 1 - Original IOAP Approach
Flows Diverted to Hikes Lane Interceptor

Main Projects	*Description*	*Comparative Cost*
J-Town to HLI Improvements *(replace interceptor from Grassland area to WQTC, Storage and PS at the WQTC, force main to HLI)*	Range of 15"-42" Interceptor Upsize; 5.7 MG Storage; 10 MGD PS; 24" FM to HLI	$ 23,737,000
Chenoweth Run PS Improvements	2.7 MGD PS; Upsize FM to 12"	$ 2,207,000
Total:		**$ 25,944,000**

Alternative 1

Alternative 1 differs from the IOAP approach in that a portion of the service area south of the WQTC is diverted to the Cedar Creek WQTC. Figure 4 shows the proportion of flow diverted, and Figure 5 shows the preliminary pipe routing. Note that this alternative is consistent with the concepts contained in the CCAPU as shown in Figure 1. For the purpose of alternative comparison, costs for blending elimination are calculated based on what is specifically needed for Jeffersontown WQTC elimination, or the upsizing required to accommodate WQCT elimination in facilities planned for other purposes (such as serving areas not currently sewered). Costs for facilities such as the Billtown Road Pump Station are not included in the evaluation, except to the extent that they must be enlarged to accommodate the Jeffersontown WQTC flows (as compared to the Hikes Lane Interceptor diversion approach presented in the IOAP). Table 2 presents the major cost elements and the comparative cost estimate for this approach.

Table 2 - Alternative 1 Costs
80% Diverted to Hikes Lane Interceptor
20% Diverted to Cedar Creek WQTC

Main Projects	***Description***	***Comparative Cost***
J-Town to HLI Improvements *(replace interceptor from Grassland to WQTC, Storage and PS at the WQTC, FM to HLI)*	Interceptor Upsize: 2,613 LF ~ 42"; 1,525 LF ~ 36"; 1,370 LF ~ 24"; 700 LF ~ 15"; 2.3 MG Storage; 10 MGD PS; 32,100 LF ~ 24" FM to HLI	$ 20,596,000
Upsize Billtown Road Interceptor	4,511 LF ~ 30"; 7,093 LF ~ 24" Chenoweth Run PS Elimination	$ 1,304,000
Upsize Billtown Road PS & FM	15 MGD PS; 5,814 LF ~ 30" FM	$ 1,811,000
Upsize Fairmount Road PS Improvements	21.7 MGD PS; 9,935 LF ~ 36" FM	$ 1,526,000
Total:		**$ 25,237,000**

Alternative 2

Alternative 2 is the only alternative under consideration that keeps the Jeffersontown WQTC in operation (at reduced flows). As shown in Figure 6, the northwest part of the service area is pumped to the Hikes Lane Interceptor from a new pump station site assumed to be located on or near the existing Sanitary Sewer Overflow at Grassland Avenue. The south area is routed to the Cedar Creek WQTC similar to Alternative 1. Approximately 0.8 MGD of dry weather flow continues to be treated and discharged from the current Jeffersontown WQTC, which would require substantial rehabilitation to assure reliable service into the future. Figure 7 shows the preliminary pipe line routing and pump station locations. Table 3 presents the major cost elements and the comparative cost estimate for this approach.

Table 3 - Alternative 2 Costs
55% Diverted to Hikes Lane Interceptor
20% Diverted to Cedar Creek WQTC
25% Continues Treatment at Existing WQTC

Main Projects	*Description*	*Comparative Cost*
J-Town to HLI Improvements *(replace interceptor from Grassland to WWTP, Storage and PS at the WWTP, FM to HLI)*	Interceptor Upsize: 680 LF ~ 24"; 700 LF ~ 15" 0.54 MG Storage; 10 MGD PS; 25,820 LF ~ 24" FM to HLI	$ 13,460,000
Jeffersontown WTP Improvements	Equipment Repairs Needed if Plant is kept in Place (This cost needs to be corrected by CH2)	$ 3,000,000
Pipe Cured In Place Pipe Lining	2,638 LF ~ 36"; 2,836 LF ~ 30"; 172 LF ~24"; 735 LF ~ 18"	$ 2,675,000
Upsize Billtown Road Interceptor	4,511 LF ~ 30"; 7,093 LF ~ 24" Chenoweth Run PS Elimination	$ 1,304,000
Upsize Billtown Road PS & FM	15 MGD PS; 5,814 LF ~ 30" FM	$ 1,811,000
Upsize Fairmount Road PS Improvements	21.7 MGD PS; 9,935 LF ~ 36" FM	$ 1,526,000
Total:		**$ 23,766,000**

Alternative 3

Alternative 3 is illustrated in Figures 8 and 9. This alternative diverts the northwest area to the Hikes Lane interceptor similar to Alternative 2. In this alternative all remaining flows (except those diverted to Floyds Fork WQTC) are diverted to the Cedar Creek WQTC. The pump station site is anticipated to be located on or near the existing Jeffersontown Municipal Services storage yard. It is expected that a connection will be retained between the pump station diverting flow to the Hikes Lane Interceptor and the interceptor carrying flow south to the Cedar Creek WQTC. This connection will allow MSD more flexibility in flow routing, and allows the option of sending all from this watershed to a new regional treatment facility on the Salt River, should that become available in the future. Table 4 presents the major cost elements and the comparative cost estimate for this approach.

Table 4 - Alternative 3 Costs
60% Diverted to Hikes Lane Interceptor
40% Diverted to Cedar Creek WQTC

Main Projects	*Description*	*Comparative Cost*
J-Town to HLI Improvements *(replace interceptor from Grassland to WQTC, Storage and PS at the WQTC, FM to HLI)*	Interceptor Upsize: 1,370 LF ~ 24"; 700 LF ~ 15"; 0.8 MG Storage; 10 MGD PS; 28,110 LF ~ 24" FM to HLI	$ 15,014,000
Pipe Cured In Place Pipe Lining	2,638 LF ~ 24"; 172 LF ~ 18"	$ 268,000
Upper Billtown Rd Interceptor	8,030 LF ~ 24" Interceptor from Jtown WQTC to Chenoweth Run PS	$ 1,047,000
Upsize Billtown Road Interceptor	9,179 LF ~ 30"; 2,426 LF ~ 24" Chenoweth Run PS Elimination	$ 1,505,000
Upsize Billtown Road PS & FM	19.5 MGD PS; 5,814 LF ~ 36" FM	$ 3,194,000
Upsize Fairmount Road PS Improvements	25.9 MGD PS; 9,935 LF 36" FM	$ 2,227,000
Total:		**$ 23,255,000**

ALTERNATIVE EVALUATION

Table 5 summarizes the benefit scores, comparative costs, and benefit/cost ratios for the IOAP approach and the three alternatives. Detailed benefit scoring sheets are attached at the end of this report, following the figures.

Table 5 - Cost and Benefit Summary

	Original IOAP	*Alternative 1*	*Alternative 2*	*Alternative 3*
Comparative Cost	$ 25,944,000	$ 25,237,000	$ 23,776,000	$ 23,255,000
Benefit Score	3,636	3,636	2,826	3,564
Benefit/Cost Ratio (x100,000)	14.01	14.41	11.89	15.33

As Table 5 shows, Alternative 3 has the lowest comparative construction cost, and also has the best benefit/cost ratio. This Alternative has an additional benefit not quantified by the benefit/cost evaluation. Since it retains connectivity between the northwest diversion and the southern diversion, it has the potential to make maximum use of a future regional treatment facility on the Salt River should that become available in the future.

At the time this report was prepared, a bill (HB 221) was being considered by the Kentucky legislature that would allow the creation of a regional sewer district to serve the Salt River watershed. If this regional sewer district is formed in the future, MSD would retain the option to include all its Salt River basin facilities within the service area of this new entity.

SELECTED BLENDING ELIMINATION APPROACH

Alternative 3 is the approach selected by MSD to eliminate blending at the Jeffersontown WQTC. It eliminates the WQTC in its entirety, which is clearly the preferred approach stated in the Amended Consent Decree. It is consistent with concepts in the Cedar Creek Action Plan Update, and will be included in the Floyds Fork Watershed Plan Update currently being prepared to update the facilities plans for all WQTCs in the Floyds Fork watershed.

Phasing Plan

Completion of the elimination plan requires coordination with enabling projects in the Cedar Creek WQTC service area. Figure 10 presents the general phasing plan for all the projects required to implement the selected plan.

Schedule

Figure 11 presents the proposed schedule for all the components of the elimination plan. Critical schedule elements include the design and construction of the force main from the new pump station

assumed to be located at or near the existing Jeffersontown Municipal Services storage yard and the east end of the Hikes Lane Interceptor. The biggest unknowns in this project are issues surrounding land and easement acquisition and permitting of stream crossings etc. MSD plans to complete the components of this plan by the December 31, 2015, requirement for blending elimination, and will be able to complete the elimination in advance of the required date if the force main construction can be completed early.

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

If you have questions or need additional information, please contact me at (502) 649-3850.

Sincerely,

W. Brian Bingham
Regulatory Services Director

Attachments

cc: H. J. Schardein, Jr. Paula Purifoy Laurence J. Zielke

Figure 1 - Cedar Creek Action Plan Update Flow Diversions

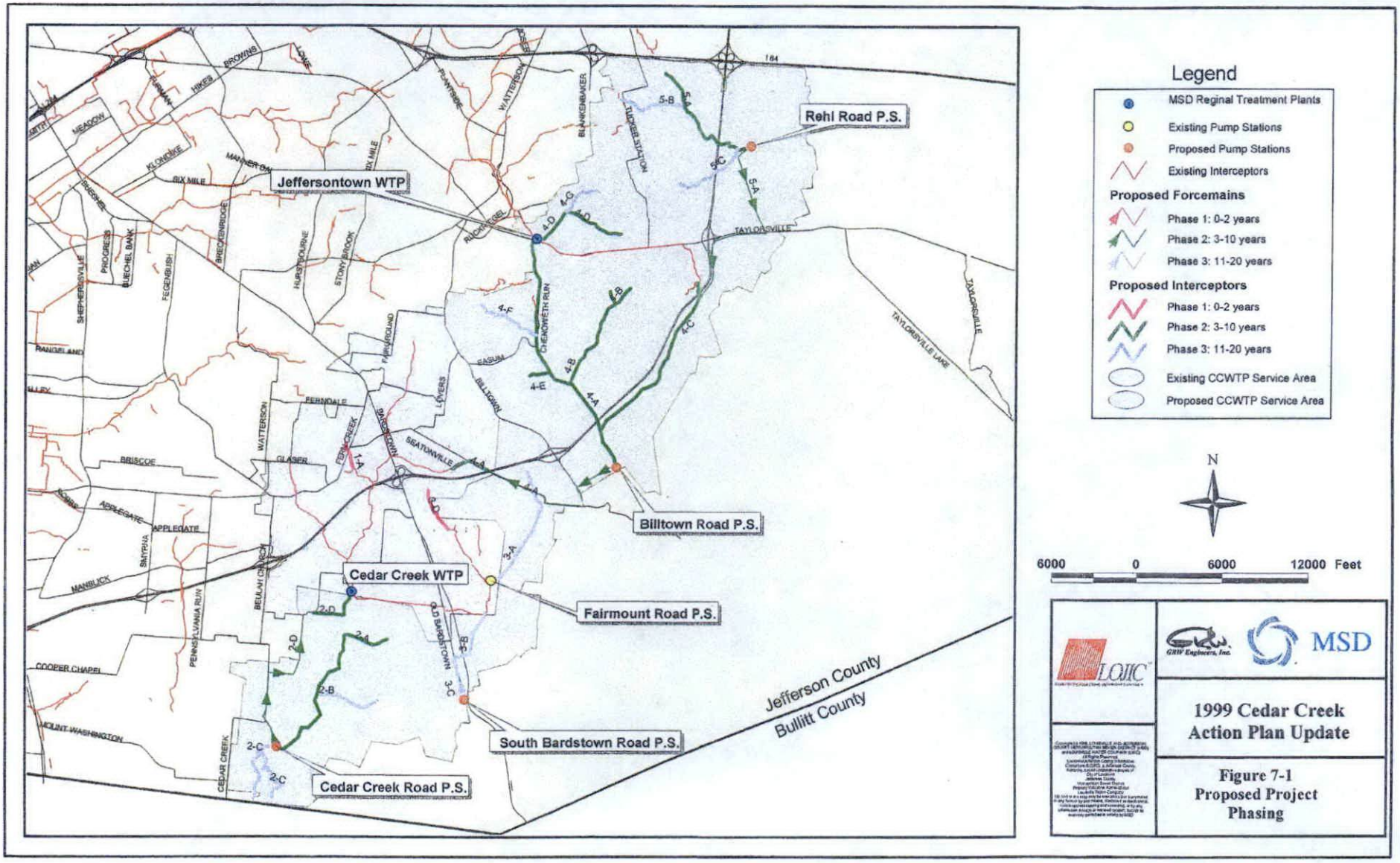
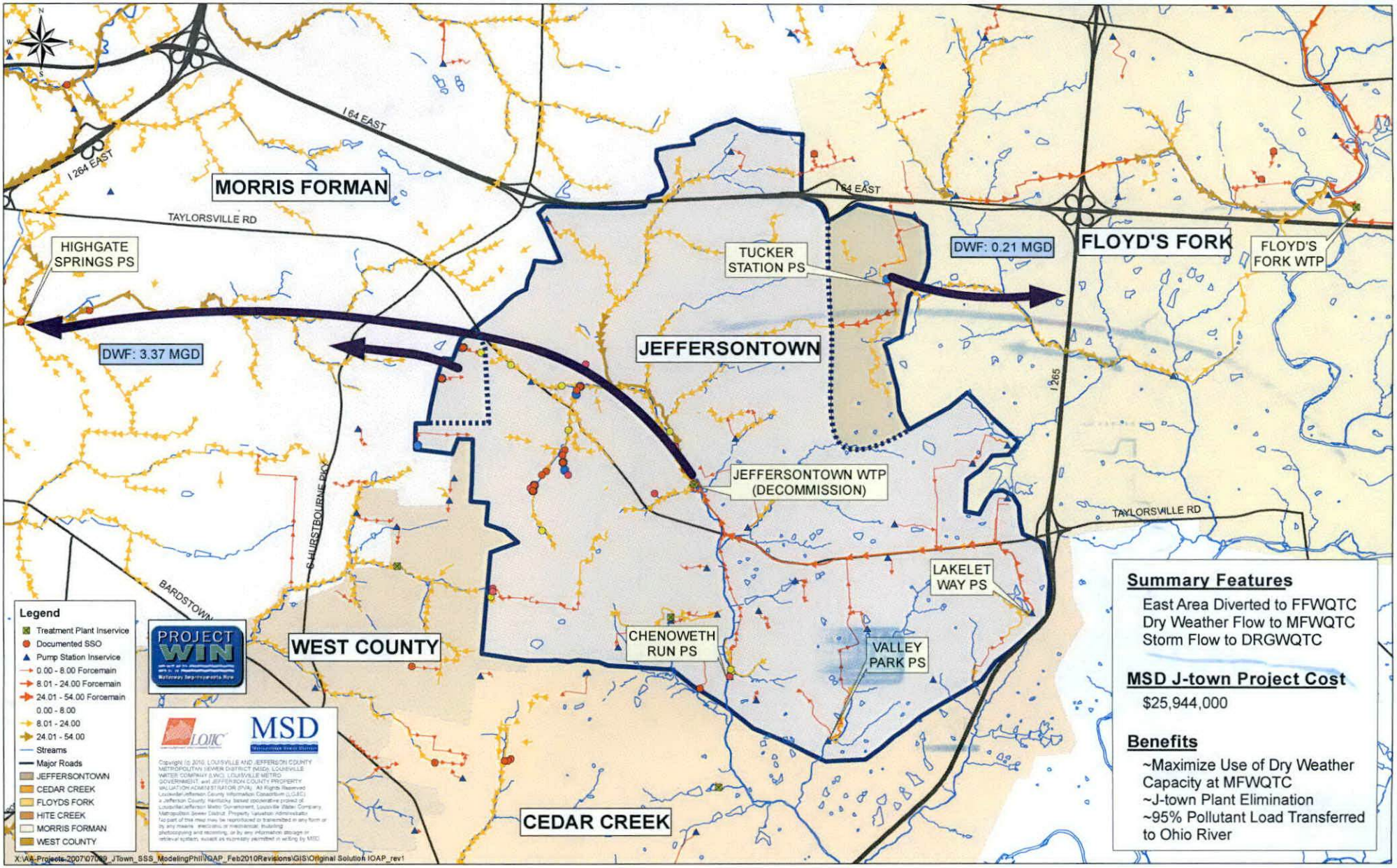


Figure 2 - Jeffersontown Diversion Projects: Original IOAP - J-Town to HLI



Summary Features

East Area Diverted to FFWQTC
Dry Weather Flow to MFWQTC
Storm Flow to DRGWQTC

MSD J-town Project Cost

$25,944,000

Benefits

~Maximize Use of Dry Weather Capacity at MFWQTC
~J-town Plant Elimination
~95% Pollutant Load Transferred to Ohio River

Figure 3 - Jefferson Diversion Projects: Original IOAP - Jeffersontown to HLI

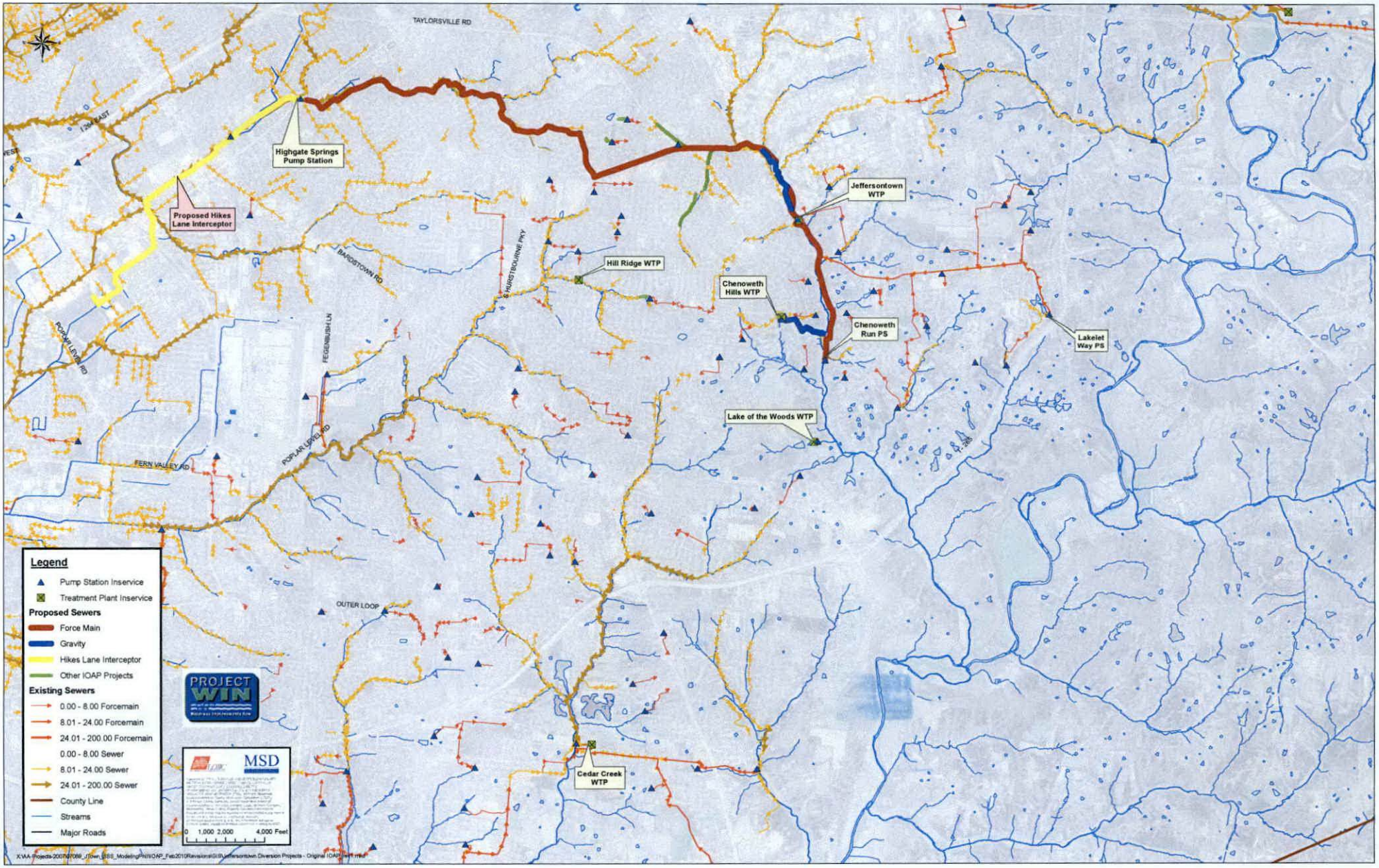


Figure 4 - Jeffersontown Diversion Projects: Alternate 1 - Gravity to HLI / Pumped to Cedar Creek

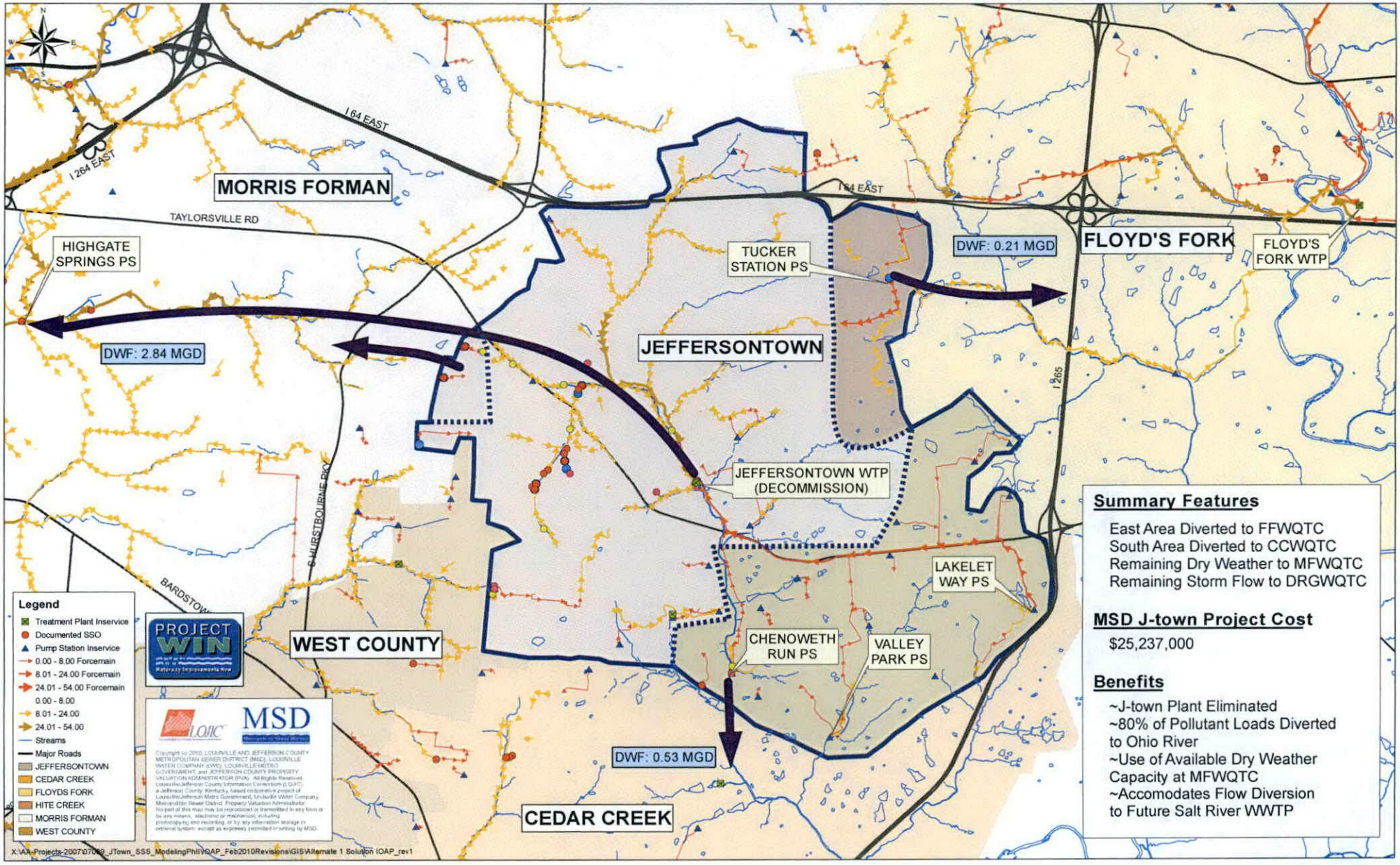


Figure 5 - Jeffersontown Diversion Projects: Alternate 1 - Gravity to HLI & Pumped to Cedar Creek

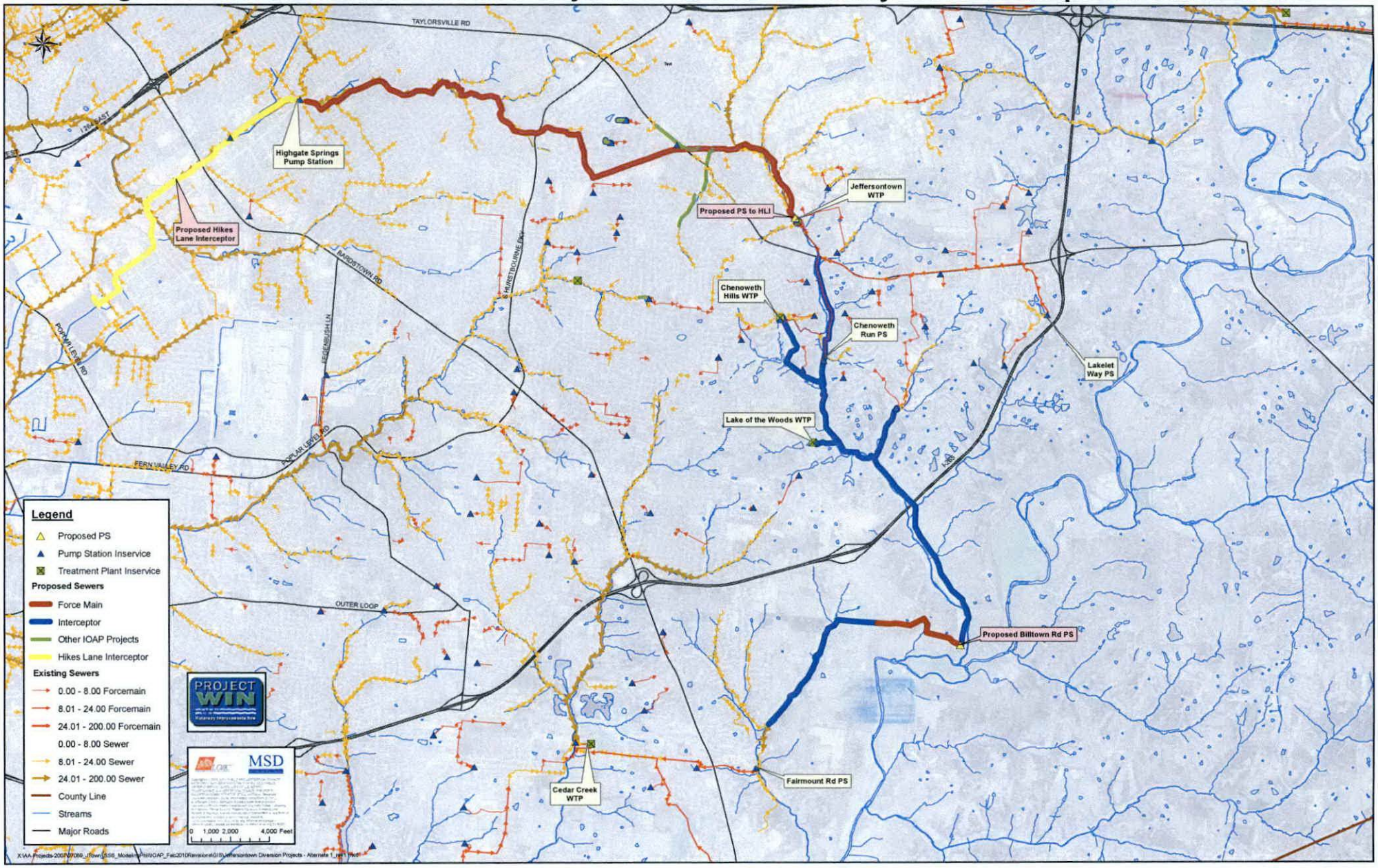
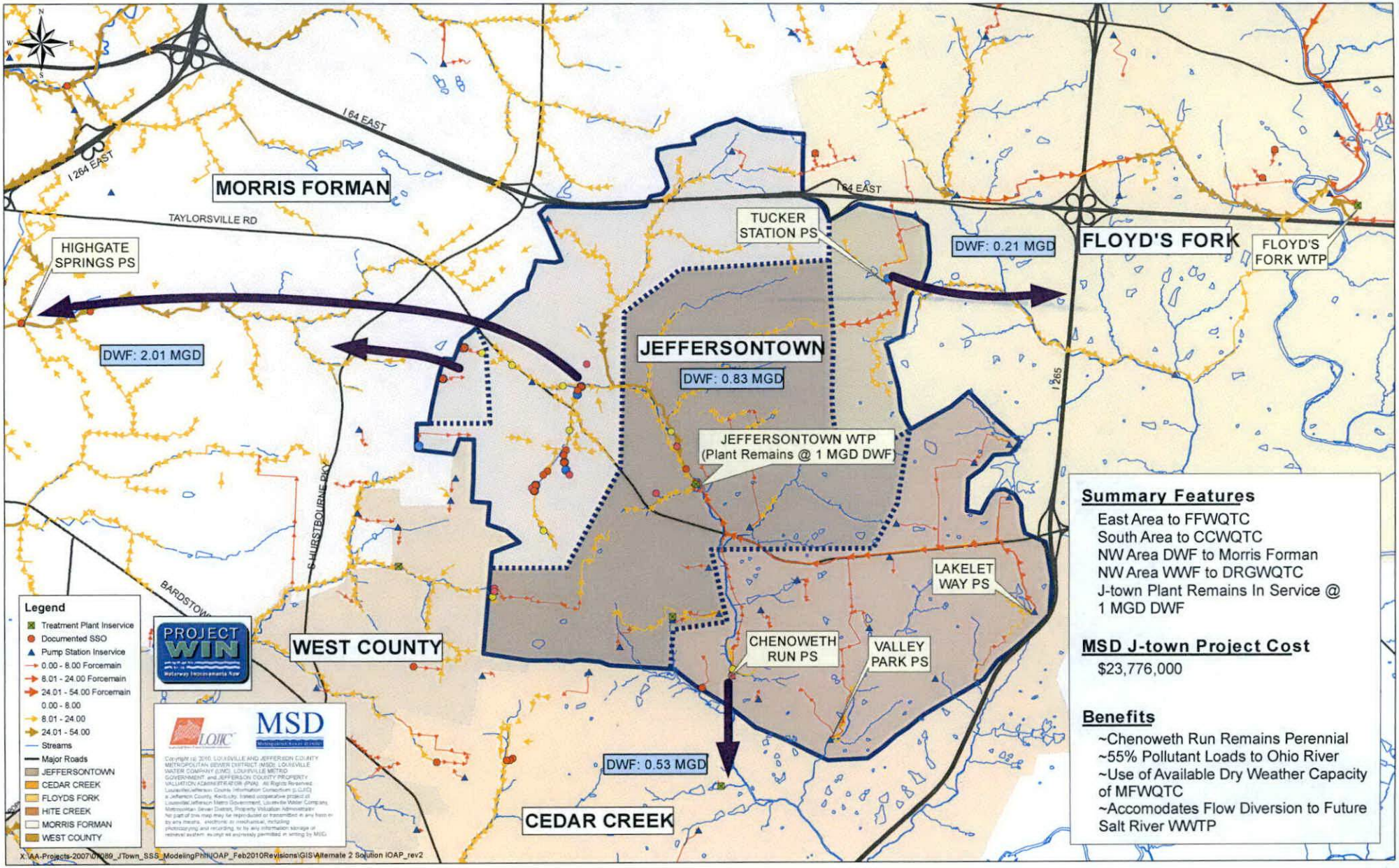


Figure 6 - Jeffersontown Diversion Projects: Alternate 2 - Grassland to HLI / Gravity and Pumped to Cedar Creek



Summary Features

East Area to FFWQTC
South Area to CCWQTC
NW Area DWF to Morris Forman
NW Area WWF to DRGWQTC
J-town Plant Remains In Service @ 1 MGD DWF

MSD J-town Project Cost

$23,776,000

Benefits

~Chenoweth Run Remains Perennial
~55% Pollutant Loads to Ohio River
~Use of Available Dry Weather Capacity of MFWQTC
~Accomodates Flow Diversion to Future Salt River WWTP

Figure 7 - Jeffersontown Diversion Projects: Alternate 2 - Grassland PS to HLI & Gravity and Pumped to Cedar Creek

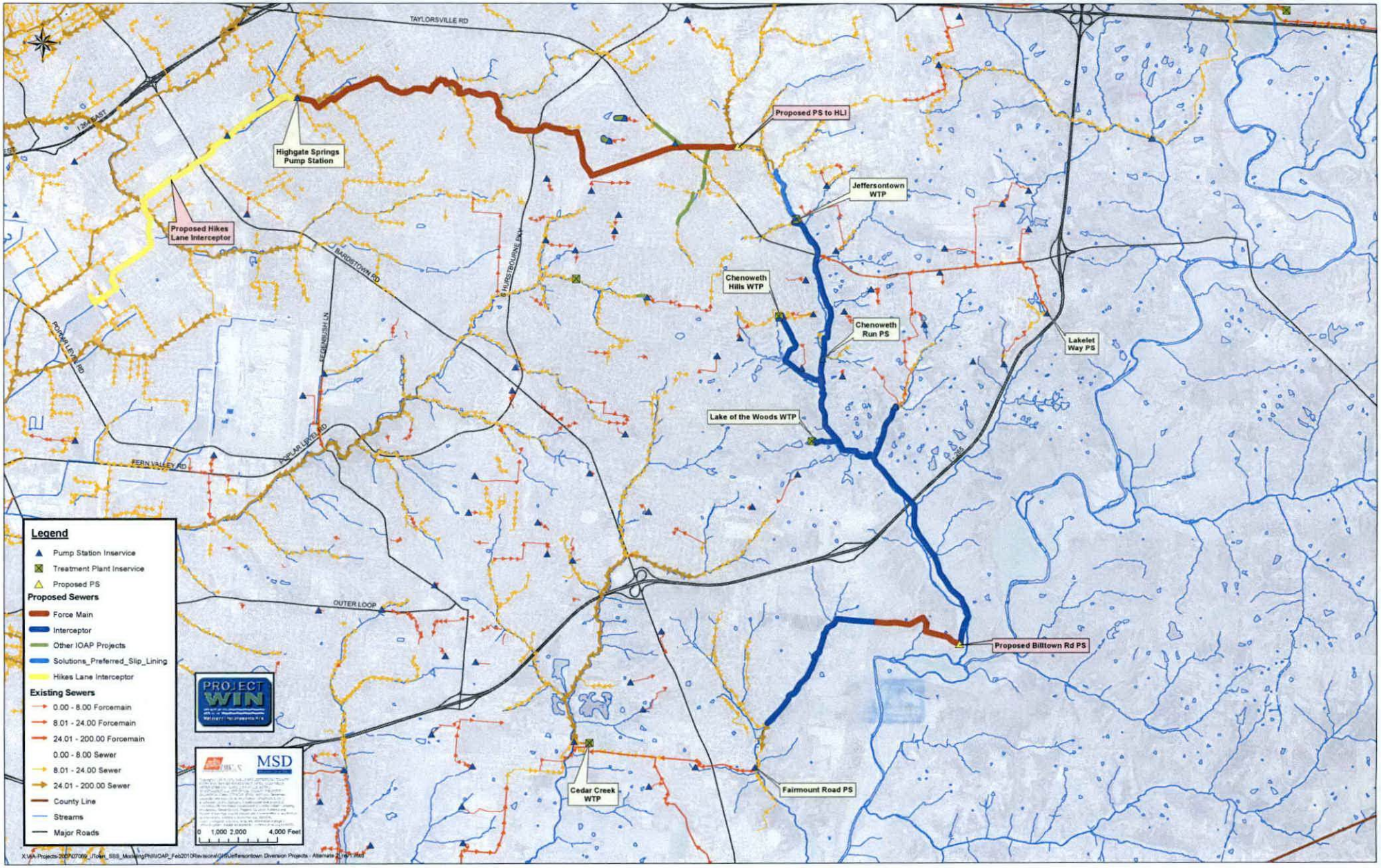


Figure 8 - Jeffersontown Diversion Projects: Alternate 3 - Public Works to HLI / Gravity and Pumped to Cedar Creek

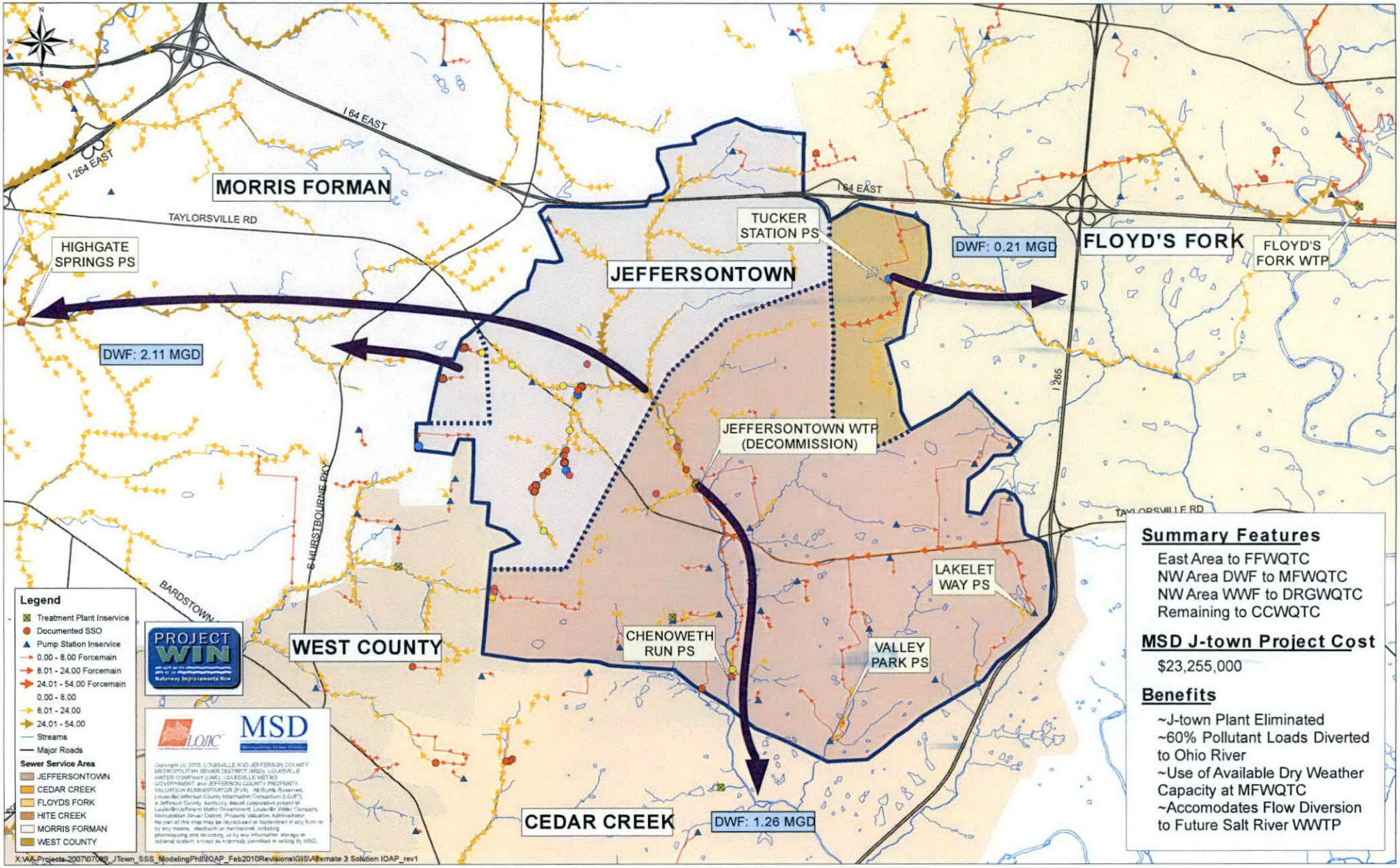


Figure 9 - Jeffersontown Diversion Projects: Alternate 3 - Public Works PS to HLI & Gravity and Pumped to Cedar Creek

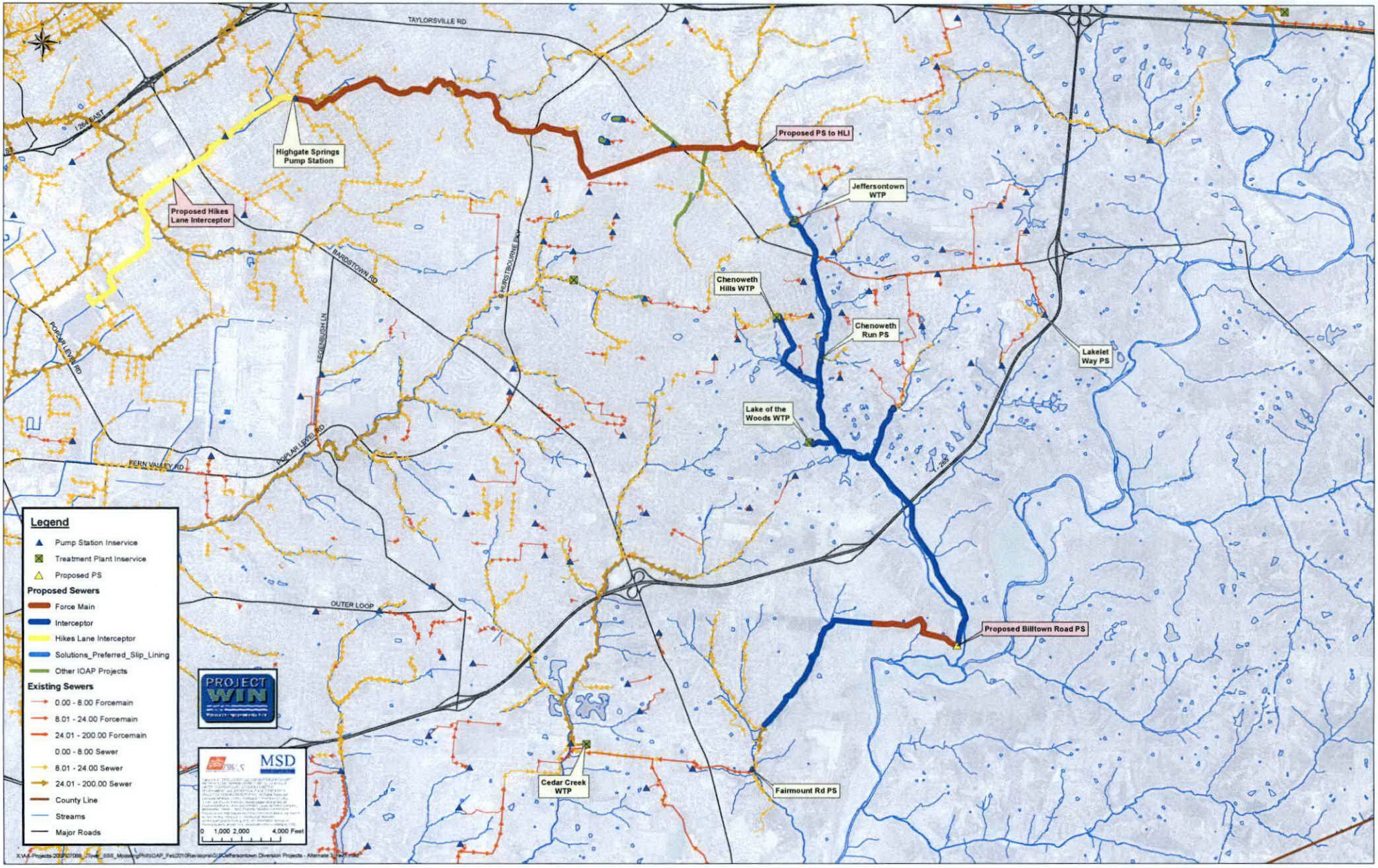


Figure 10 – Project Phasing for Bid Packages

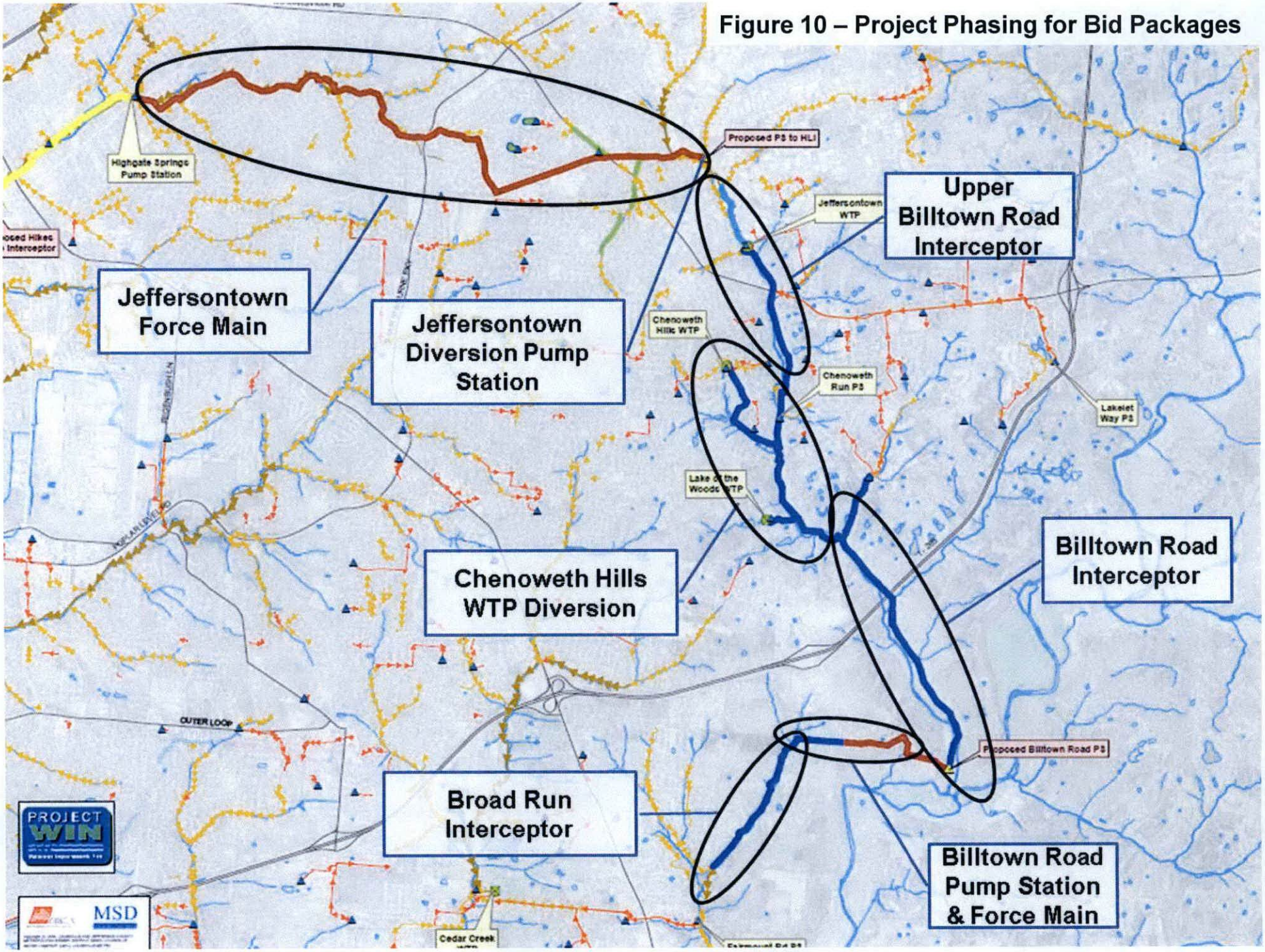
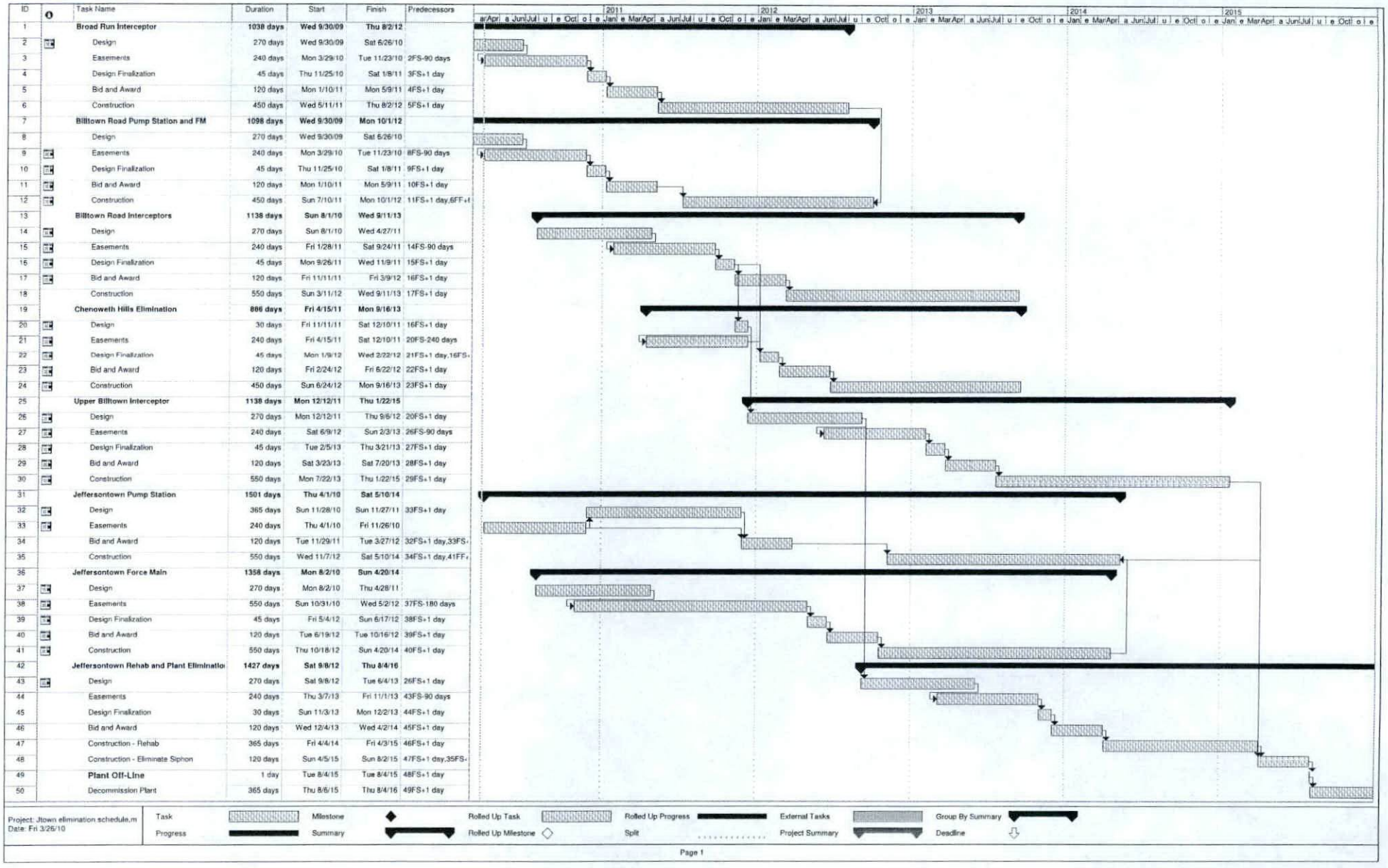


FIGURE 11–SCHEDULE



ID	Task Name	Duration	Start	Finish	Predecessors
1	**Broad Run Interceptor**	**1038 days**	**Wed 9/30/09**	**Thu 8/2/12**	
2	Design	270 days	Wed 9/30/09	Sat 6/26/10	
3	Easements	240 days	Mon 3/29/10	Tue 11/23/10	2FS-90 days
4	Design Finalization	45 days	Thu 11/25/10	Sat 1/8/11	3FS+1 day
5	Bid and Award	120 days	Mon 1/10/11	Mon 5/9/11	4FS+1 day
6	Construction	450 days	Wed 5/11/11	Thu 8/2/12	5FS+1 day
7	**Billtown Road Pump Station and FM**	**1098 days**	**Wed 9/30/09**	**Mon 10/1/12**	
8	Design	270 days	Wed 9/30/09	Sat 6/26/10	
9	Easements	240 days	Mon 3/29/10	Tue 11/23/10	8FS-90 days
10	Design Finalization	45 days	Thu 11/25/10	Sat 1/8/11	9FS+1 day
11	Bid and Award	120 days	Mon 1/10/11	Mon 5/9/11	10FS+1 day
12	Construction	450 days	Sun 7/10/11	Mon 10/1/12	11FS+1 day,6FF+
13	**Billtown Road Interceptors**	**1138 days**	**Sun 8/1/10**	**Wed 9/11/13**	
14	Design	270 days	Sun 8/1/10	Wed 4/27/11	
15	Easements	240 days	Fri 1/28/11	Sat 9/24/11	14FS-90 days
16	Design Finalization	45 days	Mon 9/26/11	Wed 11/9/11	15FS+1 day
17	Bid and Award	120 days	Fri 11/11/11	Fri 3/9/12	16FS+1 day
18	Construction	550 days	Sun 3/11/12	Wed 9/11/13	17FS+1 day
19	**Chenoweth Hills Elimination**	**886 days**	**Fri 4/15/11**	**Mon 9/16/13**	
20	Design	30 days	Fri 11/11/11	Sat 12/10/11	16FS+1 day
21	Easements	240 days	Fri 4/15/11	Sat 12/10/11	20FS-240 days
22	Design Finalization	45 days	Mon 1/9/12	Wed 2/22/12	21FS+1 day,16FS+
23	Bid and Award	120 days	Fri 2/24/12	Fri 6/22/12	22FS+1 day
24	Construction	450 days	Sun 6/24/12	Mon 9/16/13	23FS+1 day
25	**Upper Billtown Interceptor**	**1138 days**	**Mon 12/12/11**	**Thu 1/22/15**	
26	Design	270 days	Mon 12/12/11	Thu 9/6/12	20FS+1 day
27	Easements	240 days	Sat 6/9/12	Sun 2/3/13	26FS-90 days
28	Design Finalization	45 days	Tue 2/5/13	Thu 3/21/13	27FS+1 day
29	Bid and Award	120 days	Sat 3/23/13	Sat 7/20/13	28FS+1 day
30	Construction	550 days	Mon 7/22/13	Thu 1/22/15	29FS+1 day
31	**Jeffersontown Pump Station**	**1501 days**	**Thu 4/1/10**	**Sat 5/10/14**	
32	Design	365 days	Sun 11/28/10	Sun 11/27/11	33FS+1 day
33	Easements	240 days	Thu 4/1/10	Fri 11/26/10	
34	Bid and Award	120 days	Tue 11/29/11	Tue 3/27/12	32FS+1 day,33FS+
35	Construction	550 days	Wed 11/7/12	Sat 5/10/14	34FS+1 day,41FF+
36	**Jeffersontown Force Main**	**1358 days**	**Mon 8/2/10**	**Sun 4/20/14**	
37	Design	270 days	Mon 8/2/10	Thu 4/28/11	
38	Easements	550 days	Sun 10/31/10	Wed 5/2/12	37FS-180 days
39	Design Finalization	45 days	Fri 5/4/12	Sun 6/17/12	38FS+1 day
40	Bid and Award	120 days	Tue 6/19/12	Tue 10/16/12	39FS+1 day
41	Construction	550 days	Thu 10/18/12	Sun 4/20/14	40FS+1 day
42	**Jeffersontown Rehab and Plant Eliminatio**	**1427 days**	**Sat 9/8/12**	**Thu 8/4/16**	
43	Design	270 days	Sat 9/8/12	Tue 6/4/13	26FS+1 day
44	Easements	240 days	Thu 3/7/13	Fri 11/1/13	43FS-90 days
45	Design Finalization	30 days	Sun 11/3/13	Mon 12/2/13	44FS+1 day
46	Bid and Award	120 days	Wed 12/4/13	Wed 4/2/14	45FS+1 day
47	Construction - Rehab	365 days	Fri 4/4/14	Fri 4/3/15	46FS+1 day
48	Construction - Eliminate Siphon	120 days	Sun 4/5/15	Sun 8/2/15	47FS+1 day,35FS+
49	**Plant Off-Line**	1 day	Tue 8/4/15	Tue 8/4/15	48FS+1 day
50	Decommission Plant	365 days	Thu 8/6/15	Thu 8/4/16	49FS+1 day

Attachment

Benefit Scoring Sheets

(References LOC_JT_JT_NB01_Q_Q.xls and LOC_JT_JT_NB01A.xls)

Cluster Comparison

Project #1: S_JT_JT_NB01_01_C_A (Original IOAP)

CSO/SSO ID		Raw Benefit Score[2] Regulatory Performance	Public Health	Asset Protection	Environmental Enhance	Eco-Friendly Solutions
ISO28		21	22	10	11	3
28390		5	7	10	11	3
31733		21	20	10	11	3
28395A		5	3	10	11	3
64505		5	3	10	11	3
MSD0255		0	0	10	11	3
28392		0	0	10	11	3
28391		0	0	10	11	3
28173		0	0	10	11	3
64096		21	8	5	4	-4
86052		21	22	5	4	-4
92061		0	0	5	4	-4
MSD0263		21	18	5	4	-4
Weighting Factor		**8**	**10**	**6**	**8**	**6**
Weighted Benefit Score		**960**	**1030**	**660**	**920**	**66**
Total Benefit Score	**3636**					
Total Capital Cost[3]	27595000					
Total Present Worth Costs[3]						
Weighted Benefit/Cost Ratio (Capital Costs)	**13.1763**					
Weighted Benefit/Cost Ratio (Total Present Worth Costs)	**#DIV/0!**					

Notes:
1. Data Input Cells are highlighted in yellow
2. Raw Benefit Scores for Regulatory Performance and Public Health values are from the CSO or SSO Level of Control Benefit Sheets
3. Capital and Total Present Worth Costs from the"Proj Summary" Page of the Cost Model for the clustered alternative

(Reference fi JT_NB01_BCA_Q_Q.xls)

2-Year	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Regulatory Performance - SS0s										
	Measure	Impact / Frequency						Rationale	Measurement Method		
Performance Measure	SSOs	6 month	1 Year	2 Year	5 Year	10 Year	Modeled Overflow Point or No discharge	Regulations do not distinguish between potential impact of SSOs, therefore frequency and impact are the same for Regulatory Performance value.. Modeled Overflow Points are not considered until verified.	Measurement methods will be via hydraulic models to quantify the SSO discharge.		
Frequency	Value	25	12	0	4	1	0				
	ISO28	BL			PR				25	4	21
	28390			BL	PR				9	4	5
	31733	BL			PR				25	4	21
	28395A			BL	PR				9	4	5
	64505			BL	PR				9	4	5
	MSD0255						BL		0	0	0
	28392						BL		0	0	
	28391						BL		0	0	
	28173						BL		0	0	
Note - This value sheet calculates the total benefit.									Subtotal		57

Acronyms
AAOV - Average annual overflow volume
CSO - Combined sewer overflow
WQS - Water quality standards
WWTPs - Wastewater treatment plants

2-Year (Reference fo...T_NB01A_BCA.xls)	Network Branch #1A									
Value:	**Regulatory Performance - SS0s**									
	Measure	**Impact / Frequency**						**Rationale**	**Measurement Method**	
Performance Measure	**SSOs**	**6 month**	**1 Year**	**2 Year**	**5 Year**	**10 Year**	**Modeled Overflow Point or No discharge**	Regulations do not distinguish between potential impact of SSOs, therefore frequency and impact are the same for Regulatory Performance value.. Modeled Overflow Points are not considered until verified.	Measurement methods will be via hydraulic models to quantify the SSO discharge.	
Frequency	**Value**	25	16	9	4	1	0			
	64096	BL			PR				25	4	21
	86052	BL			PR				25	4	21
	92061						BL		0	0	0
	MSD0263	BL			PR				25	4	21
Note - This value sheet calculates the total benefit.									**Subtotal**		**63**

Acronyms

AAOV - Average annual overflow volume
CSO - Combined sewer overflow
WQS - Water quality standards
WWTPs - Wastewater treatment plants

ISO28 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 900,000 gallons	25	0	25	
	1 Year	20	16	12	8	4	0	Releases 2,000,000 gallons	20	0	20	
	2 Year	15	12	9	6	3	0	Releases 3,080,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 4,600,000 gallons	10	6	4	
	10 Year	5	4	3	2	1	0	Releases 5,720,000 gallons	5	4	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			13	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			22	

28390 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0	
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0	
	2 Year	15	12	9	6	3	0	Releases 63,000 gallons	12	0	12	
	5 Year	10	8	6	4	2	0	Releases 167,000 gallons	8	2	6	
	10 Year	5	4	3	2	1	0	Releases 248,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			4	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			7	

31733 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 80,000 gallons	20	0	20	
	1 Year	20	16	12	8	4	0	Releases 172,000 gallons	16	0	16	
	2 Year	15	12	9	6	3	0	Releases 269,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 393,000 gallons	10	2	8	
	10 Year	5	4	3	2	1	0	Releases 495,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			12	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			20	

28395A - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0	
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0	
	2 Year	15	12	9	6	3	0	Releases 2,000 gallons	3	0	3	
	5 Year	10	8	6	4	2	0	Releases 31,000 gallons	4	0	4	
	10 Year	5	4	3	2	1	0	Releases 46,000 gallons	2	1	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			2	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			3	

(Reference for S_ 1_BCA_G_G.xls)

64505 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0
	2 Year	15	12	9	6	3	0	Releases 13,600 gallons	3	0	3
	5 Year	10	8	6	4	2	0	Releases 170,000 gallons	8	2	6
	10 Year	5	4	3	2	1	0	Releases 282,000 gallons	5	2	3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			2
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			3

64096 - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 600 gallons	5	0	5	
	1 Year	20	16	12	8	4	0	Releases 16,000 gallons	4	0	4	
	2 Year	15	12	9	6	3	0	Releases 55,000 gallons	12	0	12	
	5 Year	10	8	6	4	2	0	Releases 123,000 gallons	8	4	4	
	10 Year	5	4	3	2	1	0	Releases 160,000 gallons	4	3	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			5	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			8	

86052-PS - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 155,000 gallons	20	0	20	
	1 Year	20	16	12	8	4	0	Releases 223,000 gallons	20	0	20	
	2 Year	15	12	9	6	3	0	Releases 292,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 360,000 gallons	10	2	8	
	10 Year	5	4	3	2	1	0	Releases 405,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			13	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			22	

MSD0263 - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 36,000 gallons	20	0	20	
	1 Year	20	16	12	8	4	0	Releases 71,000 gallons	16	0	16	
	2 Year	15	12	9	6	3	0	Releases 123,000 gallons	12	0	12	
	5 Year	10	8	6	4	2	0	Releases 204,000 gallons	10	4	6	
	10 Year	5	4	3	2	1	0	Releases 274,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score				11
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score				18

92061 - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	No Release	0	0	0	
	1 Year	20	16	12	8	4	0	No Release	0	0	0	
	2 Year	15	12	9	6	3	0	No Release	0	0	0	
	5 Year	10	8	6	4	2	0	No Release	0	0	0	
	10 Year	5	4	3	2	1	0	No Release	0	0	0	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score				0
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score				0

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Jeffersontown Blending Elimination Evaluation - Original IOAP Solution and Alterantives 1, 2, and 3 (all the same)

Value: Asset Protection

	Measure			Impact						Rationale	Measurement Method
Performance Measures		Flood Damage		Homes or businesses are subject to severe structural damage	Homes or businesses are subject to minor to moderate structural damage	Flooding limits access to homes or businesses	Flooding limits access to recreational areas	Standing water on property, but access not affected and no damage expected	No standing water	Stormwater BMPs can reduce stormwater peaks and reduce extent of flooded areas, while sewer separation may increase localized stormwater peak flows and increase the flooding impacts of storms. Alternatively, purchase of highly impacted properties may be a cheaper way to reduce flood damage and create green space and buffer zones.	Drainage models where available, historic customer complaints from MSD Customer Information System, or historic observations of flood-prone areas combined with the expected relative impacts of sewer system modifications on storm water flows.
		Basement Back-ups		Sewer surcharging within 6 feet of ground surface for more than 20% of manholes	Sewer surcharging within 6 feet of ground surface for 10 - 20% of manholes	Sewer surcharging within 6 feet of ground surface for 5 - 10% of manholes	Sewer surcharging within 6 feet of ground surface for 1 - 5% of manholes	Sewer surcharging within 6 feet of ground surface for 0 - 1% of manholes	No surcharging within 6 feet of ground surface	First floor levels are typically 1 - 2 feet above ground surface, and basement floors are typically 8 - 10 feet below the first floor. A sewer surcharge of 6 feet below ground surface is highly likely to cause back-ups in homes with basement service.	Measurement methods will be via hydraulic models to quantify the hydraulic grade lines compared to ground surface elevations at manholes.
	Storm Events	→		Most Severe Impact				Least Impact	No Impact		
		↓		5	4	3	2	1	0	Assumptions	Base Case Score / Alternative Score / Total Score
Frequency	6 Month	Most Likely	5	25	20	15	10	5	0		10 / 0 / 10
	1 Year		4	20	16	12	8	4	0		12 / 4 / 8
	2 Year		3	15	12	9	6	3	0		9 / 3 / 6
	5 Year		2	10	8	6	4	2	0		8 / 4 / 4
	10 Year	Least Likely	1	5	4	3	2	1	0		5 / 3 / 2
	Not Possible	Not Possible	0	0	0	0	0	0	0	Average Total Score	6
										Corrected Score	10

Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.

Acronyms
BMPs - Best management practices

MSD
Louisville and Jefferson County Metropolitan Sewer District

Project #1				S_JT_JT_NB01A_03_C									
Value:	Asset Protection												
	Measure			Impact						Rationale	Measurement Method		
Performance Measures		Flood Damage		Homes or businesses are subject to severe structural damage	Homes or businesses are subject to minor to moderate structural damage	Flooding limits access to homes or businesses	Flooding limits access to recreational areas	Standing water on property, but access not affected and no damage expected	No standing water	Stormwater BMPs can reduce stormwater peaks and reduce extent of flooded areas, while sewer separation may increase localized stormwater peak flows and increase the flooding impacts of storms. Alternatively, purchase of highly impacted properties may be a cheaper way to reduce flood damage and create green space and buffer zones.	Drainage models where available, historic customer complaints from MSD Customer Information System, or historic observations of flood-prone areas combined with the expected relative impacts of sewer system modifications on storm water flows.		
		Basement Back-ups		Sewer surcharging within 6 feet of ground surface for more than 20% of manholes	Sewer surcharging within 6 feet of ground surface for 10 - 20% of manholes	Sewer surcharging within 6 feet of ground surface for 5 - 10% of manholes	Sewer surcharging within 6 feet of ground surface for 1 - 5% of manholes	Sewer surcharging within 6 feet of ground surface for 0 - 1% of manholes	No surcharging within 6 feet of ground surface	First floor levels are typically 1 - 2 feet above ground surface, and basement floors are typically 8 - 10 feet below the first floor. A sewer surcharge of 6 feet below ground surface is highly likely to cause back-ups in homes with basement service.	Measurement methods will be via hydraulic models to quantify the hydraulic grade lines compared to ground surface elevations at manholes.		
	Storm Events			Most Severe Impact				Least Impact	No Impact				
				5	4	3	2	1	0	Assumptions	Base Case Score	Alternative Score	Total Score
Frequency	6 Month	Most Likely	5	25	20	15	10	5	0		5	0	5
	1 Year		4	20	16	12	8	4	0		4	4	0
	2 Year		3	15	12	9	6	3	0		9	3	6
	5 Year		2	10	8	6	4	2	0		8	6	2
	10 Year	Least Likely	1	5	4	3	2	1	0		4	3	1
	Not Possible	Not Possible	0	0	0	0	0	0	0	Average Score			3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.										Corrected Score			5

Acronyms
BMPs - Best management practices

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Jeffersontown Blending Elimination - Original IOAP Solution

Value: Environmental Enhancement

Aspect	Scoring -5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Aquatic and Terrestrial Habitat Protection	Elimination of habitat for rare or endangered species	Elimination of significant amount of common habitat	Elimination of minor amount of common habitat	Significant habitat impairment	Minor impairment to existing habitat	No impact on habitat	Minor enhancement of existing habitat	Significant enhancement of existing habitat	Creation of minor amount of common habitat	Creation of significant amount of common habitat	Creation of critical habitat for rare or endangered species	Plant elimination restores Chenoweth Run to intermittent stream habitat - its natural state that has been modified by continuous plant discharges	3
Aesthetics - Solids and Floatables	75%+ reduction in volume of flow with no S&F capture	50 - 75% of flow with no S&F removal	25 - 50% of flow with no S&F removal	10 - 25% of flow with no S&F removal	Reduces efficiency of existing S&F control device. 0 - 10% of flow with no S&F removal	No change in S&F removal	0 - 10% of discharged flow treated with positive S&F removal (screens)	10 - 25 % of discharged flow treated with positive S&F removal (screens)	25 - 50% of discharged flow treated with positive S&F removal (screens)	50 - 75% of discharged flow treated with positive S&F removal screens	75% + of discharged flow treated with positive S&F removal (screens)	No options will provide changes in S&F Removal	0
Aesthetics - Odor and Air Emissions	Create annoying odor source affecting > 20 customers often	Create annoying odor source affecting >20 customers often, or >20 customers occasionally	Create annoying odor source affecting >20 customers occasionally	Create detectable odor source affecting > 50 customers often	Create detectable odor source affecting < 50 customers occasionally	No impact on odors	Eliminate detectable odor source affecting < 50 customers occasionally	Eliminate detectable odor source affecting > 50 customers often	Eliminate annoying odor source affecting <20 customers occasionally	Eliminate annoying odor source affecting < 50 customers often, or <20 customers occasionally	Eliminate annoying odor source affecting >20 customers often	Odor will be eliminated from all overflows along Jtown interceptor being eliminated. Treatment Plant odors eliminated except for minor storage and pump station potential	3
Dissolved Oxygen Impacts	Reduction of in-stream DO by 2 mg/l + during critical flow period	Continuous reduction of in-stream DO of 2 mg/l +	Continuous reduction of in-stream DO of 0 - 2 mg/l, possible reduction of in-stream DO 2 - 4 mg/l during critical conditions	Intermittent reduction of in stream DO 2 mg/l + possible during non-critical conditions, reduction of DO 0 - 2 mg/l during critical conditions	Intermittent reduction of in stream DO 0 - 2 mg/l possible during non-critical conditions	No DO impacts	Intermittent improvement of in-stream DO 0 - 2 mg/l	Intermittent improvement of in-stream DO 2 mg/l +, intermittent critical condition improvements 0 - 2 mg/l	Continuous improvement of in-stream DO 0 - 2 mg/l, intermittent critical condition improvements 2-4 mg/l	Continuous improvement of in-stream DO 2 mg/l +	Continuous improvement of critical condition in-stream DO 2 mg/l +	Plant effluent load elimination will provide improvement of in-stream DO 0 - 2 mg/l, but stream may dry up in summer	1
Downstream Impacts	75%+ increase in annual BOD or nutrient loads	50 - 75% increase in annual BOD or nutrient loads	25 - 50% increase in annual BOD or nutrient loads	10 - 25% increase in annual BOD or nutrient loads (CSO + runoff)	Potential 0 - 10 % increase in annual average BOD or nutrient loads (CSO + runoff)	No impact on BOD or nutrient loads (CSO + runoff)	0 - 10% reduction in annual BOD or nutrient loads (CSO + runoff)	10 - 25% reduction in annual BOD or nutrient loads (CSO + runoff)	25 - 50% reduction in annual BOD or nutrient loads (CSO + runoff)	50 - 75% reduction in annual BOD or nutrient loads (CSO + runoff)	75%+ reduction in annual BOD or nutrient loads (CSO + runoff)	Improved capture and treatment of SSOs will provide 0 - 10 % reduction in annual BOD or nutrient loads (SSO + runoff) downstream of Jefferson County	1
Stream Flow Impacts (Peak flows)	25%+ increase in peak flows	10% - 25% increase in peak flows	Up to 10% increase in peak flows	Frequent increase in flow during critical conditions	Possible increase in average flow, or minor increase in high flow peaks	No impact on peak flows	Minor reduction in flows - no significant peak reduction	Minor reduction in peak flows under some conditions	Up to 10% reduction in peak flows	10% - 25% reduction in peak flows	25%+ reduction in peak flows	Flow peaks to be reduced due to diversion of plant effluent	3
Stream Flow Impacts (DWF only)	25%+ decrease in flow during critical conditions	10% - 25% decrease in flow during critical conditions	0-10% permanent decrease in flow during critical conditions	Frequent decrease in flow during critical conditions	Possible decrease in average flow	No impact on average or base stream flow	Intermittent increase in stream flow - not timed to critical conditions	Intermittent increase in stream flow - often improves critical conditions	0 - 10% permanent increase in stream flow during critical conditions	10 - 25 % permanent increase in stream flow during critical conditions	25%+ permanent increase in stream flow during critical conditions	Base flow substantially reduced, but this restores stream to its natural condition - positive and negative impacts balance out.	0
Instructions: (1.) Score each alternative for each of the seven aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.										Total Raw Score Calculated			11
										Corrected Score			11

Aspect	Rationale	Measurement Method
Aquatic and Terrestrial Habitat Protection	Wet weather projects may affect both aquatic and terrestrial habitat through changes in base flow, peak flow, water quality, tree cover, channel shape and characteristics etc. Predictive models used to evaluate wet weather control measures have a limited ability to predict biological diversity changes, erosion impacts etc., so surrogate metrics must be used to estimate future positive and negative impacts.	Project definition may specifically address changes in channel shape and configuration, tree cover etc. Predictive models will address DO and other water quality impacts. Flow models will predict base flow and peak flow rates to allow estimates of changes in erosion and water surface area.
Aesthetics - Solids and Floatables	Most CSOs have some form of solids and floatables control baffles. Improvements in capture rates can be expected with screening or other advanced treatment options. Storm water retention, constructed wetlands, and other control systems may provide solids and floatables removal as well. While reduction in solids and floatables removal efficiency is not likely, penalty points will be assessed if this is possible with any alternative.	Current solids and floatables removal efficiency has been estimated for all sites with control technology. Improvements in removal efficiencies will be estimated for all alternatives that add screening or other advanced treatment technologies. Where treatment is proposed for storm water discharges removals will be estimated based on published removal data.
Aesthetics - Odor and Air Emissions	Odors and air emissions can be generated in storage systems, pump stations, force mains, and long flat sewers. Odors are generally characterized by both the intensity and the quality of the odor. Detectable and annoying are two common descriptors of different intensities and qualities of odors from sewage handling facilities.	Odor emissions from sewage handling facilities can be modeled for intensity, quality, and geographic spread. For planning purposes this level of evaluation is not common, and will not be done except in very rare circumstances. The potential for odor and air emissions will be estimated based on typical applications and model predictions for storage time, number of events, average flow velocities etc.
Dissolved Oxygen Impacts	Dissolved oxygen in streams is dependent on a variety of factors including BOD load, nutrient load, stream flow velocity, water temperature, etc.	For BGC the Water Quality Tool will be used to estimate the impacts of various loading conditions, flows, temperatures, etc. Probable impacts of individual projects will be estimated based on comparisons to the various stream condition scenarios.
Downstream Impacts	Downstream impacts refer to conditions in the Ohio River below Jefferson County. Nutrient loadings in the Ohio (not just Jefferson County) have been identified as the source of 30 - 45% of the total nutrient loads reaching the Gulf of Mexico. BOD is not likely to persist in the river long enough to get to the Gulf, but can have detrimental impacts far downriver.	Pollutant removals will be estimated based on reductions in annual average loads, since the downstream impacts are primarily long-term and cumulative.
Stream Flow Impacts (Peak flows)	Extrememly high peak flows as are often caused by urbanization of a watershed can erode the streambed, damage aquatic and terrestrial habitat, make water based recreation unsafe or impractical.	Predictive models can estimate flow peaking factors from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various storm events.
Stream Flow Impacts (DWF only)	Diversion of flows away from a stream due to abandonment of a treatment plant etc. can reduce base flows in a stream. Alternatively, other control measures such as groundwater pumping can increase base flows with beneficial results.	Predictive models can estimate flows from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various dry weather events.

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Acronyms
BGC - Beargrass Creek
BOD - Biological oxygen demand
CSO - Combined sewer overflow
DO - Dissolved oxygen
DWF - Dry weather flow
mg/l - Milligram per liter
S&F - Solids and floatables

MSD
Louisville and Jefferson County Metropolitan Sewer District

Project #1	S_JT_JT_NB01A_03_C
Value:	Environmental Enhancement

Aspect	Scoring											Assumptions	Score Per Aspect
	-5	-4	-3	-2	-1	0	1	2	3	4	5		
Aquatic and Terrestrial Habitat Protection	Elimination of habitat for rare or endangered species	Elimination of significant amount of common habitat	Elimination of minor amount of common habitat	Significant habitat impairment	Minor impairment to existing habitat	No impact on habitat	Minor enhancement of existing habitat	Significant enhancement of existing habitat	Creation of minor amount of common habitat	Creation of significant amount of common habitat	Creation of critical habitat for rare or endangered species		
Aesthetics - Solids and Floatables	75%+ reduction in volume of flow with no SAF capture	50 - 75% of flow with no SAF removal	25 - 50% of flow with no SAF removal	10 - 25% of flow with no SAF removal	Reduces efficiency of existing SAF control device, 0 - 10% of flow with no SAF removal	No change in SAF removal	0 - 10% of discharged flow treated with positive SAF removal (screens)	10 - 25 % of discharged flow treated with positive SAF removal (screens)	25 - 50% of discharged flow treated with positive SAF removal (screens)	50 - 75% of discharged flow treated with positive SAF removal screens	75% + of discharged flow treated with positive SAF removal (screens)		
Aesthetics - Odor and Air Emissions	Create annoying odor source affecting > 20 customers often	Create annoying odor source affecting <20 customers often or >20 customers occasionally	Create annoying odor source affecting <20 customers occasionally	Create detectable odor source affecting > 50 customers often	Create detectable odor source affecting > 50 customers occasionally	No impact on odors	Eliminate detectable odor source affecting > 50 customers occasionally	Eliminate detectable odor source affecting > 50 customers often	Eliminate annoying odor source affecting <20 customers occasionally	Eliminate annoying odor source affecting <20 customers often or >20 customers occasionally	Eliminate annoying odor source affecting >20 customers often		
Dissolved Oxygen Impacts	Reduction of in-stream DO by 2 mg/l + during critical flow periods	Continuous reduction of in-stream DO of 2 mg/l +	Continuous reduction of in-stream DO of 0 - 2 mg/l, possible reduction of in-stream DO 2 - 4 mg/l during critical conditions	Intermittent reduction of in stream DO 2 mg/l + possible during non-critical conditions, reduction of DO 0 - 2 mg/l during	Intermittent reduction of in stream DO 0 - 2 mg/l possible during non-critical conditions	No DO impacts	Intermittent improvement of in-stream DO 0 - 2 mg/l	Intermittent improvement of in-stream DO 2 mg/l +, intermittent critical condition improvements 0 - 2 mg/l	Continuous improvement of in-stream DO 0 - 2 mg/l, intermittent critical condition improvements 2-4 mg/l	Continuous improvement of in-stream DO 2 mg/l +	Continuous improvement of critical condition in stream DO 2 mg/l +		
Downstream Impacts	25%+ increase in annual BOD or nutrient loads	50 - 75% increase in annual BOD or nutrient loads	25 - 50% increase in annual BOD or nutrient loads	10 - 25% increase in annual BOD or nutrient loads (CSO + runoff)	Potential 0 - 10 % increase in annual average BOD or nutrient loads (CSO + runoff)	No impact on BOD or nutrient loads (CSO + runoff)	0 - 10% reduction in annual BOD or nutrient loads (CSO + runoff)	10 - 25% reduction in annual BOD or nutrient loads (CSO + runoff)	25 - 50% reduction in annual BOD or nutrient loads (CSO + runoff)	50 - 75% reduction in annual BOD or nutrient loads (CSO + runoff)	75%+ reduction in annual BOD or nutrient loads (CSO + runoff)		
Stream Flow Impacts (Peak flows)	25% + increase in peak flows	10% - 25% increase in peak flows	Up to 10% increase in peak flows	Frequent increase in flow during critical conditions	Possible increase in average flow, or minor increase in high flow peaks	No impact on peak flows	Minor reduction in flows - no significant peak reduction	Minor reduction in peak flows under some conditions	Up to 10% reduction in peak flows	10% - 25% reduction in peak flows	25%+ reduction in peak flows		
Stream Flow Impacts (DWF only)	25%+ decrease in flow during critical conditions	10% - 25% decrease in flow during critical conditions	0-10% permanent decrease in flow during critical conditions	Frequent decrease in flow during critical conditions	Possible decrease in average flow	No impact on average or base stream flow	Intermittent increase in stream flow - not timed to critical conditions	Intermittent increase in stream flow - often improves critical conditions	0 - 10% permanent increase in stream flow during critical conditions	10 - 25 % permanent increase in stream flow during critical conditions	25%+ permanent increase in stream flow during critical conditions		

Instructions: (1.) Score each alternative for each of the seven aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	4
Corrected Score	4

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Aquatic and Terrestrial Habitat Protection	Wet weather projects may affect both aquatic and terrestrial habitat through changes in base flow, peak flow, water quality, tree cover, channel shape and characteristics etc. Predictive models used to evaluate wet weather control measures have a limited ability to predict biological diversity changes, erosion impacts etc., so surrogate metrics must be used to estimate future positive and negative impacts.	Project definition may specifically address changes in channel shape and configuration, tree cover etc. Predictive models will address DO and other water quality impacts. Flow models will predict base flow and peak flow rates to allow estimates of changes in erosion and water surface area.
Aesthetics - Solids and Floatables	Most CSOs have some form of solids and floatables control baffles. Improvements in capture rates can be expected with screening or other advanced treatment options. Storm water retention, constructed wetlands, and other control systems may provide solids and floatables removal as well. While reduction in solids and floatables removal efficiency is not likely, penalty points will be assessed if this is possible with any alternative.	Current solids and floatables removal efficiency has been estimated for all sites with control technology. Improvements in removal efficiencies will be estimated for all alternatives that add screening or other advanced treatment technologies. Where treatment is proposed for storm water discharges removals will be estimated based on publisher removal data.
Aesthetics - Odor and Air Emissions	Odors and air emissions can be generated in storage systems, pump stations, force mains, and long flat sewers. Odors are generally characterized by both the intensity and the quality of the odor. Detectable and annoying are two common descriptors of different intensities and qualities of odors from sewage handling facilities.	Odor emissions from sewage handling facilities can be modeled for intensity, quality, and geographic spread. For planning purposes this level of evaluation is not common, and will not be done except in very rare circumstances. The potential for odor and air emissions will be estimated based on typical applications and model predictions for storage time, number of events, average flow velocities etc.
Dissolved Oxygen Impacts	Dissolved oxygen in streams is dependent on a variety of factors including BOD load, nutrient load, stream flow velocity, water temperature, etc.	For BGC the Water Quality Tool will be used to estimate the impacts of various loading conditions, flows, temperatures, etc. Probable impacts of individual projects will be estimated based on comparisons to the various stream condition scenarios.
Downstream Impacts	Downstream impacts refer to conditions in the Ohio River below Jefferson County. Nutrient loadings in the Ohio (not just Jefferson County) have been identified as the source of 30 - 45% of the total nutrient loads reaching the Gulf of Mexico. BOD is not likely to persist in the river long enough to get to the Gulf, but can have detrimental impacts far downriver.	Pollutant removals will be estimated based on reductions in annual average loads, since the downstream impacts are primarily long-term and cumulative.
Stream Flow Impacts (Peak flows)	Extreemly high peak flows as are often caused by urbanization of a watershed can erode the streambed, damage aquatic and terrestrial habitat, make water based recreation unsafe or impractical.	Predictive models can estimate flow peaking factors from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various storm events.
Stream Flow Impacts (DWF only)	Diversion of flows away from a stream due to abandonment of a treatment plant etc. can reduce base flows in a stream. Alternatively, other control measures such as groundwater pumping can increase base flows with beneficial results.	Predictive models can estimate flows from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various dry weather events.

Acronyms
BGC - Beargrass Creek
BOD - Biological oxygen demand
CSO - Combined sewer overflow
DO - Dissolved oxygen
DWF - Dry weather flow
mg/l - Milligram per liter
SAF - Solids and floatables

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Jeffersontown Blending Elimination Evaluation - Original IOAP Solution

Value: Eco-Friendly Solutions

	Scoring												
Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Non-Renewable Energy Consumption	Primary energy consumption is greater than secondary treatment	Primary energy consumption equal to 75 - 100% of secondary treatment	Primary energy consumption equal to 30 - 75% of secondary treatment	Primary energy consumption equal to 15 - 30% of secondary treatment	Primary energy consumption equal to 0 - 15% of secondary treatment	No energy consumption except for cleaning and maintenance	Cleaning and maintenance not needed, no primary consumption	NA	NA	NA	NA	Energy consumption needed for storage and pump station at the plant. 95% of flow pumped, secondary treatment still required end of pipe	-4
Use of Natural Systems	Constructed facilities permanently displace 5+ acres wetlands or 50% locally available green space	Constructed facilities permanently displace 3 - 5 acres wetlands or 25 - 50% locally available green space	Constructed facilities permanently displace 1 - 3 acres wetlands or 10 - 15% locally available green space	Constructed facilities permanently displace 0 - 1 acre wetlands or up to 10% locally available green space	Constructed facilities temporarily disrupt wetlands or green space	Alternative does not use or affect natural systems, wetlands, or green space	Alternative doesn not use natural systems, but enhances green space or wetland	Natural systems play a minor role in alternative function, up to 1 acre wetland or 10% additional green space created	Natural systems are significant part of alternative function, 1 - 3 acres of wetland created or 10 - 25% additional green space	Alternative fully uses natural systems, 3 - 5 acres of wetland created or 25-50% additional green space	Alternative results in multi-use natural system development, 5+ acres of wetland or 50% additional green space	Construction would temporarily disrupt green space, but potentially allow new green space to be created at the existing plant site	1
Multiple-Use Facilties	Constructed facilities permanently eliminate recreational opportunity	Constructed facilities significantly impare recreational opportunity	Constructed facilities moderately impare recreational opportunity	Constructed facilities have minor impacts on recreational opportunity	Construction temporarily impacts recreational opportunity	No impacts on recreational opportunities	Alternative improves access to existing recreational areas	Alternative has limited positive impact on recreation	Alternative significantly enhances recreational opportunities	Alternative increases recreational opportunities in area	Alternative results in multi-use facility	Portion of plant site could be converted to multi-use recreation when treatment process is decommissioned.	2
Source Control of subwatershed pollutant loads	Pollutant loadings are increased by 50%	Pollutant loadings are increased by 30 - 50%	Pollutant loadings are increased by 10 - 30%	End of pipe pollutant loadings are increased by 0 - 10%	End of pipe pollutant loadings impacts are inconsistent, but likely higher	End of pipe pollutant loadings are unchanged	Diversion transfers more than 25% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 50% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 75% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 90% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 100% of pollutant loadings to less sensitive receiving water	94% of pollutant loads transferred to Ohio River, a less sensitive watershed.	4
Non-Obtrusive Construction Techniques	Permanent loss of green space or sensitive area disruption	Main thoroughfare closures, sensitive area temporary disruptions	Widespread dust and noise, blasting, secondary street closures	Localized dust, noise and local street closures	Minor dust and noise, traffic lane closures	No construction impacts	NA	NA	NA	NA	NA	Construction would cause localized dust and noise with street closures	-2
Consistent Land Use	Intrusive or nuisance facilities inconsistent with neighborhood or land use.	Facilities inconsistent with neighborhood or land use.	Facility characteristics mitigated to reduce impact on neighborhood	Facilties have significant impact on development density or land use	Facility has minor impact on development density or land use	No impact on land use or no above ground facilities	Alternative mitigates existing compatibility problem	Alternative removes facility inconsistent with neighborhood	Alternative removes nuisance facilty from neighborhood	Alternative enhances property values in neighborhood	Alternative provides enhancements that significantly improve neighborhood	Facilities on plant site will be reduced to a pump station and storage facility, eliminating the existing incompatable use of a treatment facility.	2
Impermeable Surfaces	5 acres+ of impermeable surfaces are added	3 - 5 acres of impermeable surfaces are added	1 - 3 acres of impermeable surfaces are added	up to 1 acre of impermeable surfaces are added	Minor increase in impermeable surfaces added	No change in impermeable surface	Minor reduction in impermeable surfaces	Up to 1 acre of impermeable surfaces removed	1 - 3 acres of impermeable surfaces removed	3 - 5 acres of impermeable surfaces removed	More than 5 acres of impermeable surfaces removed	No change in impermeable surface in all options	0
LEEDS Performance	NA	NA	NA	NA	NA	LEEDS not applicable or LEEDS score <10	LEEDS Score 10 - 25	LEEDS Certified	LEEDS Silver	LEEDS Gold	LEEDS Platinum	LEEDS not applicable or LEEDS score < 10	0

Instructions: (1.) Score each alternative for each of the eight aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	**3**
Corrected Score	**3**

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Non-Renewable Energy Consumption	Eco-friendly solutions would be expected to be low consumers of non-renewable energy. Benchmarking energy consumption against conventional secondary treatment provides penalty points for high energy consuming alternatives.	Evaluation of primary energy consumed per MG of flow treated, compared to the energy consumed at the WCWTP per MG treated.
Use of Natural Systems	Natural systems replace concrete and steel construction with wet bottom storage lagoons, constructed bioswales, rain gardens etc. that increase green space of various kinds. Options that reduce wetlands and green space get penalty points.	Acres of wetlands and other types of green space created or eliminated. Also includes subjective evaluation of the "basis" of the alternative - "green" or "grey".
Multiple-Use Facilties	Eco-friendly solutions create recreational opportunities for both water-based and riparian recreation. Boating, canoeing, kayaking, fishing, wading, swimming etc. would be direct water-based recreation. Bird watching, hiking, biking, picnicing, camping etc. would be considered related riparian recreation.	Subjective evaluation of changes predicted in the aquatic or riparian environment as a result of better water quality, increased base flow or decreased flow peaks, increased tree cover or vegitated riparian areas etc.
Source Control of subwatershed pollutant loads	Controlling pollutant loads at the source through behavior modification, product replacements or stormwater management BMPs that capture pollutants thereby avoiding end of pipe treatment requirements	Modeled land-side pollutant loading reductions as calculated by the BGC Water Quality Tool or by comparision to literature values or pilot program measurements.
Non-Obtrusive Construction Techniques	Probable construction impacts on traffic, noise and dust are all measures of the friendliness of an alternative. Construction impacts get penalty points for creating nuisance conditions.	Subjective evaluation of probable construction impacts based on the type of construction envisioned for the alternative.
Consistent Land Use	Alternative configuration can either enhance or detract from the surrounding property. For example, an extremely unfriendly pump station can be noisy, smelly, and ugly. The same pump station can be "disguised" as a residence that fits right in with the neighborhood. If a larger parcel of land is available, a pump station can be hidden from view by landscaping, and a community garden or other green space added to enhance the neighborhood.	At the planning level, projects can be defined to avoid negative impacts on the surrounding properties. Depending on the availability of land, enhancements are possible. This aspect encourages project definition and budgets to enhance, not detract.
Impermeable Surfaces	Adding impermeable surfaces increases total runoff volume, peak runoff flowrates, and the total transport of any pollutant deposited on the surface from any source. Conversely, permeable surfaces can reduce flow volume and peaks, and provide filtering mechanisms for pollutants.	Acres of permeable surfaces created or eliminated.
LEEDS Performance	LEED standards are applicable to alternatives that include above-ground building structures.	Application of LEED evaluation points.

Acronyms

BGC - Beargrass Creek
LEEDS - Leadership in Energy and Environmental Design
MG - million gallons
WCWTP - West County Wastewater Treatment Plant

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Project #1	S_JT_JT_NB01A_03_C
Value:	Eco-Friendly Solutions

	Scoring												
Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Non-Renewable Energy Consumption	Primary energy consumption is greater than secondary treatment	Primary energy consumption equal to 75 - 100% of secondary treatment	Primary energy consumption equal to 30 - 75% of secondary treatment	Primary energy consumption equal to 15 - 30% of secondary treatment	Primary energy consumption equal to 0 - 15% of secondary treatment	No energy consumption except for cleaning and maintenance	Cleaning and maintenance not needed, no primary consumption	NA	NA	NA	NA	Energy consumption due to increase in pumping	-1
Use of Natural Systems	Constructed facilities permanently displace 5+ acres wetlands or 50% locally available green space	Constructed facilities permanently displace 3 - 5 acres wetlands or 25 - 50% locally available green space	Constructed facilities permanently displace 1 - 3 acres wetlands or 10 - 15% locally available green space	Constructed facilities permanently displace 0 - 1 acre wetlands or up to 10% locally available green space	Constructed facilities temporarily disrupt wetlands or green space	Alternative does not use or affect natural systems, wetlands, or green space	Alternative doesn not use natural systems, but enhances green space or wetland	Natural systems play a minor role in alternative function, up to 1 acre wetland or 10% additional green space created	Natural systems are significant part of alternative function, 1 - 3 acres of wetland created or 10 - 25% additional green space	Alternative fully uses natural systems, 3 - 5 acres of wetland created or 25-50% additional green space	Alternative results in multi-use natural system development, 5+ acres of wetland or 50% additional green space	Force Main construction temporarily disrupts green space	-1
Multiple-Use Facilities	Constructed facilities permanently eliminate recreational opportunity	Constructed facilities significantly impare recreational opportunity	Constructed facilities modecetely impare recreational opportunity	Constructed facilities have minor impacts on recreational opportunity	Construction temporarily impacts recreational opportunity	No impacts on recreational opportunities	Alternative improves access to existing recreational areas	Alternative has limited positive impact on recreation	Alternative significantly enhances recreational opportunities	Alternative increases recreational opportunities in area	Alternative results in multi-use facility	No impact	0
Source Control of subwatershed pollutant loads	Pollutant loadings are increased by 50%	Pollutant loadings are increased by 30 - 50%	Pollutant loadings are increased by 10 - 30%	End of pipe pollutant loadings are increased by 0 - 10%	End of pipe pollutant loadings impacts are inconsistent, but likely higher	End of pipe pollutant loadings are unchanged	Pollutant loadings impacts are inconsistent, but likely lower	Source control reduces pollutant loadings by 0 - 10%	Source control reduces pollutant loadings by 10 - 30%	Source control reduces pollutant loadings by 30 - 50%	Source control reduces pollutant loadings by more than 50%	End of pipe pollutant loadings impacts are inconsistent, but likely higher in all options	-1
Non-Obtrusive Construction Techniques	Permanent loss of green space or sensitive area disruption	Main thoroughfare closures, sensitive area temporary disruptions	Widespread dust and noise, blasting, secondary street closures	Localized dust, noise and local street closures	Minor dust and noise, traffic lane closures	No construction impacts	NA	NA	NA	NA	NA	Force mein construction would result in minor dust and lane closures	-1
Consistent Land Use	Intrusive or nuisance facilities inconsistent with neighborhood or land use	Facilities inconsistent with neighborhood or land use.	Facilty characteristics mitigated to reduce impact on neighborhood	Facilties have significant impact on development density or land use	Facility has minor impact on development density or land use	No impact on land use or no above ground facilities	Alternative mitigates existing compatibility problem	Alternative removes facilty inconsistent with neighborhood	Alternative removes nuisance facility from neighborhood	Alternative enhances property values in neighborhood	Alternative provides enhancements that significantly improve neighborhood	No impact on land use or above ground facilities in all options	0
Impermeable Surfaces	5 acres+ of impermeable surfaces are added	3 - 5 acres of impermeable surfaces are added	1 - 3 acres of impermeable surfaces are added	up to 1 acre of impermeable surfaces are added	Minor increase in impermeable surfaces added	No change in impermeable surface	Minor reduction in impermeable surfaces	Up to 1 acre of impermeable surfaces removed	1 - 3 acres of impermeable surfaces removed	3 - 5 acres of impermeable surfaces removed	More than 5 acres of impermeable surfaces removed	No change in impermeable surface in all options	0
LEEDS Performance	NA	NA	NA	NA	NA	LEEDS not applicable or LEEDS score <10	LEEDS Score 10 - 25	LEEDS Certified	LEEDS Silver	LEEDS Gold	LEEDS Platinum	LEEDS not applicable or LEEDS score < 10 in all options	0

Instructions: (1.) Score each alternative for each of the eight aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	-4
Corrected Score	-4

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Non-Renewable Energy Consumption	Eco-friendly solutions would be expected to be low consumers of non-renewable energy. Benchmarking energy consumption against conventional secondary treatment provides penalty points for high energy consuming alternatives.	Evaluation of primary energy consumed per MG of flow treated, compared to the energy consumed at the WCWTP per MG treated.
Use of Natural Systems	Natural systems replace concrete and steel construction with wet bottom storage lagoons, constructed bioswales, rain gardens etc. that increase green space of various kinds. Options that reduce wetlands and green space get penalty points.	Acres of wetlands and other types of green space created or eliminated. Also includes subjective evaluation of the "basis" of the alternative - "green" or "grey".
Multiple-Use Facilties	Eco-friendly solutions create recreational opportunities for both water-based and riparian recreation. Boating, canoing, kayaking, fishing, wading, swimming etc. would be direct water-based recreation. Bird watching, hiking, biking, picnicing, camping etc. would be considered related riparian recreation.	Subjective evaluation of changes predicted in the aquatic or riparian environment as a result of better water quality, increased base flow or decreased flow peaks, increased tree cover or vegitated riparian areas etc.
Source Control of subwatershed pollutant loads	Controlling pollutant loads at the source through behavior modification, product replacements or stormwater management BMPs that capture pollutants thereby avoiding end of pipe treatment requirements	Modeled land-side pollutant loading reductions as calculated by the BGC Water Quality Tool or by comparision to literature values or pilot program measurements.
Non-Obtrusive Construction Techniques	Probable construction impacts on traffic, noise and dust are all measures of the friendliness of an alternative. Construction impacts get penalty points for creating nuisance conditions.	Subjective evaluation of probable construction impacts based on the type of construction envisioned for the alternative.
Consistent Land Use	Alternative configuration can either enhance or detract from the surrounding property. For example, an extremely unfriendly pump station can be noisy, smelly, and ugly. The same pump station can be "disguised" as a residence that fits right in with the neighborhood. If a larger parcel of land is available, a pump station can be hidden from view by landscaping, and a community garden or other green space added to enhance the neighborhood.	At the planning level, projects can be defined to avoid negative impacts on the surrounding properties. Depending on the availability of land, enhancements are possible. This aspect encourages project definition and budgets to enhance, not detract.
Impermeable Surfaces	Adding impermeable surfaces increases total runoff volume, peak runoff flowrates, and the total transport of any pollutant deposited on the surface from any source. Conversely, permeable surfaces can reduce flow volume and peaks, and provide filtering mechanisms for pollutants.	Acres of permeable surfaces created or eliminated.
LEEDS Performance	LEED standards are applicable to alternatives that include above-ground building structures.	Application of LEED evaluation points.

Acronyms
BGC - Beargrass Creek
LEEDS - Leadership in Energy and Environmental Design
MG - million gallons
WCWTP - West County Wastewater Treatment Plant

Cluster Comparison

Project #1: S_JT_JT_NB01_01_C_A (Alternative 1)

CSO/SSO ID		Raw Benefit Score[2] Regulatory Performance	Public Health	Asset Protection	Environmental Enhance	Eco-Friendly Solutions
ISO28		21	22	10	11	3
28390		5	7	10	11	3
31733		21	20	10	11	3
28395A		5	3	10	11	3
64505		5	3	10	11	3
MSD0255		0	0	10	11	3
28392		0	0	10	11	3
28391		0	0	10	11	3
28173		0	0	10	11	3
64096		21	8	5	4	-4
86052		21	22	5	4	-4
92061		0	0	5	4	-4
MSD0263		21	18	5	4	-4
Weighting Factor		**8**	**10**	**6**	**8**	**6**
Weighted Benefit Score		**960**	**1030**	**660**	**920**	**66**
Total Benefit Score	**3636**					
Total Capital Cost[3]	24831000					
Total Present Worth Costs[3]	0					
Weighted Benefit/Cost Ratio (Capital Costs)	**14.642987**					
Weighted Benefit/Cost Ratio (Total Present Worth Costs)	**#DIV/0!**					

Notes:

1. Data Input Cells are highlighted in yellow
2. Raw Benefit Scores for Regulatory Performance and Public Health values are from the CSO or SSO Level of Control Benefit Sheets
3. Capital and Total Present Worth Costs from the"Proj Summary" Page of the Cost Model for the clustered alternative

(Reference fc... /T_NB01_BCA_Q_Q.xls)

2-Year	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Regulatory Performance - SS0s										
	Measure	Impact / Frequency						Rationale	Measurement Method		
Performance Measure	SSOs	6 month	1 Year	2 Year	5 Year	10 Year	Modeled Overflow Point or No discharge	Regulations do not distinguish between potential impact of SSOs, therefore frequency and impact are the same for Regulatory Performance value.. Modeled Overflow Points are not considered until verified.	Measurement methods will be via hydraulic models to quantify the SSO discharge.		
Frequency	Value	25	12	0	4	1	0				
	ISO28	BL			PR				25	4	21
	28390			BL	PR				9	4	5
	31733	BL			PR				25	4	21
	28395A			BL	PR				9	4	5
	64505			BL	PR				9	4	5
	MSD0255						BL		0	0	0
	28392						BL		0	0	
	28391						BL		0	0	
	28173						BL		0	0	
Note - This value sheet calculates the total benefit.									Subtotal		57

Acronyms
AAOV - Average annual overflow volume
CSO - Combined sewer overflow
WQS - Water quality standards
WWTPs - Wastewater treatment plants

(Reference fi	JT_NB01A_BCA.xls)	Network Branch #1A									
2-Year											
Value:	Regulatory Performance - SS0s										
	Measure	Impact / Frequency						Rationale	Measurement Method		
Performance Measure	SSOs	6 month	1 Year	2 Year	5 Year	10 Year	Modeled Overflow Point or No discharge	Regulations do not distinguish between potential impact of SSOs, therefore frequency and impact are the same for Regulatory Performance value.. Modeled Overflow Points are not considered until verified.	Measurement methods will be via hydraulic models to quantify the SSO discharge.		
Frequency	Value	25	16	9	4	1	0				
	64096	BL			PR				25	4	21
	86052	BL			PR				25	4	21
	92061						BL		0	0	0
	MSD0263	BL			PR				25	4	21
Note - This value sheet calculates the total benefit.									Subtotal		63

Acronyms

AAOV - Average annual overflow volume
CSO - Combined sewer overflow
WQS - Water quality standards
WWTPs - Wastewater treatment plants

(Reference for S_ _BCA_G_O.xls)

ISO28 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 900,000 gallons	25	0	25	
	1 Year	20	16	12	8	4	0	Releases 2,000,000 gallons	20	0	20	
	2 Year	15	12	9	6	3	0	Releases 3,080,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 4,600,000 gallons	10	6	4	
	10 Year	5	4	3	2	1	0	Releases 5,720,000 gallons	5	4	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			13	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			22	

28390 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0	
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0	
	2 Year	15	12	9	6	3	0	Releases 63,000 gallons	12	0	12	
	5 Year	10	8	6	4	2	0	Releases 167,000 gallons	8	2	6	
	10 Year	5	4	3	2	1	0	Releases 248,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			4	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			7	

31733 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 80,000 gallons	20	0	20	
	1 Year	20	16	12	8	4	0	Releases 172,000 gallons	16	0	16	
	2 Year	15	12	9	6	3	0	Releases 269,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 393,000 gallons	10	2	8	
	10 Year	5	4	3	2	1	0	Releases 495,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			12	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			20	

28395A - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0	
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0	
	2 Year	15	12	9	6	3	0	Releases 2,000 gallons	3	0	3	
	5 Year	10	8	6	4	2	0	Releases 31,000 gallons	4	0	4	
	10 Year	5	4	3	2	1	0	Releases 46,000 gallons	2	1	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			2	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			3	

64505 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0
	2 Year	15	12	9	6	3	0	Releases 13,600 gallons	3	0	3
	5 Year	10	8	6	4	2	0	Releases 170,000 gallons	8	2	6
	10 Year	5	4	3	2	1	0	Releases 282,000 gallons	5	2	3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			2
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			3

64096 - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 600 gallons	5	0	5	
	1 Year	20	16	12	8	4	0	Releases 16,000 gallons	4	0	4	
	2 Year	15	12	9	6	3	0	Releases 55,000 gallons	12	0	12	
	5 Year	10	8	6	4	2	0	Releases 123,000 gallons	8	4	4	
	10 Year	5	4	3	2	1	0	Releases 160,000 gallons	4	3	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			5	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			8	

86052-PS - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 155,000 gallons	20	0	20	
	1 Year	20	16	12	8	4	0	Releases 223,000 gallons	20	0	20	
	2 Year	15	12	9	6	3	0	Releases 292,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 360,000 gallons	10	2	8	
	10 Year	5	4	3	2	1	0	Releases 405,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			13	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			22	

MSD0263 - 2 YR	Network Branch #1A										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	Releases 36,000 gallons	20	0	20
	1 Year	20	16	12	8	4	0	Releases 71,000 gallons	16	0	16
	2 Year	15	12	9	6	3	0	Releases 123,000 gallons	12	0	12
	5 Year	10	8	6	4	2	0	Releases 204,000 gallons	10	4	6
	10 Year	5	4	3	2	1	0	Releases 274,000 gallons	5	2	3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			11
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			18

92061 - 2 YR	Network Branch #1A										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	No Release	0	0	0
	1 Year	20	16	12	8	4	0	No Release	0	0	0
	2 Year	15	12	9	6	3	0	No Release	0	0	0
	5 Year	10	8	6	4	2	0	No Release	0	0	0
	10 Year	5	4	3	2	1	0	No Release	0	0	0
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			0
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			0

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Jeffersontown Blending Elimination Evaluation - Original IOAP Solution and Alterantives 1, 2, and 3 (all the same)

Value: Asset Protection

	Measure		Impact						Rationale	Measurement Method
Performance Measures		Flood Damage	Homes or businesses are subject to severe structural damage	Homes or businesses are subject to minor to moderate structural damage	Flooding limits access to homes or businesses	Flooding limits access to recreational areas	Standing water on property, but access not affected and no damage expected	No standing water	Stormwater BMPs can reduce stormwater peaks and reduce extent of flooded areas, while sewer separation may increase localized stormwater peak flows and increase the flooding impacts of storms. Alternatively, purchase of highly impacted properties may be a cheaper way to reduce flood damage and create green space and buffer zones.	Drainage models where available, historic customer complaints from MSD Customer Information System, or historic observations of flood-prone areas combined with the expected relative impacts of sewer system modifications on storm water flows.
		Basement Back-ups	Sewer surcharging within 6 feet of ground surface for more than 20% of manholes	Sewer surcharging within 6 feet of ground surface for 10 - 20% of manholes	Sewer surcharging within 6 feet of ground surface for 5 - 10% of manholes	Sewer surcharging within 6 feet of ground surface for 1 - 5% of manholes	Sewer surcharging within 6 feet of ground surface for 0 - 1% of manholes	No surcharging within 6 feet of ground surface	First floor levels are typically 1 - 2 feet above ground surface, and basement floors are typically 8 - 10 feet below the first floor. A sewer surcharge of 6 feet below ground surface is highly likely to cause back-ups in homes with basement service.	Measurement methods will be via hydraulic models to quantify the hydraulic grade lines compared to ground surface elevations at manholes.
	Storm Events	→	Most Severe Impact				Least Impact	No Impact		
		↓	5	4	3	2	1	0	Assumptions	Base Case Score / Alternative Score / Total Score
Frequency	6 Month	Most Likely 5	25	20	15	10	5	0		10 / 0 / 10
	1 Year	4	20	16	12	8	4	0		12 / 4 / 8
	2 Year	3	15	12	9	6	3	0		9 / 3 / 6
	5 Year	2	10	8	6	4	2	0		8 / 4 / 4
	10 Year	Least Likely 1	5	4	3	2	1	0		5 / 3 / 2
	Not Possible	Not Possible 0	0	0	0	0	0	0	Average Total Score	6
									Corrected Score	10

Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.

Acronyms
BMPs - Best management practices

MSD
Louisville and Jefferson County Metropolitan Sewer District

Project #1				S_JT_JT_NB01A_03_C							
Value:	Asset Protection										
	Measure			Impact						Rationale	Measurement Method
Performance Measures		Flood Damage		Homes or businesses are subject to severe structural damage	Homes or businesses are subject to minor to moderate structural damage	Flooding limits access to homes or businesses	Flooding limits access to recreational areas	Standing water on property, but access not affected and no damage expected	No standing water	Stormwater BMPs can reduce stormwater peaks and reduce extent of flooded areas, while sewer separation may increase localized stormwater peak flows and increase the flooding impacts of storms. Alternatively, purchase of highly impacted properties may be a cheaper way to reduce flood damage and create green space and buffer zones.	Drainage models where available, historic customer complaints from MSD Customer Information System, or historic observations of flood-prone areas combined with the expected relative impacts of sewer system modifications on storm water flows.
		Basement Back-ups		Sewer surcharging within 6 feet of ground surface for more than 20% of manholes	Sewer surcharging within 6 feet of ground surface for 10 - 20% of manholes	Sewer surcharging within 6 feet of ground surface for 5 - 10% of manholes	Sewer surcharging within 6 feet of ground surface for 1 - 5% of manholes	Sewer surcharging within 6 feet of ground surface for 0 - 1% of manholes	No surcharging within 6 feet of ground surface	First floor levels are typically 1 - 2 feet above ground surface, and basement floors are typically 8 - 10 feet below the first floor. A sewer surcharge of 6 feet below ground surface is highly likely to cause back-ups in homes with basement service.	Measurement methods will be via hydraulic models to quantify the hydraulic grade lines compared to ground surface elevations at manholes.
		Storm Events →		Most Severe Impact				Least Impact	No Impact		
		↓		5	4	3	2	1	0	Assumptions	Base Case Score / Alternative Score / Total Score
Frequency	6 Month	Most Likely	5	25	20	15	10	5	0		5 / 0 / 5
	1 Year		4	20	16	12	8	4	0		4 / 4 / 0
	2 Year		3	15	12	9	6	3	0		9 / 3 / 6
	5 Year		2	10	8	6	4	2	0		8 / 6 / 2
	10 Year	Least Likely	1	5	4	3	2	1	0		4 / 3 / 1
	Not Possible	Not Possible	0	0	0	0	0	0	0	Average Score	3
										Corrected Score	5

Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.

Acronyms
BMPs - Best management practices

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Jeffersontown Blending Elimination - Alternative 1

Value: Environmental Enhancement

Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
	Scoring												
Aquatic and Terestrial Habitat Protection	Elimination of habitat for rare or endangered species	Elimination of significant amount of common habitat	Elimination of minor amount of common habitat	Significant habitat impairment	Minor impairment to existing habitat	No impact on habitat	Minor enhancement of existing habitat	Significant enhancement of existing habitat	Creation of minor amount of common habitat	Creation of significant amount of common habitat	Creation of critical habitat for rare or endangered species	Plant elimination restores Chenoweth Run to intermittent stream habitat - its natural state that has been modified by continuous plant discharges.	3
Aesthetics - Solids and Floatables	75%+ reduction in volume of flow with no S&F capture	50 - 75% of flow with no S&F removal	25 - 50% of flow with no S&F removal	10 - 25% of flow with no S&F removal	Reduces efficiency of existing S&F control device. 0 - 10% of flow with no S&F removal	No change in S&F removal	0 - 10% of discharged flow treated with positive S&F removal (screens)	10 - 25 % of discharged flow treated with positive S&F removal (screens)	25 - 50% of discharged flow treated with positive S&F removal (screens)	50 - 75% of discharged flow treated with positive S&F removal screens	75% + of discharged flow treated with positive S&F removal (screens)	No options will provide changes in S&F Removal	0
Aesthetics - Odor and Air Emissions	Create annoying odor source affecting + 20 customers often	Create annoying odor source affecting <20 customers often, or >20 customers occasionally	Create annoying odor source affecting +20 customers occasionally	Create detectable odor source affecting + 50 customers often	Create detectable odor source affecting + 50 customers occasionally	No impact on odors	Eliminate detectable odor source affecting + 50 customers occasionally	Eliminate detectable odor source affecting + 50 customers often	Eliminate annoying odor source affecting +20 customers occasionally	Eliminate annoying odor source affecting +20 customers often, or +20 customers occasionally	Eliminate annoying odor source affecting +20 customers often	Odor will be eliminated from all overflows along Jtown interceptor being eliminated. Treatment Plant odors eliminated except for minor storage and pump station potential	3
Dissolved Oxygen Impacts	Reduction of in stream DO by 2 mg/l + during critical flow periods	Continuous reduction of in-stream DO of 2 mg/l +	Continuous reduction of in-stream DO of 0 - 2 mg/l, possible reduction of in-stream DO 2 - 4 mg/l during critical conditions.	Intermittent reduction of in stream DO 2 mg/l + possible during non-critical conditions, reduction of DO 0 - 2 mg/l during critical conditions	Intermittent reduction of in stream DO 0 - 2 mg/l possible during non-critical conditions	No DO impacts	Intermittent improvement of in-stream DO 0 - 2 mg/l	Intermittent improvement of in-stream DO 2 mg/l + , intermittent critical condition improvements 0 - 2 mg/l	Continuous improvement of in-stream DO 0 - 2 mg/l, intermittent critical condition improvements 2-4 mg/l	Continuous improvement of in-stream DO 2 mg/l +	Continuous improvement of critical condition in-stream DO 2 mg/l +	Plant effluent load elimination will provide improvement of in-stream DO 0 - 2 mg/l, but stream may dry up in summer	1
Downstream Impacts	75%+ increase in annual BOD or nutrient loads	50 - 75% increase in annual BOD or nutrient loads	25 - 50% increase in annual BOD or nutrient loads	10 - 25% increase in annual BOD or nutrient loads (CSO + runoff)	Potential 0 - 10 % increase in annual average BOD or nutrient loads (CSO + runoff)	No impact on BOD or nutrient loads (CSO + runoff)	0 - 10% reduction in annual BOD or nutrient loads (CSO + runoff)	10 - 25% reduction in annual BOD or nutrient loads (CSO + runoff)	25 - 50% reduction in annual BOD or nutrient loads (CSO + runoff)	50 - 75% reduction in annual BOD or nutrient loads (CSO + runoff)	75%+ reduction in annual BOD or nutrient loads (CSO + runoff)	Improved capture and treatment of SSOs will provide 0 - 10 % reduction in annual BOD or nutrient loads (SSO + runoff) downstream of Jefferson County	1
Stream Flow Impacts (Peak flows)	25% + increase in peak flows	10% - 25% increase in peak flows	Up to 10% increase in peak flows	Frequent increase in flow during critical conditions	Possible increases in average flow, or minor increase in high flow peaks	No impact on peak flows	Minor reduction in flows - no significant peak reduction	Minor reduction in peak flows under some conditions	Up to 10% reduction in peak flows	10% - 25% reduction in peak flows	25%+ reduction in peak flows	Flow peaks to be reduced due to diversion of plant effluent.	3
Stream Flow Impacts (DWF only)	25%+ decrease in flow during critical conditions.	10% - 25% decrease in flow during critical conditions	0-10% permanent decrease in flow during critical conditions	Frequent decrease in flow during critical conditions	Possible decrease in average flow	No impact on average or base stream flow	Intermittent increase in stream flow - not linked to critical conditions	Intermittent increase in stream flow - often improves critical conditions	0 - 10% permanent increase in stream flow during critical conditions	10 - 25 % permanent increase in stream flow during critical conditions	25%+ permanent increase in stream flow during critical conditions.	Base flow substantially reduced, but this restores stream to its natural condition - positive and negative impacts balance out.	0

Instructions: (1.) Score each alternative for each of the seven aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	11
Total Score (Default)	11

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Aquatic and Terestrial Habitat Protection	Wet weather projects may affect both aquatic and terrestrial habitat through changes in base flow, peak flow, water quality, tree cover, channel shape and characteristics etc. Predictive models used to evaluate wet weather control measures have a limited ability to predict biological diversity changes, erosion impacts etc., so surrogate metrics must be used to estimate future positive and negative impacts.	Project definition may specifically address changes in channel shape and configuration, tree cover etc. Predictive models will address DO and other water quality impacts. Flow models will predict base flow and peak flow rates to allow estimates of changes in erosion and water surface area.
Aesthetics - Solids and Floatables	Most CSOs have some form of solids and floatables control baffles. Improvements in capture rates can be expected with screening or other advanced treatment options. Storm water retention, constructed wetlands, and other control systems may provide solids and floatables removal as well. While reduction in solids and floatables removal efficiency is not likely, penalty points will be assessed if this is possible with any alternative.	Current solids and floatables removal efficiency has been estimated for all sites with control technology. Improvements in removal efficiencies will be estimated for all alternatives that add screening or other advanced treatment technologies. Where treatment is proposed for storm water discharges removals will be estimated based on publisher removal data.
Aesthetics - Odor and Air Emissions	Odors and air emissions can be generated in storage systems, pump stations, force mains, and long flat sewers. Odors are generally characterized by both the intensity and the quality of the odor. Detectable and annoying are two common descriptors of different intensities and qualities of odors from sewage handling facilities.	Odor emissions from sewage handling facilities can be modeled for intensity, quality, and geographic spread. For planning purposes this level of evaluation is not common, and will not be done except in very rare circumstances. The potential for odor and air emissions will be estimated based on typical applications and model predictions for storage time, number of events, average flow velocities etc.
Dissolved Oxygen Impacts	Dissolved oxygen in streams is dependent on a variety of factors including BOD load, nutrient load, stream flow velocity, water temperature, etc.	For BGC the Water Quality Tool will be used to estimate the impacts of various loading conditions, flows, temperatures, etc. Probable impacts of individual projects will be estimated based on comparisons to the various stream condition scenarios.
Downstream Impacts	Downstream impacts refer to conditions in the Ohio River below Jefferson County. Nutrient loadings in the Ohio (not just Jefferson County) have been identified as the source of 30 - 45% of the total nutrient loads reaching the Gulf of Mexico. BOD is not likely to persist in the river long enough to get to the Gulf, but can have detrimental impacts far downriver.	Pollutant removals will be estimated based on reductions in annual average loads, since the downstream impacts are primarily long-term and cumulative.
Stream Flow Impacts (Peak flows)	Extrememly high peak flows as are often caused by urbanization of a watershed can erode the streambed, damage aquatic and terrestrial habitat, make water based recreation unsafe or impractical.	Predictive models can estimate flow peaking factors from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various storm events.
Stream Flow Impacts (DWF only)	Diversion of flows away from a stream due to abandonment of a treatment plant etc. can reduce base flows in a stream. Alternatively, other control measures such as groundwater pumping can increase base flows with beneficial results.	Predictive models can estimate flows from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various dry weather events.

Acronyms
BGC - Beargrass Creek
BOD - Biological oxygen demand
CSO - Combined sewer overflow
DO - Dissolved oxygen
DWF - Dry weather flow
mg/l - Milligram per liter
S&F - Solids and floatables

MSD
Louisville and Jefferson County Metropolitan Sewer District

Project #1	S_JT_JT_NB01A_03_C
Value:	Environmental Enhancement

Aspect	Scoring											Assumptions	Score Per Aspect
	-5	-4	-3	-2	-1	0	1	2	3	4	5		
Aquatic and Terrestrial Habitat Protection	Elimination of habitat for rare or endangered species	Elimination of significant amount of common habitat	Elimination of minor amount of common habitat	Significant habitat improvement	Minor improvement to existing habitat	No impact on habitat	Minor enhancement of existing habitat	Significant enhancement of existing habitat	Creation of minor amount of common habitat	Creation of significant amount of common habitat	Creation of critical habitat for rare or endangered species		
Aesthetics - Solids and Floatables	75%+ reduction in volume of flow with no S&F capture	50 - 75% of flow with no S&F removal	25 - 50% of flow with no S&F removal	10 - 25% of flow with no S&F removal	Reduces efficiency of existing S&F control device, 0 - 10% of flow with no S&F removal	No change in S&F removal	0 - 10% of discharged flow treated with positive S&F removal (screens)	10 - 25 % of discharged flow treated with positive S&F removal (screens)	25 - 50% of discharged flow treated with positive S&F removal (screens)	50 - 75% of discharged flow treated with positive S&F removal screens	75% + of discharged flow treated with positive S&F removal (screens)		
Aesthetics - Odor and Air Emissions	Create annoying odor source affecting > 20 customers often	Create annoying odor source affecting <20 customers often, or >20 customers occasionally	Create annoying odor source affecting >20 customers occasionally	Create detectable odor source affecting > 50 customers often	Create detectable odor source affecting > 50 customers occasionally	No impact on odors	Eliminate detectable odor source affecting > 50 customers occasionally	Eliminate detectable odor source affecting > 50 customers often	Eliminate annoying odor source affecting <20 customers occasionally	Eliminate annoying odor source affecting <20 customers often, or <20 customers occasionally	Eliminate annoying odor source affecting >20 customers often		
Dissolved Oxygen Impacts	Reduction of in-stream DO by 2 mg/l + during critical low period	Continuous reduction of in-stream DO of 2 mg/l +	Continuous reduction of in-stream DO of 0 - 2 mg/l, possible reduction of in-stream DO 2 / 4 mg/l during critical conditions	Intermittent reduction of in stream DO 2 mg/l + possible during non-critical conditions, reduction of DO 0 - 2 mg/l during critical conditions	Intermittent reduction of in stream DO 0 - 2 mg/l possible during non-critical conditions	No DO impacts	Intermittent improvement of in-stream DO 0 - 2 mg/l	Intermittent improvement of in-stream DO 2 mg/l +, intermittent critical condition improvements 0 - 2 mg/l	Continuous improvement of in-stream DO 0 - 2 mg/l, intermittent critical condition improvements 2-4 mg/l	Continuous improvement of in-stream DO 2 mg/l +	Continuous improvement of critical condition in stream DO 2 mg/l +		
Downstream Impacts	75%+ increase in annual BOD or nutrient loads	50 - 75% increase in annual BOD or nutrient loads	25 - 50% increase in annual BOD or nutrient loads	10 - 25% increase in annual BOD or nutrient loads (CSO + runoff)	Potential 0 - 10 % increase in annual average BOD or nutrient loads (CSO + runoff)	No impact on BOD or nutrient loads (CSO + runoff)	0 - 10% reduction in annual BOD or nutrient loads (CSO + runoff)	10 - 25% reduction in annual BOD or nutrient loads (CSO + runoff)	25 - 50% reduction in annual BOD or nutrient loads (CSO + runoff)	50 - 75% reduction in annual BOD or nutrient loads (CSO + runoff)	75%+ reduction in annual BOD or nutrient loads (CSO + runoff)		
Stream Flow Impacts (Peak flows)	25% + increase in peak flows	10% - 25% increase in peak flows	Up to 10% increase in peak flows	Frequent increase in flow during critical conditions	Possible increase in average flow, or minor increase in high flow peaks	No impact on peak flows	Minor reduction in flows - not significant peak reduction	Minor reduction in peak flows under some conditions	Up to 10% reduction in peak flows	10% - 25% reduction in peak flows	25%+ reduction in peak flows		
Stream Flow Impacts (DWF only)	25%+ decrease in flow during critical conditions	10% - 25% decrease in flow during critical conditions	0-10% permanent decrease in flow during critical conditions	Frequent decrease in flow during critical conditions	Possible decrease in average flow	No impact on average or base stream flow	Intermittent increase in stream flow - not timed to critical conditions	Intermittent increase in stream flow - often improves critical conditions	0 - 10% permanent increase in stream flow during critical conditions	10 - 25 % permanent increase in stream flow during critical conditions	25%+ permanent increase in stream flow during critical conditions		

Instructions: (1.) Score each alternative for each of the seven aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	4
Corrected Score	4

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Aquatic and Terrestrial Habitat Protection	Wet weather projects may affect both aquatic and terrestrial habitat through changes in base flow, peak flow, water quality, tree cover, channel shape and characteristics etc. Predictive models used to evaluate wet weather control measures have a limited ability to predict biological diversity changes, erosion impacts etc., so surrogate metrics must be used to estimate future positive and negative impacts.	Project definition may specifically address changes in channel shape and configuration, tree cover etc. Predictive models will address DO and other water quality impacts. Flow models will predict base flow and peak flow rates to allow estimates of changes in erosion and water surface area.
Aesthetics - Solids and Floatables	Most CSOs have some form of solids and floatables control baffles. Improvements in capture rates can be expected with screening or other advanced treatment options. Storm water retention, constructed wetlands, and other control systems may provide solids and floatables removal as well. While reduction in solids and floatables removal efficiency is not likely, penalty points will be assessed if this is possible with any alternative.	Current solids and floatables removal efficiency has been estimated for all sites with control technology. Improvements in removal efficiencies will be estimated for all alternatives that add screening or other advanced treatment technologies. Where treatment is proposed for storm water discharges removals will be estimated based on publisher removal data.
Aesthetics - Odor and Air Emissions	Odors and air emissions can be generated in storage systems, pump stations, force mains, and long flat sewers. Odors are generally characterized by both the intensity and the quality of the odor. Detectable and annoying are two common descriptors of different intensities and qualities of odors from sewage handling facilities.	Odor emissions from sewage handling facilities can be modeled for intensity, quality, and geographic spread. For planning purposes this level of evaluation is not common, and will not be done except in very rare circumstances. The potential for odor and air emissions will be estimated based on typical applications and model predictions for storage time, number of events, average flow velocities etc.
Dissolved Oxygen Impacts	Dissolved oxygen in streams is dependent on a variety of factors including BOD load, nutrient load, stream flow velocity, water temperature, etc.	For BGC the Water Quality Tool will be used to estimate the impacts of various loading conditions, flows, temperatures, etc. Probable impacts of individual projects will be estimated based on comparisons to the various stream condition scenarios.
Downstream Impacts	Downstream impacts refer to conditions in the Ohio River below Jefferson County. Nutrient loadings in the Ohio (not just Jefferson County) have been identified as the source of 30 - 45% of the total nutrient loads reaching the Gulf of Mexico. BOD is not likely to persist in the river long enough to get to the Gulf, but can have detrimental impacts far downriver.	Pollutant removals will be estimated based on reductions in annual average loads, since the downstream impacts are primarily long-term and cumulative.
Stream Flow Impacts (Peak flows)	Extremely high peak flows as are often caused by urbanization of a watershed can erode the streambed, damage aquatic and terrestrial habitat, make water based recreation unsafe or impractical.	Predictive models can estimate flow peaking factors from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various storm events.
Stream Flow Impacts (DWF only)	Diversion of flows away from a stream due to abandonment of a treatment plant etc. can reduce base flows in a stream. Alternatively, other control measures such as groundwater pumping can increase base flows with beneficial results.	Predictive models can estimate flows from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various dry weather events.

Acronyms
BGC - Beargrass Creek
BOD - Biological oxygen demand
CSO - Combined sewer overflow
DO - Dissolved oxygen
DWF - Dry weather flow
mg/l - Milligram per liter
S&F - Solids and floatables

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Jeffersontown Blending Elimination Evaluation - Alternative 1

Value: Eco-Friendly Solutions

	Scoring												
Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Non-Renewable Energy Consumption	Primary energy consumption is greater than secondary treatment	Primary energy consumption equal to 75 - 100% of secondary treatment	Primary energy consumption equal to 30 - 75% of secondary treatment	Primary energy consumption equal to 15 - 30% of secondary treatment	Primary energy consumption equel to 0 - 15% of secondary treatment	No energy consumption except for cleaning and maintenance	Cleaning and maintenance not needed, no primary consumption	NA	NA	NA	NA	Energy consumption needed for storage and pump station at the plant, 80% of flow pumped, secondary treatment still required end of pipe	-3
Use of Natural Systems	Constructed facilities permanently displace 5+ acres wetlands or 50% locally available green space	Constructed facilities permanently displace 3 - 5 acres wetlands or 25 - 50% locally available green space	Constructed facilities permanently displace 1 - 3 acres wetlands or 10 - 15% locally available green space	Constructed facilities permanently displace 0 - 1 acre wetlands or up to 10% locally available green space	Constructed facilities temporarily disrupt wetlands or green space	Alternative does not use or affect natural systems, wetlands, or green space	Alternative doesn not use natural systems, but enhances green space or wetland	Natural systems play a minor role in alternative function, up to 1 acre wetland or 10% additional green space created	Natural systems are significant part of alternative function, 1 - 3 acres of wetland created or 10 - 25% additional green space	Alternative fully uses natural systems, 3 - 5 acres of wetland created or 25-50% additional green space	Alternative results in multi-use natural system development, 5+ acres of wetland or 50% additional green space	Construction would temporarily disrupt green space, but potentially allow new green space to be created at the existing plant site	1
Multiple-Use Facilities	Constructed facilities permanently eliminate recreational opportunity	Constructed facilities significantly impare recreational opportunity	Constructed facilities moderately impare recreational opportunity	Constructed facilities have minor impacts on recreational opportunity	Construction temporarily impacts recreational opportunity	No impacts on recreational opportunities	Alternative improves access to existing recreational areas	Alternative has limited positive impact on recreation	Alternative significantly enhances recreational opportunities	Alternative increases recreational opportunities in area	Alternative results in multi-use facility	Portion of plant site could be converted to multi use recreation when treatment process is decommissioned.	2
Source Control of subwatershed pollutant loads	Pollutant loadings are increased by 50%	Pollutant loadings are increased by 30 - 50%	Pollutant loadings are increased by 10 - 30%	End of pipe pollutant loadings are increased by 0 - 10%	End of pipe pollutant loadings impacts are inconsistent, but likely higher	End of pipe pollutant loadings are unchanged	Diversion transfers more than 25% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 50% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 75% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 90% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 100% of pollutant loadings to less sensitive receiving water	79% of pollutant loads transferred to Ohio River, a less sensitive watershed.	3
Non-Obtrusive Construction Techniques	Permanent loss of green space or sensitive area disruption	Main thoroughfare closures, sensitive area temporary disruptions	Widespread dust and noise, blasting, secondary street closures	Localized dust, noise and local street closures	Minor dust and noise, traffic lane closures	No construction impacts	NA	NA	NA	NA	NA	Construction would cause localized dust and noise with street closures	-2
Consistent Land Use	Intrusive or nuisance facilities inconsistent with neighborhood or land use.	Facilities inconsistent with neighborhood or land use.	Facility characteristics mitigated to reduce impact on neighborhood	Facilities have significant impact on development density or land use	Facility has minor impact on development density or land use	No impact on land use or no above ground facilities	Alternative mitigates existing compatibility problem	Alternative removes facility inconsistent with neighborhood	Alternative removes nuisance facilty from neighborhood	Alternative enhances property values in neighborhood	Alternative provides enhancements that significantly improve neighborhood	Facilities on plant site will be reduced to a pump station and storage facility, eliminating the existing incompatable use of a treatment facility.	2
Impermeable Surfaces	5 acres+ of impermeable surfaces are added	3 - 5 acres of impermeable surfaces are added	1 - 3 acres of impermeable surfaces are added	up to 1 acre of impermeable surfaces are added	Minor increase in impermeable surfaces added	No change in impermeable surface	Minor reduction in impermeable surfaces	Up to 1 acre of impermeable surfaces removed	1 - 3 acres of impermeable surfaces removed	3 - 5 acres of impermeable surfaces removed	More than 5 acres of impermeable surfaces removed	No change in impermeable surface in all options	0
LEEDS Performance	NA	NA	NA	NA	NA	LEEDS not applicable or LEEDS score <10	LEEDS Score 10 - 25	LEEDS Certified	LEEDS Silver	LEEDS Gold	LEEDS Platinum	LEEDS not applicable or LEEDS score < 10	0

Instructions: (1.) Score each alternative for each of the eight aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	**3**
Total Score (Default)	**3**

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Non-Renewable Energy Consumption	Eco-friendly solutions would be expected to be low consumers of non-renewable energy. Benchmarking energy consumption against conventional secondary treatment provides penalty points for high energy consuming alternatives.	Evaluation of primary energy consumed per MG of flow treated, compared to the energy consumed at the WCWTP per MG treated.
Use of Natural Systems	Natural systems replace concrete and steel construction with wet bottom storage lagoons, constructed bioswales, rain gardens etc. that increase green space of various kinds. Options that reduce wetlands and green space get penalty points.	Acres of wetlands and other types of green space created or eliminated. Also includes subjective evaluation of the "basis" of the alternative - "green" or "grey".
Multiple-Use Facilities	Eco-friendly solutions create recreational opportunities for both water-based and riparian recreation. Boating, canoeing, kayaking, fishing, wading, swimming etc. would be direct water-based recreation. Bird watching, hiking, biking, picnicing, camping etc. would be considered related riparian recreation.	Subjective evaluation of changes predicted in the aquatic or riparian environment as a result of better water quality, increased base flow or decreased flow peaks, increased tree cover or vegitated riparian areas etc.
Source Control of subwatershed pollutant loads	Controlling pollutant loads at the source through behavior modification, product replacements or stormwater management BMPs that capture pollutants thereby avoiding end of pipe treatment requirements	Modeled land-side pollutant loading reductions as calculated by the BGC Water Quality Tool or by comparision to literature values or pilot program measurements.
Non-Obtrusive Construction Techniques	Probable construction impacts on traffic, noise and dust are all measures of the friendliness of an alternative. Construction impacts get penalty points for creating nuisance conditions.	Subjective evaluation of probable construction impacts based on the type of construction envisioned for the alternative.
Consistent Land Use	Alternative configuration can either enhance or detract from the surrounding property. For example, an extremely unfriendly pump station can be noisy, smelly, and ugly. The same pump station can be "disguised" as a residence that fits right in with the neighborhood. If a larger parcel of land is available, a pump station can be hidden from view by landscaping, and a community garden or other green space added to enhance the neighborhood.	At the planning level, projects can be defined to avoid negative impacts on the surrounding properties. Depending on the availability of land, enhancements are possible. This aspect encourages project definition and budgets to enhance, not detract.
Impermeable Surfaces	Adding impermeable surfaces increases total runoff volume, peak runoff flowrates, and the total transport of any pollutant deposited on the surface from any source. Conversely, permeable surfaces can reduce flow volume and peaks, and provide filtering mechanisms for pollutants.	Acres of permeable surfaces created or eliminated.
LEEDS Performance	LEED standards are applicable to alternatives that include above-ground building structures.	Application of LEED evaluation points.

Acronyms

BGC - Beargrass Creek
LEEDS - Leadership in Energy and Environmental Design
MG - million gallons
WCWTP - West County Wastewater Treatment Plant

MSD
Louisville and Jefferson County Metropolitan Sewer District

Project #1	S_JT_JT_NB01A_03_C
Value:	Eco-Friendly Solutions

	Scoring												
Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Non-Renewable Energy Consumption	Primary energy consumption is greater than secondary treatment	Primary energy consumption equal to 75 - 100% of secondary treatment	Primary energy consumption equal to 30 - 75% of secondary treatment	Primary energy consumption equal to 15 - 30% of secondary treatment	Primary energy consumption equal to 0 - 15% of secondary treatment	No energy consumption except for cleaning and maintenance	Cleaning and maintenance not needed, no primary consumption	NA	NA	NA	NA	Energy consumption due to increase in pumping	-1
Use of Natural Systems	Constructed facilities permanently displace 5+ acres wetlands or 50% locally available green space	Constructed facilities permanently displace 3 - 5 acres wetlands or 25 - 50% locally available green space	Constructed facilities permanently displace 1 - 3 acres wetlands or 10 - 15% locally available green space	Constructed facilities permanently displace 0 - 1 acre wetlands or up to 10% locally available green space	Constructed facilities temporarily disrupt wetlands or green space	Alternative does not use or affect natural systems, wetlands, or green space	Alternative doesn not use natural systems, but enhances green space or wetland	Natural systems play a minor role in alternative function, up to 1 acre wetland or 10% additional green space created	Natural systems are significant part of alternative function, 1 - 3 acres of wetland created or 10 - 25% additional green space	Alternative fully uses natural systems, 3 - 5 acres of wetland created or 25-50% additional green space	Alternative results in multi-use natural system development, 5+ acres of wetland or 50% additional green space	Force Main construction temporarily disrupts green space	-1
Multiple-Use Facilities	Constructed facilities permanently eliminate recreational opportunity	Constructed facilities significantly impare recreational opportunity	Constructed facilities moderately impare recreational opportunity	Constructed facilities have minor impacts on recreational opportunity	Construction temporarily impacts recreational opportunity	No impacts on recreational opportunities	Alternative improves access to existing recreational areas	Alternative has limited positive impact on recreation	Alternative significantly enhances recreational opportunities	Alternative increases recreational opportunities in area	Alternative results in multi-use facility	No impact	0
Source Control of subwatershed pollutant loads	Pollutant loadings are increased by 50%	Pollutant loadings are increased by 30 - 50%	Pollutant loadings are increased by 10 - 30%	End of pipe pollutant loadings are increased by 0 - 10%	End of pipe pollutant loadings impacts are inconsistent, but likely higher	End of pipe pollutant loadings are unchanged	Pollutant loadings impacts are inconsistent, but likely lower	Source control reduces pollutant loadings by 0 - 10%	Source control reduces pollutant loadings by 10 - 30%	Source control reduces pollutant loadings by 30 - 50%	Source control reduces pollutant loadings by more than 50%	End of pipe pollutant loadings impacts are inconsistent, but likely higher in all options	-1
Non-Obtrusive Construction Techniques	Permanent loss of green space or sensitive area disruption	Main thoroughfare closures, sensitive area temporary disruptions	Widespread dust and noise, blasting, secondary street closures	Localized dust, noise and local street closures	Minor dust and noise, traffic lane closures	No construction impacts	NA	NA	NA	NA	NA	Force main construction would result in minor dust and lane closures	-1
Consistent Land Use	Intrusive or nuisance facilities inconsistent with neighborhood or land use.	Facilities inconsistent with neighborhood or land use.	Facility characteristics mitigated to reduce impact on neighborhood	Facilities have significant impact on development density or land use	Facility has minor impact on development density or land use	No impact on land use or no above ground facilities	Alternative mitigates existing compatibility problem	Alternative removes facility inconsistent with neighborhood	Alternative removes nuisance facility from neighborhood	Alternative enhances property values in neighborhood	Alternative provides enhancements that significantly improve neighborhood	No impact on land use or above ground facilities in all options	0
Impermeable Surfaces	5 acres+ of impermeable surfaces are added	3 - 5 acres of impermeable surfaces are added	1 - 3 acres of impermeable surfaces are added	up to 1 acre of impermeable surfaces are added	Minor increase in impermeable surfaces added	No change in impermeable surface	Minor reduction in impermeable surfaces	Up to 1 acre of impermeable surfaces removed	1 - 3 acres of impermeable surfaces removed	3 - 5 acres of impermeable surfaces removed	More than 5 acres of impermeable surfaces removed	No change in impermeable surface in all options	0
LEEDS Performance	NA	NA	NA	NA	NA	LEEDS not applicable or LEEDS score <10	LEEDS Score 10 - 25	LEEDS Certified	LEEDS Silver	LEEDS Gold	LEEDS Platinum	LEEDS not applicable or LEEDS score < 10 in all options	0

Instructions: (1.) Score each alternative for each of the eight aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	-4
Corrected Score	-4

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Non-Renewable Energy Consumption	Eco-friendly solutions would be expected to be low consumers of non-renewable energy. Benchmarking energy consumption against conventional secondary treatment provides penalty points for high energy consuming alternatives.	Evaluation of primary energy consumed per MG of flow treated, compared to the energy consumed at the WCWTP per MG treated.
Use of Natural Systems	Natural systems replace concrete and steel construction with wet bottom storage lagoons, constructed bioswales, rain gardens etc. that increase green space of various kinds. Options that reduce wetlands and green space get penalty points.	Acres of wetlands and other types of green space created or eliminated. Also includes subjective evaluation of the "basis" of the alternative - "green" or "grey".
Multiple-Use Facilities	Eco-friendly solutions create recreational opportunities for both water-based and riparian recreation. Boating, canoing, kayaking, fishing, wading, swimming etc. would be direct water-based recreation. Bird watching, hiking, biking, picnicing, camping etc. would be considered related riparian recreation.	Subjective evaluation of changes predicted in the aquatic or riparian environment as a result of better water quality, increased base flow or decreased flow peaks, increased tree cover or vegitated riparian areas etc.
Source Control of subwatershed pollutant loads	Controlling pollutant loads at the source through behavior modification, product replacements or stormwater management BMPs that capture pollutants thereby avoiding end of pipe treatment requirements	Modeled land-side pollutant loading reductions as calculated by the BGC Water Quality Tool or by comparision to literature values or pilot program measurements.
Non-Obtrusive Construction Techniques	Probable construction impacts on traffic, noise and dust are all measures of the friendliness of an alternative. Construction impacts get penalty points for creating nuisance conditions.	Subjective evaluation of probable construction impacts based on the type of construction envisioned for the alternative.
Consistent Land Use	Alternative configuration can either enhance or detract from the surrounding property. For example, an extremely unfriendly pump station can be noisy, smelly, and ugly. The same pump station can be "disguised" as a residence that fits right in with the neighborhood. If a larger parcel of land is available, a pump station can be hidden from view by landscaping, and a community garden or other green space added to enhance the neighborhood.	At the planning level, projects can be defined to avoid negative impacts on the surrounding properties. Depending on the availability of land, enhancements are possible. This aspect encourages project definition and budgets to enhance, not detract.
Impermeable Surfaces	Adding impermeable surfaces increases total runoff volume, peak runoff flowrates, and the total transport of any pollutant deposited on the surface from any source. Conversely, permeable surfaces can reduce flow volume and peaks, and provide filtering mechanisms for pollutants.	Acres of permeable surfaces created or eliminated.
LEEDS Performance	LEED standards are applicable to alternatives that include above-ground building structures.	Application of LEED evaluation points.

Acronyms

BGC - Beargrass Creek
LEEDS - Leadership in Energy and Environmental Design
MG - million gallons
WCWTP - West County Wastewater Treatment Plant

Cluster Comparison

Project #1: S_JT_JT_NB01_01_C_A (Alternative 2)

CSO/SSO ID		Raw Benefit Score[2] Regulatory Performance	Public Health	Asset Protection	Environmental Enhance	Eco-Friendly Solutions
ISO28		21	22	10	2	0
28390		5	7	10	2	0
31733		21	20	10	2	0
28395A		5	3	10	2	0
64505		5	3	10	2	0
MSD0255		0	0	10	2	0
28392		0	0	10	2	0
28391		0	0	10	2	0
28173		0	0	10	2	0
64096		21	8	5	4	-4
86052		21	22	5	4	-4
92061		0	0	5	4	-4
MSD0263		21	18	5	4	-4
Weighting Factor		**8**	**10**	**6**	**8**	**6**
Weighted Benefit Score		**960**	**1030**	**660**	**272**	**-96**
Total Benefit Score	**2826**					
Total Capital Cost[3]	25798000					
Total Present Worth Costs[3]						
Weighted Benefit/Cost Ratio (Capital Costs)	**10.954338**					
Weighted Benefit/Cost Ratio (Total Present Worth Costs)	**#DIV/0!**					

Notes:

1. Data Input Cells are highlighted in yellow
2. Raw Benefit Scores for Regulatory Performance and Public Health values are from the CSO or SSO Level of Control Benefit Sheets
3. Capital and Total Present Worth Costs from the"Proj Summary" Page of the Cost Model for the clustered alternative

(Reference _JT_NB01_BCA_Q_Q.xls)

2-Year	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Regulatory Performance - SS0s										
	Measure	Impact / Frequency						Rationale	Measurement Method		
Performance Measure	SSOs	6 month	1 Year	2 Year	5 Year	10 Year	Modeled Overflow Point or No discharge	Regulations do not distinguish between potential impact of SSOs, therefore frequency and impact are the same for Regulatory Performance value.. Modeled Overflow Points are not considered until verified.	Measurement methods will be via hydraulic models to quantify the SSO discharge.		
Frequency	Value	25	12	0	4	1	0				
	ISO28	BL			PR				25	4	21
	28390			BL	PR				9	4	5
	31733	BL			PR				25	4	21
	28395A			BL	PR				9	4	5
	64505			BL	PR				9	4	5
	MSD0255						BL		0	0	0
	28392						BL		0	0	
	28391						BL		0	0	
	28173						BL		0	0	
Note - This value sheet calculates the total benefit.									Subtotal		57

Acronyms

AAOV - Average annual overflow volume
CSO - Combined sewer overflow
WQS - Water quality standards
WWTPs - Wastewater treatment plants

2-Year (Reference JT_NB01A_BCA.xls)	Network Branch #1A									
Value:	**Regulatory Performance - SS0s**									
	Measure	**Impact / Frequency**						**Rationale**	**Measurement Method**	
Performance Measure	**SSOs**	**6 month**	**1 Year**	**2 Year**	**5 Year**	**10 Year**	**Modeled Overflow Point or No discharge**	Regulations do not distinguish between potential impact of SSOs, therefore frequency and impact are the same for Regulatory Performance value.. Modeled Overflow Points are not considered until verified.	Measurement methods will be via hydraulic models to quantify the SSO discharge.	
Frequency	Value	25	16	9	4	1	0			
	64096	BL			PR				25	4	21
	86052	BL			PR				25	4	21
	92061						BL		0	0	0
	MSD0263	BL			PR				25	4	21
Note - This value sheet calculates the total benefit.									**Subtotal**		**63**

Acronyms
AAOV - Average annual overflow volume
CSO - Combined sewer overflow
WQS - Water quality standards
WWTPs - Wastewater treatment plants

ISO28 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 900,000 gallons	25	0	25	
	1 Year	20	16	12	8	4	0	Releases 2,000,000 gallons	20	0	20	
	2 Year	15	12	9	6	3	0	Releases 3,080,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 4,600,000 gallons	10	6	4	
	10 Year	5	4	3	2	1	0	Releases 5,720,000 gallons	5	4	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			13	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			22	

28390 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0	
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0	
	2 Year	15	12	9	6	3	0	Releases 63,000 gallons	12	0	12	
	5 Year	10	8	6	4	2	0	Releases 167,000 gallons	8	2	6	
	10 Year	5	4	3	2	1	0	Releases 248,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			4	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			7	

31733 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 80,000 gallons	20	0	20	
	1 Year	20	16	12	8	4	0	Releases 172,000 gallons	16	0	16	
	2 Year	15	12	9	6	3	0	Releases 269,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 393,000 gallons	10	2	8	
	10 Year	5	4	3	2	1	0	Releases 495,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			12	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			20	

28395A - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0	
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0	
	2 Year	15	12	9	6	3	0	Releases 2,000 gallons	3	0	3	
	5 Year	10	8	6	4	2	0	Releases 31,000 gallons	4	0	4	
	10 Year	5	4	3	2	1	0	Releases 46,000 gallons	2	1	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			2	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			3	

64505 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0
	2 Year	15	12	9	6	3	0	Releases 13,600 gallons	3	0	3
	5 Year	10	8	6	4	2	0	Releases 170,000 gallons	8	2	6
	10 Year	5	4	3	2	1	0	Releases 282,000 gallons	5	2	3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			2
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			3

64096 - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 600 gallons	5	0	5	
	1 Year	20	16	12	8	4	0	Releases 16,000 gallons	4	0	4	
	2 Year	15	12	9	6	3	0	Releases 55,000 gallons	12	0	12	
	5 Year	10	8	6	4	2	0	Releases 123,000 gallons	8	4	4	
	10 Year	5	4	3	2	1	0	Releases 160,000 gallons	4	3	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			5	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			8	

86052-PS - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 155,000 gallons	20	0	20	
	1 Year	20	16	12	8	4	0	Releases 223,000 gallons	20	0	20	
	2 Year	15	12	9	6	3	0	Releases 292,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 360,000 gallons	10	2	8	
	10 Year	5	4	3	2	1	0	Releases 405,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			13	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			22	

MSD0263 - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 36,000 gallons	20	0	20	
	1 Year	20	16	12	8	4	0	Releases 71,000 gallons	16	0	16	
	2 Year	15	12	9	6	3	0	Releases 123,000 gallons	12	0	12	
	5 Year	10	8	6	4	2	0	Releases 204,000 gallons	10	4	6	
	10 Year	5	4	3	2	1	0	Releases 274,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score				11
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score				18

92061 - 2 YR	Network Branch #1A											
Value:	Public Health Enhancement - SSOs											
	Measure	Release Impact						Rationale	Measurement Method			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	No Release	0	0	0	
	1 Year	20	16	12	8	4	0	No Release	0	0	0	
	2 Year	15	12	9	6	3	0	No Release	0	0	0	
	5 Year	10	8	6	4	2	0	No Release	0	0	0	
	10 Year	5	4	3	2	1	0	No Release	0	0	0	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score				0
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score				0

MSD
Louisville and Jefferson County Metropolitan Sewer District

Jeffersontown Blending Elimination Evaluation - Original IOAP Solution and Alterantives 1, 2, and 3 (all the same)

Value: Asset Protection

	Measure		Impact						Rationale	Measurement Method
Performance Measures		Flood Damage	Homes or businesses are subject to severe structural damage	Homes or businesses are subject to minor to moderate structural damage	Flooding limits access to homes or businesses	Flooding limits access to recreational areas	Standing water on property, but access not affected and no damage expected	No standing water	Stormwater BMPs can reduce stormwater peaks and reduce extent of flooded areas, while sewer separation may increase localized stormwater peak flows and increase the flooding impacts of storms. Alternatively, purchase of highly impacted properties may be a cheaper way to reduce flood damage and create green space and buffer zones.	Drainage models where available, historic customer complaints from MSD Customer Information System, or historic observations of flood-prone areas combined with the expected relative impacts of sewer system modifications on storm water flows.
		Basement Back-ups	Sewer surcharging within 6 feet of ground surface for more than 20% of manholes	Sewer surcharging within 6 feet of ground surface for 10 - 20% of manholes	Sewer surcharging within 6 feet of ground surface for 5 - 10% of manholes	Sewer surcharging within 6 feet of ground surface for 1 - 5% of manholes	Sewer surcharging within 6 feet of ground surface for 0 - 1% of manholes	No surcharging within 6 feet of ground surface	First floor levels are typically 1 - 2 feet above ground surface, and basement floors are typically 8 - 10 feet below the first floor. A sewer surcharge of 6 feet below ground surface is highly likely to cause back-ups in homes with basement service.	Measurement methods will be via hydraulic models to quantify the hydraulic grade lines compared to ground surface elevations at manholes.
	Storm Events	→	Most Severe Impact				Least Impact	No Impact		
		↓	5	4	3	2	1	0	Assumptions	Base Case Score / Alternative Score / Total Score
Frequency	6 Month	Most Likely 5	25	20	15	10	5	0		10 / 0 / 10
	1 Year	4	20	16	12	8	4	0		12 / 4 / 8
	2 Year	3	15	12	9	6	3	0		9 / 3 / 6
	5 Year	2	10	8	6	4	2	0		8 / 4 / 4
	10 Year	Least Likely 1	5	4	3	2	1	0		5 / 3 / 2
	Not Possible	Not Possible 0	0	0	0	0	0	0	Average Total Score	6
									Corrected Score	10

Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.

Acronyms
BMPs - Best management practices

MSD
Louisville and Jefferson County Metropolitan Sewer District

Project #1				S_JT_JT_NB01A_03_C								
Value:	Asset Protection											
	Measure			Impact						Rationale	Measurement Method	
Performance Measures		Flood Damage		Homes or businesses are subject to severe structural damage	Homes or businesses are subject to minor to moderate structural damage	Flooding limits access to homes or businesses	Flooding limits access to recreational areas	Standing water on property, but access not affected and no damage expected	No standing water	Stormwater BMPs can reduce stormwater peaks and reduce extent of flooded areas, while sewer separation may increase localized stormwater peak flows and increase the flooding impacts of storms. Alternatively, purchase of highly impacted properties may be a cheaper way to reduce flood damage and create green space and buffer zones.	Drainage models where available, historic customer complaints from MSD Customer Information System, or historic observations of flood-prone areas combined with the expected relative impacts of sewer system modifications on storm water flows.	
		Basement Back-ups		Sewer surcharging within 6 feet of ground surface for more than 20% of manholes	Sewer surcharging within 6 feet of ground surface for 10 - 20% of manholes	Sewer surcharging within 6 feet of ground surface for 5 - 10% of manholes	Sewer surcharging within 6 feet of ground surface for 1 - 5% of manholes	Sewer surcharging within 6 feet of ground surface for 0 - 1% of manholes	No surcharging within 6 feet of ground surface	First floor levels are typically 1 - 2 feet above ground surface, and basement floors are typically 8 - 10 feet below the first floor. A sewer surcharge of 6 feet below ground surface is highly likely to cause back-ups in homes with basement service.	Measurement methods will be via hydraulic models to quantify the hydraulic grade lines compared to ground surface elevations at manholes.	
	Storm Events	→ / ↓		Most Severe Impact				Least Impact	No Impact			
				5	4	3	2	1	0	Assumptions	Base Case Score	Alternative Score	Total Score
Frequency	6 Month	Most Likely	5	25	20	15	10	5	0		5	0	5
	1 Year		4	20	16	12	8	4	0		4	4	0
	2 Year		3	15	12	9	6	3	0		9	3	6
	5 Year		2	10	8	6	4	2	0		8	6	2
	10 Year	Least Likely	1	5	4	3	2	1	0		4	3	1
	Not Possible	Not Possible	0	0	0	0	0	0	0	Average Score			3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.										Corrected Score			5

Acronyms
BMPs - Best management practices

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Jeffersontown Blending Elimination - Alternative 2

Value: Environmental Enhancement

Aspect	Scoring -5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Aquatic and Terestrial Habitat Protection	Elimination of habitat for rare or endangered species	Elimination of significant amount of common habitat	Elimination of minor amount of common habitat	Significant habitat impairment	Minor impairment to existing habitat	No impact on habitat	Minor enhancement of existing habitat	Significant enhancement of existing habitat	Creation of minor amount of common habitat	Creation of significant amount of common habitat	Creation of critical habitat for rare or endangered species	Plant flows reduced but not eliminated, likely minor impacts on existing habitat during construction.	-1
Aesthetics - Solids and Floatables	75%+ reduction in volume of flow with no S&F capture	50 - 75% of flow with no S&F removal	25 - 50% of flow with no S&F removal	10 - 25% of flow with no S&F removal	Reduces efficiency of existing S&F control device. 0 - 10% of flow with no S&F removal	No change in S&F removal	0 - 10% of discharged flow treated with positive S&F removal (screens)	10 - 25 % of discharged flow treated with positive S&F removal (screens)	25 - 50% of discharged flow treated with positive S&F removal (screens)	50 - 75% of discharged flow treated with positive S&F removal screens	75% + of discharged flow treated with positive S&F removal (screens)	No options will provide changes in S&F Removal	0
Aesthetics - Odor and Air Emissions	Create annoying odor source affecting > 20 customers often	Create annoying odor source affecting <20 customers often or >20 customers occasionally	Create annoying odor source affecting <20 customers occasionally	Create detectable odor source affecting > 50 customers often	Create detectable odor source affecting < 50 customers occasionally	No impact on odors	Eliminate detectable odor source affecting < 50 customers occasionally	Eliminate detectable odor source affecting > 50 customers often	Eliminate annoying odor source affecting <20 customers occasionally	Eliminate annoying odor source affecting <20 customers often, or >20 customers occasionally	Eliminate annoying odor source affecting >20 customers often	Odor will be eliminated from all overflows along Jtown interceptor being eliminated. Treatment Plant odors will be reduced due to load reduction and plant upgrades. New location for potential minor storage and pump odors,station potential.	1
Dissolved Oxygen Impacts	Reduction of in-stream DO by 2 mg/l + during critical flow periods	Continuous reduction of in-stream DO of 2 mg/l +	Continuous reduction of in-stream DO of 0 - 2 mg/l, possible reduction of in-stream DO 2 - 4 mg/l during critical conditions.	Intermittent reduction of in-stream DO 2 mg/l + possible during non-critical conditions, reduction of DO 0 - 2 mg/l during critical conditions	Intermittant reduction of in-stream DO 0 - 2 mg/l possible during non-critical conditions	No DO impacts	Intermittent improvement of in-stream DO 0 - 2 mg/l	Intermittent improvement of in-stream DO 2 mg/l +, intermittant critical condition improvements 0 - 2 mg/l	Continuous improvement of in-stream DO 0 - 2 mg/l, intermittant critical condition improvements 2-4 mg/l	Continuous improvement of in-stream DO 2 mg/l +	Continuous improvement of critical condition in-stream DO 2 mg/l +	Plant effluent load reduction may will provide improvement of in-stream DO 0 - 2 mg/l	1
Downstream Impacts	75%+ increase in annual BOD or nutrient loads	50 - 75% increase in annual BOD or nutrient loads	25 - 50% increase in annual BOD or nutrient loads	10 - 25% increase in annual BOD or nutrient loads (CSO + runoff)	Potential 0 - 10 % increase in annual average BOD or nutrient loads (CSO + runoff)	No impact on BOD or nutrient loads (CSO + runoff)	0 - 10% reduction in annual BOD or nutrient loads (CSO + runoff)	10 - 25% reduction in annual BOD or nutrient loads (CSO + runoff)	25 - 50% reduction in annual BOD or nutrient loads (CSO + runoff)	50 - 75% reduction in annual BOD or nutrient loads (CSO + runoff)	75%+ reduction in annual BOD or nutrient loads (CSO + runoff)	Improved capture and treatment of SSOs will provide 0 - 10 % reduction in annual BOD or nutrient loads (SSO + runoff) downstream of Jefferson County	1
Stream Flow Impacts (Peak flows)	25% + increase in peak flows	10% - 25% increase in peak flows	Up to 10% increase in peak flows	Frequent increase in flow during critical conditions	Possible increase in average flow or minor increase in high flow years	No impact on peak flows	Minor reduction in flows - no significant peak reduction	Minor reduction in peak flows under some conditions	Up to 10% reduction in peak flows	10% - 25% reduction in peak flows	25%+ reduction in peak flows	Flow peaks to be reduced due to partial diversion of plant effluent.	2
Stream Flow Impacts (DWF only)	25%+ decrease in flow during critical conditions.	10% - 25% decrease in flow during critical conditions	0-10% permanent decrease in flow during critical conditions	Frequent decrease in flow during critical conditions	Possible decrease in average flow	No impact on average or base stream flow	Intermittent increase in stream flow - not linked to critical conditions	Intermittent increase in stream flow - often improves critical conditions	0 - 10% permanent increase in stream flow during critical conditions	10 - 25 % permanent increase in stream flow during critical conditions	25%+ permanent increase in stream flow during critical conditions.	Base flow substantially reduced.	-2

Instructions: (1.) Score each alternative for each of the seven aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	2
Total Score (Default)	2

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Aquatic and Terestrial Habitat Protection	Wet weather projects may affect both aquatic and terrestrial habitat through changes in base flow, peak flow, water quality, tree cover, channel shape and characteristics etc. Predictive models used to evaluate wet weather control measures have a limited ability to predict biological diversity changes, erosion impacts etc., so surrogate metrics must be used to estimate future positive and negative impacts.	Project definition may specifically address changes in channel shape and configuration, tree cover etc. Predictive models will address DO and other water quality impacts. Flow models will predict base flow and peak flow rates to allow estimates of changes in erosion and water surface area.
Aesthetics - Solids and Floatables	Most CSOs have some form of solids and floatables control baffles. Improvements in capture rates can be expected with screening or other advanced treatment options. Storm water retention, constructed wetlands, and other control systems may provide solids and floatables removal as well. While reduction in solids and floatables removal efficiency is not likely, penalty points will be assessed if this is possible with any alternative.	Current solids and floatables removal efficiency has been estimated for all sites with control technology. Improvements in removal efficiencies will be estimated for all alternatives that add screening or other advanced treatment technologies. Where treatment is proposed for storm water discharges removals will be estimated based on publisher removal data.
Aesthetics - Odor and Air Emissions	Odors and air emissions can be generated in storage systems, pump stations, force mains, and long flat sewers. Odors are generally characterized by both the intensity and the quality of the odor. Detectable and annoying are two common descriptors of different intensities and qualities of odors from sewage handling facilities.	Odor emissions from sewage handling facilities can be modeled for intensity, quality, and geographic spread. For planning purposes this level of evaluation is not common, and will not be done except in very rare circumstances. The potential for odor and air emissions will be estimated based on typical applications and model predictions for storage time, number of events, average flow velocities etc.
Dissolved Oxygen Impacts	Dissolved oxygen in streams is dependent on a variety of factors including BOD load, nutrient load, stream flow velocity, water temperature, etc.	For BGC the Water Quality Tool will be used to estimate the impacts of various loading conditions, flows, temperatures, etc. Probable impacts of individual projects will be estimated based on comparisons to the various stream condition scenarios.
Downstream Impacts	Downstream impacts refer to conditions in the Ohio River below Jefferson County. Nutrient loadings in the Ohio (not just Jefferson County) have been identified as the source of 30 - 45% of the total nutrient loads reaching the Gulf of Mexico. BOD is not likely to persist in the river long enough to get to the Gulf, but can have detrimental impacts far downriver.	Pollutant removals will be estimated based on reductions in annual average loads, since the downstream impacts are primarily long-term and cumulative.
Stream Flow Impacts (Peak flows)	Extremely high peak flows as are often caused by urbanization of a watershed can erode the streambed, damage aquatic and terrestrial habitat, make water based recreation unsafe or impractical.	Predictive models can estimate flow peaking factors from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various storm events.
Stream Flow Impacts (DWF only)	Diversion of flows away from a stream due to abandonment of a treatment plant etc. can reduce base flows in a stream. Alternatively, other control measures such as groundwater pumping can increase base flows with beneficial results.	Predictive models can estimate flows from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various dry weather events.

Acronyms
BGC - Beargrass Creek
BOD - Biological oxygen demand
CSO - Combined sewer overflow
DO - Dissolved oxygen
DWF - Dry weather flow
mg/l - Milligram per liter
S&F - Solids and floatables

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Project #1	S_JT_JT_NB01A_03_C
Value:	Environmental Enhancement

	Scoring												
Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Aquatic and Terrestrial Habitat Protection	Elimination of habitat for rare or endangered species	Elimination of significant amount of common habitat	Elimination of minor amount of common habitat	Significant habitat impairment	Minor impairment to existing habitat	No impact on habitat	Minor enhancement of existing habitat	Significant enhancement of existing habitat	Creation of minor amount of common habitat	Creation of significant amount of common habitat	Creation of critical habitat for rare or endangered species		
Aesthetics - Solids and Floatables	75%+ reduction in volume of flow with no S&F capture	50 - 75% of flow with no S&F removal	25 - 50% of flow with no S&F removal	10 - 25% of flow with no S&F removal	Reduces efficiency of existing S&F control device, 0 - 10% of flow with no S&F removal	No change in S&F removal	0 - 10% of discharged flow treated with positive S&F removal (screens)	10 - 25 % of discharged flow treated with positive S&F removal (screens)	25 - 50% of discharged flow treated with positive S&F removal (screens)	50 - 75% of discharged flow treated with positive S&F removal screens	75% + of discharged flow treated with positive S&F removal (screens)		
Aesthetics - Odor and Air Emissions	Create annoying odor source affecting > 20 customers often	Create annoying odor source affecting <20 customers often, or > 20 customers occasionally	Create annoying odor source affecting >20 customers occasionally	Create detectable odor source affecting > 50 customers often	Create detectable odor source affecting > 50 customers occasionally	No impact on odors	Eliminate detectable odor source affecting > 50 customers occasionally	Eliminate detectable odor source affecting > 50 customers often	Eliminate annoying odor source affecting <20 customers occasionally	Eliminate annoying odor source affecting >20 customers occasionally, or <20 customers occasionally	Eliminate annoying odor source affecting >20 customers often		
Dissolved Oxygen Impacts	Reduction of in-stream DO by 2 mg/l + during critical flow periods	Continuous reduction of in-stream DO of 2 mg/l +	Continuous reduction of in-stream DO of 0 - 2 mg/l, possible reduction of in-stream DO 2 - 4 mg/l during critical conditions	Intermittent reduction of in stream DO 2 mg/l + possible during non-critical conditions, reduction of DO 0 - 2 mg/l during critical conditions	Intermittent reduction of in stream DO 0 - 2 mg/l possible during non-critical conditions	No DO impacts	Intermittent improvement of in-stream DO 0 - 2 mg/l	Intermittent improvement of in-stream DO 2 mg/l +, intermittent critical condition improvements 0 - 2 mg/l	Continuous improvement of in-stream DO 0 - 2 mg/l, intermittent critical condition improvements 2-4 mg/l	Continuous improvement of in-stream DO 2 mg/l +	Continuous improvement of critical condition in stream DO 2 mg/l +		
Downstream Impacts	75%+ increase in annual BOD or nutrient loads	50 - 75% increase in annual BOD or nutrient loads	25 - 50% increase in annual BOD or nutrient loads	10 - 25% increase in annual BOD or nutrient loads	Potential 0 - 10 % increase in annual average BOD or nutrient loads (CSO + runoff)	No impact on BOD or nutrient loads (CSO + runoff)	0 - 10% reduction in annual BOD or nutrient loads (CSO + runoff)	10 - 25% reduction in annual BOD or nutrient loads (CSO + runoff)	25 - 50% reduction in annual BOD or nutrient loads (CSO + runoff)	50 - 75% reduction in annual BOD or nutrient loads (CSO + runoff)	75%+ reduction in annual BOD or nutrient loads (CSO + runoff)		
Stream Flow Impacts (Peak flows)	25% + increase in peak flows	10% - 25% increase in peak flows	Up to 10% increase in peak flows	Frequent increase in flow during critical conditions	Possible increase in average flow, or minor increase in high flow peaks	No impact on peak flows	Minor reduction in flows - no significant peak reduction	Minor reduction in peak flows under some conditions	Up to 10% reduction in peak flows	10% - 25% reduction in peak flows	25%+ reduction in peak flows		
Stream Flow Impacts (DWF only)	25%+ decrease in flow during critical conditions	10% - 25% decrease in flow during critical conditions	0-10% permanent decrease in flow during critical conditions	Frequent decrease in flow during critical conditions	Possible decrease in average flow	No impact on average or base stream flow	Intermittent increase in stream flow - not timed to critical conditions	Intermittent increase in stream flow - often improves critical conditions	0 - 10% permanent increase in stream flow during critical conditions	10 - 25 % permanent increase in stream flow during critical conditions	25%+ permanent increase in stream flow during critical conditions		

Instructions: (1.) Score each alternative for each of the seven aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	4
Corrected Score	4

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Aquatic and Terrestrial Habitat Protection	Wet weather projects may affect both aquatic and terrestrial habitat through changes in base flow, peak flow, water quality, tree cover, channel shape and characteristics etc. Predictive models used to evaluate wet weather control measures have a limited ability to predict biological diversity changes, erosion impacts etc., so surrogate metrics must be used to estimate future positive and negative impacts.	Project definition may specifically address changes in channel shape and configuration, tree cover etc. Predictive models will address DO and other water quality impacts. Flow models will predict base flow and peak flow rates to allow estimates of changes in erosion and water surface area.
Aesthetics - Solids and Floatables	Most CSOs have some form of solids and floatables control baffles. Improvements in capture rates can be expected with screening or other advanced treatment options. Storm water retention, constructed wetlands, and other control systems may provide solids and floatables removal as well. While reduction in solids and floatables removal efficiency is not likely, penalty points will be assessed if this is possible with any alternative.	Current solids and floatables removal efficiency has been estimated for all sites with control technology. Improvements in removal efficiencies will be estimated for all alternatives that add screening or other advanced treatment technologies. Where treatment is proposed for storm water discharges removals will be estimated based on published removal data.
Aesthetics - Odor and Air Emissions	Odors and air emissions can be generated in storage systems, pump stations, force mains, and long flat sewers. Odors are generally characterized by both the intensity and the quality of the odor. Detectable and annoying are two common descriptors of different intensities and qualities of odors from sewage handling facilities.	Odor emissions from sewage handling facilities can be modeled for intensity, quality, and geographic spread. For planning purposes this level of evaluation is not common, and will not be done except in very rare circumstances. The potential for odor and air emissions will be estimated based on typical applications and model predictions for storage time, number of events, average flow velocities etc.
Dissolved Oxygen Impacts	Dissolved oxygen in streams is dependent on a variety of factors including BOD load, nutrient load, stream flow velocity, water temperature, etc.	For BGC the Water Quality Tool will be used to estimate the impacts of various loading conditions, flows, temperatures, etc. Probable impacts of individual projects will be estimated based on comparisons to the various stream condition scenarios.
Downstream Impacts	Downstream impacts refer to conditions in the Ohio River below Jefferson County. Nutrient loadings in the Ohio (not just Jefferson County) have been identified as the source of 30 - 45% of the total nutrient loads reaching the Gulf of Mexico. BOD is not likely to persist in the river long enough to get to the Gulf, but can have detrimental impacts far downriver.	Pollutant removals will be estimated based on reductions in annual average loads, since the downstream impacts are primarily long-term and cumulative.
Stream Flow Impacts (Peak flows)	Extremely high peak flows as are often caused by urbanization of a watershed can erode the streambed, damage aquatic and terrestrial habitat, make water based recreation unsafe or impractical.	Predictive models can estimate flow peaking factors from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various storm events.
Stream Flow Impacts (DWF only)	Diversion of flows away from a stream due to abandonment of a treatment plant etc. can reduce base flows in a stream. Alternatively, other control measures such as groundwater pumping can increase base flows with beneficial results.	Predictive models can estimate flows from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various dry weather events.

Acronyms
BGC - Beargrass Creek
BOD - Biological oxygen demand
CSO - Combined sewer overflow
DO - Dissolved oxygen
DWF - Dry weather flow
mg/l - Milligram per liter
S&F - Solids and floatables

Jeffersontown Blending Elimination Evaluation - Alternative 2

Value: Eco-Friendly Solutions

Aspect	Scoring -5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Non-Renewable Energy Consumption	Primary energy consumption is greater than secondary treatment	Primary energy consumption equal to 75 - 100% of secondary treatment	Primary energy consumption equal to 30 - 75% of secondary treatment	Primary energy consumption equal to 15 - 30% of secondary treatment	Primary energy consumption equal to 0 - 15% of secondary treatment	No energy consumption except for cleaning and maintenance	Cleaning and maintenance not needed, no primary consumption	NA	NA	NA	NA	Energy consumption needed for storage and pump station at the plant. 55% of flow pumped, secondary treatment still required end of pipe	-2
Use of Natural Systems	Constructed facilities permanently displace 5+ acres wetlands or 50% locally available green space	Constructed facilities permanently displace 3 - 5 acres wetlands or 25 - 50% locally available green space	Constructed facilities permanently displace 1 - 3 acres wetlands or 10 - 15% locally available green space	Constructed facilities permanently displace 0 - 1 acre wetlands or up to 10% locally available green space	Constructed facilities temporarily disrupt wetlands or green space	Alternative does not use or affect natural systems, wetlands, or green space	Alternative doesn not use natural systems, but enhances green space or wetland	Natural systems play a minor role in alternative function, up to 1 acre wetland or 10% additional green space created	Natural systems are significant part of alternative function, 1 - 3 acres of wetland created or 10 - 25% additional green space	Alternative fully uses natural systems, 3 - 5 acres of wetland created or 25-50% additional green space	Alternative results in multi-use natural system development, 5+ acres of wetland or 50% additional green space	Construction would temporarily disrupt green space, but potentially allow new green space to be created at the existing plant site	1
Multiple-Use Facilities	Constructed facilities permanently eliminate recreational opportunity	Constructed facilities significantly impare recreational opportunity	Constructed facilities moderately impare recreational opportunity	Constructed facilities have minor impacts on recreational opportunity	Construction temporarily impacts recreational opportunity	No impacts on recreational opportunities	Alternative improves access to existing recreational areas	Alternative has limbed positive impact on recreation	Alternative significantly enhances recreational opportunities	Alternative increases recreational opportunities in area	Alternative results in multi-use facility	No change in recreational uses since plant remains in service	0
Source Control of subwatershed pollutant loads	Pollutant loadings are increased by 50%	Pollutant loadings are increased by 30 - 50%	Pollutant loadings are increased by 10 - 30%	End of pipe pollutant loadings are increased by 0 - 10%	End of pipe pollutant loadings impacts are inconsistent, but likely higher	End of pipe pollutant loadings are unchanged	Diversion transfers more than 25% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 50% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 75% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 90% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 100% of pollutant loadings to less sensitive receiving water	56% of pollutant loads transferred to Ohio River, a less sensitive watershed.	2
Non-Obtrusive Construction Techniques	Permanent loss of green space or sensitive area disruption	Main thoroughfare closures, sensitive area temporary disruptions	Widespread dust and noise, blasting, secondary street closures	Localized dust, noise and local street closures	Minor dust and noise, traffic lane closures	No construction impacts	NA	NA	NA	NA	NA	Construction would cause localized dust and noise with street closures	-2
Consistent Land Use	Intrusive or nuisance facilities inconsistent with neighborhood or land use.	Facilities inconsistent with neighborhood or land use.	Facility characteristics mitigated to reduce impact on neighborhood	Facities have significant impact on development density or land use	Facility has minor impact on development density or land use	No impact on land use or no above ground facilities	Alternative mitigates existing compatibility problem	Alternative removes facility inconsistent with neighborhood	Alternative removes nuisance facility from neighborhood	Alternative enhances property values in neighborhood	Alternative provides enhancements that significantly improve neighborhood	Facilities on plant site will be upgraded, partially mitigating incompatable use of a treatment facility.	1
Impermeable Surfaces	5 acres + of impermeable surfaces are added	3 - 5 acres of impermeable surfaces are added	1 - 3 acres of impermeable surfaces are added	up to 1 acre of impermeable surfaces are added	Minor increase in impermeable surfaces added	No change in impermeable surface	Minor reduction in impermeable surfaces	Up to 1 acre of impermeable surfaces removed	1 - 3 acres of impermeable surfaces removed	3 - 5 acres of impermeable surfaces removed	More than 5 acres of impermeable surfaces removed	No change in impermeable surface in all options	0
LEEDS Performance	NA	NA	NA	NA	NA	LEEDS not applicable or LEEDS score <10	LEEDS Score 10 - 25	LEEDS Certified	LEEDS Silver	LEEDS Gold	LEEDS Platinum	LEEDS not applicable or LEEDS score < 10	0

Instructions: (1.) Score each alternative for each of the eight aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	0
Total Score (Default)	0

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Non-Renewable Energy Consumption	Eco-friendly solutions would be expected to be low consumers of non-renewable energy. Benchmarking energy consumption against conventional secondary treatment provides penalty points for high energy consuming alternatives.	Evaluation of primary energy consumed per MG of flow treated, compared to the energy consumed at the WCWTP per MG treated.
Use of Natural Systems	Natural systems replace concrete and steel construction with wet bottom storage lagoons, constructed bioswales, rain gardens etc. that increase green space of various kinds. Options that reduce wetlands and green space get penalty points.	Acres of wetlands and other types of green space created or eliminated. Also includes subjective evaluation of the "basis" of the alternative - "green" or "grey".
Multiple-Use Facilities	Eco-friendly solutions create recreational opportunities for both water-based and riparian recreation. Boating, canoing, kayaking, fishing, wading, swimming etc. would be direct water-based recreation. Bird watching, hiking, biking, picnicing, camping etc. would be considered related riparian recreation.	Subjective evaluation of changes predicted in the aquatic or riparian environment as a result of better water quality, increased base flow or decreased flow peaks, increased tree cover or vegitated riparian areas etc.
Source Control of subwatershed pollutant loads	Controlling pollutant loads at the source through behavior modification, product replecements or stormwater management BMPs that capture pollutants thereby avoiding end of pipe treatment requirements	Modeled land-side pollutant loading reductions as calculated by the BGC Water Quality Tool or by comparision to literature values or pilot program measurements.
Non-Obtrusive Construction Techniques	Probable construction impacts on traffic, noise and dust are all measures of the friendliness of an alternative. Construction impacts get penalty points for creating nuisance conditions.	Subjective evaluation of probable construction impacts based on the type of construction envisioned for the alternative.
Consistent Land Use	Alternative configuration can either enhance or detract from the surrounding property. For example, an extremely unfriendly pump station can be noisy, smelly, and ugly. The same pump station can be "disguised" as a residence that fits right in with the neighborhood. If a larger parcel of land is available, a pump station can be hidden from view by landscaping, and a community garden or other green space added to enhance the neighborhood.	At the planning level, projects can be defined to avoid negative impacts on the surrounding properties. Depending on the availability of land, enhancements are possible. This aspect encourages project definition and budgets to enhance, not detract.
Impermeable Surfaces	Adding impermeable surfaces increases total runoff volume, peak runoff flowrates, and the total transport of any pollutant deposited on the surface from any source. Conversely, permeable surfaces can reduce flow volume and peaks, and provide filtering mechanisms for pollutants.	Acres of permeable surfaces created or eliminated.
LEEDS Performance	LEED standards are applicable to alternatives that include above-ground building structures.	Application of LEED evaluation points.

Acronyms

BGC - Beargrass Creek
LEEDS - Leadership in Energy and Environmental Design
MG - million gallons
WCWTP - West County Wastewater Treatment Plant

MSD
Louisville and Jefferson County Metropolitan Sewer District

Project #1	S_JT_JT_NB01A_03_C
Value:	Eco-Friendly Solutions

	Scoring												
Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Non-Renewable Energy Consumption	Primary energy consumption is greater than secondary treatment	Primary energy consumption equal to 75 - 100% of secondary treatment	Primary energy consumption equal to 30 - 75% of secondary treatment	Primary energy consumption equal to 15 - 30% of secondary treatment	Primary energy consumption equal to 0 - 15% of secondary treatment	No energy consumption except for cleaning and maintenance	Cleaning and maintenance not needed, no primary consumption	NA	NA	NA	NA	Energy consumption due to increase in pumping	-1
Use of Natural Systems	Constructed facilities permanently displace 5+ acres wetlands or 50% locally available green space	Constructed facilities permanently displace 3 - 5 acres wetlands or 25 - 50% locally available green space	Constructed facilities permanently displace 1 - 3 acres wetlands or 10 - 15% locally available green space	Constructed facilities permanently displace 0 - 1 acre wetlands or up to 10% locally available green space	Constructed facilities temporarily disrupt wetlands or green space	Alternative does not use or affect natural systems, wetlands, or green space	Alternative doesn not use natural systems, but enhances green space or wetland	Natural systems play a minor role in alternative function, up to 1 acre wetland or 10% additional green space created	Natural systems are significant part of alternative function, 1 - 3 acres of wetland created or 10 - 25% additional green space	Alternative fully uses natural systems, 3 - 5 acres of wetland created or 25-50% additional green space	Alternative results in multi-use natural system development, 5+ acres of wetland or 50% additional green space	Force Main construction temporarily disrupts green space	-1
Multiple-Use Facilties	Constructed facilities permanently eliminate recreational opportunity	Constructed facilities significantly impare recreational opportunity	Constructed facilities moderately impare recreational opportunity	Constructed facilities have minor impacts on recreational opportunity	Construction temporarily impacts recreational opportunity	No impacts on recreational opportunities	Alternative improves access to existing recreational areas	Alternative has limited positive impact on recreation	Alternative significantly enhances recreational opportunities	Alternative increases recreational opportunities in area	Alternative results in multi-use facility	No impact	0
Source Control of subwatershed pollutant loads	Pollutant loadings are increased by 50%	Pollutant loadings are increased by 30 - 50%	Pollutant loadings are increased by 10 - 30%	End of pipe pollutant loadings are increased by 0 - 10%	End of pipe pollutant loadings impacts are inconsistent, but likely higher	End of pipe pollutant loadings are unchanged	Pollutant loadings impacts are inconsistent, but likely lower	Source control reduces pollutant loadings by 0 - 10%	Source control reduces pollutant loadings by 10 - 30%	Source control reduces pollutant loadings by 30 - 50%	Source control reduces pollutant loadings by more than 50%	End of pipe pollutant loadings impacts are inconsistent, but likely higher in all options	-1
Non-Obtrusive Construction Techniques	Permenent loss of green space or sensitive area disruption	Main thoroughfare closures, sensitive area temporary disruptions	Widespread dust and noise, blasting, secondary street closures	Localized dust, noise and local street closures	Minor dust and noise, traffic lane closures	No construction impacts	NA	NA	NA	NA	NA	Force main construction would result in minor dust and lane closures	-1
Consistent Land Use	Intrusive or nuisance facilities inconsistent with neighborhood or land use.	Facilities inconsistent with neighborhood or land use.	Facility characteristics mitigated to reduce impact on neighborhood	Facilties have significant impact on development density or land use	Facility has minor impact on development density or land use	No impact on land use or no above ground facilities	Alternative mitigates existing compatibility problem	Alternative removes facility inconsistent with neighborhood	Alternative removes nuisance facility from neighborhood	Alternative enhances property values in neighborhood	Alternative provides enhancements that significantly improve neighborhood	No impact on land use or above ground facilities in all options	0
Impermeable Surfaces	5 acres+ of impermeable surfaces are added	3 - 5 acres of impermeable surfaces are added	1 - 3 acres of impermeable surfaces are added	up to 1 acre of impermeable surfaces are added	Minor increase in impermeable surfaces added	No change in impermeable surface	Minor reduction in impermeable surfaces	Up to 1 acre of impermeable surfaces removed	1 - 3 acres of impermeable surfaces removed	3 - 5 acres of impermeable surfaces removed	More than 5 acres of impermeable surfaces removed	No change in impermeable surface in all options	0
LEEDS Performance	NA	NA	NA	NA	NA	LEEDS not applicable or LEEDS score <10	LEEDS Score 10 - 25	LEEDS Certified	LEEDS Silver	LEEDS Gold	LEEDS Platinum	LEEDS not applicable or LEEDS score < 10 in all options	0

Instructions: (1.) Score each alternative for each of the eight aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	-4
Corrected Score	-4

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Non-Renewable Energy Consumption	Eco-friendly solutions would be expected to be low consumers of non-renewable energy. Benchmarking energy consumption against conventional secondary treatment provides penalty points for high energy consuming alternatives.	Evaluation of primary energy consumed per MG of flow treated, compared to the energy consumed at the WCWTP per MG treated.
Use of Natural Systems	Natural systems replace concrete and steel construction with wet bottom storage lagoons, constructed bioswales, rain gardens etc. that increase green space of various kinds. Options that reduce wetlands and green space get penalty points.	Acres of wetlands and other types of green space created or eliminated. Also includes subjective evaluation of the "basis" of the alternative - "green" or "grey".
Multiple-Use Facilties	Eco-friendly solutions create recreational opportunities for both water-based and riparian recreation. Boating, canoing, kayaking, fishing, wading, swimming etc. would be direct water-based recreation. Bird watching, hiking, biking, picnicing, camping etc. would be considered related riparian recreation.	Subjective evaluation of changes predicted in the aquatic or riparian environment as a result of better water quality, increased base flow or decreased flow peaks, increased tree cover or vegitated riparian areas etc.
Source Control of subwatershed pollutant loads	Controlling pollutant loads at the source through behavior modification, product replacements or stormwater management BMPs that capture pollutants thereby avoiding end of pipe treatment requirements	Modeled land-side pollutant loading reductions as calculated by the BGC Water Quality Tool or by comparision to literature values or pilot program measurements.
Non-Obtrusive Construction Techniques	Probable construction impacts on traffic, noise and dust are all measures of the friendliness of an alternative. Construction impacts get penalty points for creating nuisance conditions.	Subjective evaluation of probable construction impacts based on the type of construction envisioned for the alternative.
Consistent Land Use	Alternative configuration can either enhance or detract from the surrounding property. For example, an extremely unfriendly pump station can be noisy, smelly, and ugly. The same pump station can be "disguised" as a residence that fits right in with the neighborhood. If a larger parcel of land is available, a pump station can be hidden from view by landscaping, and a community garden or other green space added to enhance the neighborhood.	At the planning level, projects can be defined to avoid negative impacts on the surrounding properties. Depending on the availability of land, enhancements are possible. This aspect encourages project definition and budgets to enhance, not detract.
Impermeable Surfaces	Adding impermeable surfaces increases total runoff volume, peak runoff flowrates, and the total transport of any pollutant deposited on the surface from any source. Conversely, permeable surfaces can reduce flow volume and peaks, and provide filtering mechanisms for pollutants.	Acres of permeable surfaces created or eliminated.
LEEDS Performance	LEED standards are applicable to alternatives that include above-ground building structures.	Application of LEED evaluation points.

Acronyms

BGC - Beargrass Creek
LEEDS - Leadership in Energy and Environmental Design
MG - million gallons
WCWTP - West County Wastewater Treatment Plant

Cluster Comparison

Project #1: S_JT_JT_NB01_01_C_A (Alternative 3)

CSO/SSO ID		Raw Benefit Score[2] Regulatory Performance	Public Health	Asset Protection	Environmental Enhance	Eco-Friendly Solutions
ISO28		21	22	10	10	3
28390		5	7	10	10	3
31733		21	20	10	10	3
28395A		5	3	10	10	3
64505		5	3	10	10	3
MSD0255		0	0	10	10	3
28392		0	0	10	10	3
28391		0	0	10	10	3
28173		0	0	10	10	3
64096		21	8	5	4	-4
86052		21	22	5	4	-4
92061		0	0	5	4	-4
MSD0263		21	18	5	4	-4
Weighting Factor		**8**	**10**	**6**	**8**	**6**
Weighted Benefit Score		**960**	**1030**	**660**	**848**	**66**
Total Benefit Score	**3564**					
Total Capital Cost[3]	20209000					
Total Present Worth Costs[3]						
Weighted Benefit/Cost Ratio (Capital Costs)	**17.635707**					
Weighted Benefit/Cost Ratio (Total Present Worth Costs)	**#DIV/0!**					

Notes:

1. Data Input Cells are highlighted in yellow
2. Raw Benefit Scores for Regulatory Performance and Public Health values are from the CSO or SSO Level of Control Benefit Sheets
3. Capital and Total Present Worth Costs from the"Proj Summary" Page of the Cost Model for the clustered alternative

(Reference t _JT_NB01_BCA_Q_Q.xls)

2-Year	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Regulatory Performance - SS0s										
	Measure	Impact / Frequency						Rationale	Measurement Method		
Performance Measure	SSOs	6 month	1 Year	2 Year	5 Year	10 Year	Modeled Overflow Point or No discharge	Regulations do not distinguish between potential impact of SSOs, therefore frequency and impact are the same for Regulatory Performance value.. Modeled Overflow Points are not considered until verified.	Measurement methods will be via hydraulic models to quantify the SSO discharge.		
Frequency	Value	25	12	0	4	1	0				
	ISO28	BL			PR				25	4	21
	28390			BL	PR				9	4	5
	31733	BL			PR				25	4	21
	28395A			BL	PR				9	4	5
	64505			BL	PR				9	4	5
	MSD0255						BL		0	0	0
	28392						BL		0	0	
	28391						BL		0	0	
	28173						BL		0	0	
Note - This value sheet calculates the total benefit.									Subtotal		57

Acronyms
AAOV - Average annual overflow volume
CSO - Combined sewer overflow
WQS - Water quality standards
WWTPs - Wastewater treatment plants

(Reference fo	_JT_NB01A_BCA.xls)	Network Branch #1A									
2-Year											
Value:	Regulatory Performance - SS0s										
	Measure	Impact / Frequency						Rationale	Measurement Method		
Performance Measure	SSOs	6 month	1 Year	2 Year	5 Year	10 Year	Modeled Overflow Point or No discharge	Regulations do not distinguish between potential impact of SSOs, therefore frequency and impact are the same for Regulatory Performance value.. Modeled Overflow Points are not considered until verified.	Measurement methods will be via hydraulic models to quantify the SSO discharge.		
Frequency	Value	25	16	9	4	1	0				
	64096	BL			PR				25	4	21
	86052	BL			PR				25	4	21
	92061						BL		0	0	0
	MSD0263	BL			PR				25	4	21
Note - This value sheet calculates the total benefit.									Subtotal		63

Acronyms

AAOV - Average annual overflow volume
CSO - Combined sewer overflow
WQS - Water quality standards
WWTPs - Wastewater treatment plants

ISO28 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	**Public Health Enhancement - SSOs**											
	Measure	**Release Impact**						**Rationale**	**Measurement Method**			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	Releases 900,000 gallons	25	0	25	
	1 Year	20	16	12	8	4	0	Releases 2,000,000 gallons	20	0	20	
	2 Year	15	12	9	6	3	0	Releases 3,080,000 gallons	15	0	15	
	5 Year	10	8	6	4	2	0	Releases 4,600,000 gallons	10	6	4	
	10 Year	5	4	3	2	1	0	Releases 5,720,000 gallons	5	4	1	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								**Average Total Score**			**13**	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								**Corrected Score**			**22**	

28390 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)											
Value:	**Public Health Enhancement - SSOs**											
	Measure	**Release Impact**						**Rationale**	**Measurement Method**			
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.			
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0	
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0	
	2 Year	15	12	9	6	3	0	Releases 63,000 gallons	12	0	12	
	5 Year	10	8	6	4	2	0	Releases 167,000 gallons	8	2	6	
	10 Year	5	4	3	2	1	0	Releases 248,000 gallons	5	2	3	
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								**Average Total Score**			**4**	
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								**Corrected Score**			**7**	

31733 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	Releases 80,000 gallons	20	0	20
	1 Year	20	16	12	8	4	0	Releases 172,000 gallons	16	0	16
	2 Year	15	12	9	6	3	0	Releases 269,000 gallons	15	0	15
	5 Year	10	8	6	4	2	0	Releases 393,000 gallons	10	2	8
	10 Year	5	4	3	2	1	0	Releases 495,000 gallons	5	2	3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			12
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			20

28395A - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0
	2 Year	15	12	9	6	3	0	Releases 2,000 gallons	3	0	3
	5 Year	10	8	6	4	2	0	Releases 31,000 gallons	4	0	4
	10 Year	5	4	3	2	1	0	Releases 46,000 gallons	2	1	1
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			2
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			3

64505 - 2 YR	Jeffersontown Blending Elimination Plan - Original IOAP, Alternatives 1, 2, 3 (all the same)										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	No Discharge	0	0	0
	1 Year	20	16	12	8	4	0	No Discharge	0	0	0
	2 Year	15	12	9	6	3	0	Releases 13,600 gallons	3	0	3
	5 Year	10	8	6	4	2	0	Releases 170,000 gallons	8	2	6
	10 Year	5	4	3	2	1	0	Releases 282,000 gallons	5	2	3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			2
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			3

64096 - 2 YR	Network Branch #1A										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	Releases 600 gallons	5	0	5
	1 Year	20	16	12	8	4	0	Releases 16,000 gallons	4	0	4
	2 Year	15	12	9	6	3	0	Releases 55,000 gallons	12	0	12
	5 Year	10	8	6	4	2	0	Releases 123,000 gallons	8	4	4
	10 Year	5	4	3	2	1	0	Releases 160,000 gallons	4	3	1
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			5
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			8

86052-PS - 2 YR	Network Branch #1A										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	Releases 155,000 gallons	20	0	20
	1 Year	20	16	12	8	4	0	Releases 223,000 gallons	20	0	20
	2 Year	15	12	9	6	3	0	Releases 292,000 gallons	15	0	15
	5 Year	10	8	6	4	2	0	Releases 360,000 gallons	10	2	8
	10 Year	5	4	3	2	1	0	Releases 405,000 gallons	5	2	3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			13
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			22

MSD0263 - 2 YR	Network Branch #1A										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	Releases 36,000 gallons	20	0	20
	1 Year	20	16	12	8	4	0	Releases 71,000 gallons	16	0	16
	2 Year	15	12	9	6	3	0	Releases 123,000 gallons	12	0	12
	5 Year	10	8	6	4	2	0	Releases 204,000 gallons	10	4	6
	10 Year	5	4	3	2	1	0	Releases 274,000 gallons	5	2	3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			11
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			18

92061 - 2 YR	Network Branch #1A										
Value:	Public Health Enhancement - SSOs										
	Measure	Release Impact						Rationale	Measurement Method		
Performance Measures	SSOs	Basement Flooding or Park or Blue-Line Stream > 50,000 Gals or >200,000 Gals	Residential Area > 50,000 Gals or Park or Blue Line <50,000 Gals or > 100,000 Gals	Release 50,000 - 99,999 Gals	Release 20,000-49,999 Gals	Release 10,000 - 19,999 Gals	No discharge	Not all discharges violate the Clean Water Act. Discharges vary in the impact to public health and the environment. Therefore, EPA developed guidance on how to set priorities based on the risk to the public's health and the environment under their Enforce	Measurement methods will be via hydraulic models to quantify the SSO discharge and the GIS to establish relative distance from designated locations or objects.		
Frequency	6 Month	25	20	15	10	5	0	No Release	0	0	0
	1 Year	20	16	12	8	4	0	No Release	0	0	0
	2 Year	15	12	9	6	3	0	No Release	0	0	0
	5 Year	10	8	6	4	2	0	No Release	0	0	0
	10 Year	5	4	3	2	1	0	No Release	0	0	0
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.								Average Total Score			0
Acronyms CSO - Combined sewer overflow FC - Fecal coliform GIS - Geographic information system								Corrected Score			0

MSD
Louisville and Jefferson County Metropolitan Sewer District

Jeffersontown Blending Elimination Evaluation - Original IOAP Solution and Alterantives 1, 2, and 3 (all the same)

Value: Asset Protection

	Measure		Impact						Rationale	Measurement Method
Performance Measures		Flood Damage	Homes or businesses are subject to severe structural damage	Homes or businesses are subject to minor to moderate structural damage	Flooding limits access to homes or businesses	Flooding limits access to recreational areas	Standing water on property, but access not affected and no damage expected	No standing water	Stormwater BMPs can reduce stormwater peaks and reduce extent of flooded areas, while sewer separation may increase localized stormwater peak flows and increase the flooding impacts of storms. Alternatively, purchase of highly impacted properties may be a cheaper way to reduce flood damage and create green space and buffer zones.	Drainage models where available, historic customer complaints from MSD Customer Information System, or historic observations of flood-prone areas combined with the expected relative impacts of sewer system modifications on storm water flows.
		Basement Back-ups	Sewer surcharging within 6 feet of ground surface for more than 20% of manholes	Sewer surcharging within 6 feet of ground surface for 10 - 20% of manholes	Sewer surcharging within 6 feet of ground surface for 5 - 10% of manholes	Sewer surcharging within 6 feet of ground surface for 1 - 5% of manholes	Sewer surcharging within 6 feet of ground surface for 0 - 1% of manholes	No surcharging within 6 feet of ground surface	First floor levels are typically 1 - 2 feet above ground surface, and basement floors are typically 8 - 10 feet below the first floor. A sewer surcharge of 6 feet below ground surface is highly likely to cause back-ups in homes with basement service.	Measurement methods will be via hydraulic models to quantify the hydraulic grade lines compared to ground surface elevations at manholes.
	Storm Events	→ / ↓	Most Severe Impact				Least Impact	No Impact		
			5	4	3	2	1	0	Assumptions	Base Case Score / Alternative Score / Total Score
Frequency	6 Month	Most Likely 5	25	20	15	10	5	0		10 / 0 / 10
	1 Year	4	20	16	12	8	4	0		12 / 4 / 8
	2 Year	3	15	12	9	6	3	0		9 / 3 / 6
	5 Year	2	10	8	6	4	2	0		8 / 4 / 4
	10 Year	Least Likely 1	5	4	3	2	1	0		5 / 3 / 2
	Not Possible	Not Possible 0	0	0	0	0	0	0	Average Total Score	6
									Corrected Score	10

Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.

Acronyms
BMPs - Best management practices

MSD
Louisville and Jefferson County Metropolitan Sewer District

Project #1			S_JT_JT_NB01A_03_C									
Value:	Asset Protection											
	Measure		Impact						Rationale	Measurement Method		
Performance Measures		Flood Damage	Homes or businesses are subject to severe structural damage	Homes or businesses are subject to minor to moderate structural damage	Flooding limits access to homes or businesses	Flooding limits access to recreational areas	Standing water on property, but access not affected and no damage expected	No standing water	Stormwater BMPs can reduce stormwater peaks and reduce extent of flooded areas, while sewer separation may increase localized stormwater peak flows and increase the flooding impacts of storms. Alternatively, purchase of highly impacted properties may be a cheaper way to reduce flood damage and create green space and buffer zones.	Drainage models where available, historic customer complaints from MSD Customer Information System, or historic observations of flood-prone areas combined with the expected relative impacts of sewer system modifications on storm water flows.		
		Basement Back-ups	Sewer surcharging within 6 feet of ground surface for more than 20% of manholes	Sewer surcharging within 6 feet of ground surface for 10 - 20% of manholes	Sewer surcharging within 6 feet of ground surface for 5 - 10% of manholes	Sewer surcharging within 6 feet of ground surface for 1 - 5% of manholes	Sewer surcharging within 6 feet of ground surface for 0 - 1% of manholes	No surcharging within 6 feet of ground surface	First floor levels are typically 1 - 2 feet above ground surface, and basement floors are typically 8 - 10 feet below the first floor. A sewer surcharge of 6 feet below ground surface is highly likely to cause back-ups in homes with basement service.	Measurement methods will be via hydraulic models to quantify the hydraulic grade lines compared to ground surface elevations at manholes.		
	Storm Events	→ / ↓	Most Severe Impact				Least Impact	No Impact				
			5	4	3	2	1	0	Assumptions	Base Case Score	Alternative Score	Total Score
Frequency	6 Month	Most Likely	5	25	20	15	10	5	0		5	0	5
	1 Year		4	20	16	12	8	4	0		4	4	0
	2 Year		3	15	12	9	6	3	0		9	3	6
	5 Year		2	10	8	6	4	2	0		8	6	2
	10 Year	Least Likely	1	5	4	3	2	1	0		4	3	1
	Not Possible	Not Possible	0	0	0	0	0	0	0	Average Score			3
Note - This value sheet calculates the average benefit over the recurrence intervals. A correction calculation is included in order to obtain a maximum score of 25.										Corrected Score			5

Acronyms
BMPs - Best management practices

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Jeffersontown Blending Elimination - Alternative 3

Value: Environmental Enhancement

Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
	Scoring												
Aquatic and Terestrial Habitat Protection	Elimination of habitat for rare or endangered species	Elimination of significant amount of common habitat	Elimination of minor amount of common habitat	Significant habitat impairment	Minor impairment to existing habitat	No impact on habitat	Minor enhancement of existing habitat	Significant enhancement of existing habitat	Creation of minor amount of common habitat	Creation of significant amount of common habitat	Creation of critical habitat for rare or endangered species	Plant elimination restores Chenoweth Run to intermittent stream habitat - its natural state that has been modified by continuous plant discharges	3
Aesthetics - Solids and Floatables	75%+ reduction in volume of flow with no S&F capture	50 - 75% of flow with no S&F removal	25 - 50% of flow with no S&F removal	10 - 25% of flow with no S&F removal	Reduces efficiency of existing S&F control device, 0 - 10% of flow with no S&F removal	No change in S&F removal	0 - 10% of discharged flow treated with positive S&F removal (screens)	10 - 25 % of discharged flow treated with positive S&F removal (screens)	25 - 50% of discharged flow treated with positive S&F removal (screens)	50 - 75% of discharged flow treated with positive S&F removal screens	75% + of discharged flow treated with positive S&F removal (screens)	No options will provide changes in S&F Removal	0
Aesthetics - Odor and Air Emissions	Create annoying odor source affecting > 20 customers often	Create annoying odor source affecting >20 customers often or >20 customers occasionally	Create annoying odor source affecting >20 customers occasionally	Create detectable odor source affecting > 50 customers often	Create detectable odor source affecting > 50 customers occasionally	No impact on odors	Eliminate detectable odor source affecting < 50 customers occasionally	Eliminate detectable odor source affecting > 50 customers often	Eliminate annoying odor source affecting >20 customers occasionally	Eliminate annoying odor source affecting <20 customers often, or >20 customers occasionally	Eliminate annoying odor source affecting >20 customers often	Odor will be eliminated from all overflows along Jtown interceptor being eliminated Treatment Plant odors eliminated. Potential for minor storage and pump station odors at new site.	2
Dissolved Oxygen Impacts	Reduction of in-stream DO by 2 mg/l + during critical flow periods	Continuous reduction of in-stream DO of 2 mg/l +	Continuous reduction of in-stream DO of 0 - 2 mg/l, possible reduction of in-stream DO 2 - 4 mg/l during critical conditions	Intermittent reduction of in stream DO 2 mg/l + possible during non-critical conditions, reduction of DO 0 - 2 mg/l during critical conditions	Intermittent reduction of in stream DO 0 - 2 mg/l possible during non-critical conditions	No DO impacts	Intermittent improvement of in-stream DO 0 - 2 mg/l	Intermittent improvement of in-stream DO 2 mg/l + intermittent critical condition improvements 0 - 2 mg/l	Continuous improvement of in-stream DO 0 - 2 mg/l, intermittent critical condition improvements 2-4 mg/l	Continuous improvement of in-stream DO 2 mg/l +	Continuous improvement of critical condition in stream DO 2 mg/l +	Plant effluent load elimination will provide improvement of in-stream DO 0 - 2 mg/l, but stream may dry up in summer	1
Downstream Impacts	75%+ increase in annual BOD or nutrient loads	50 - 75% increase in annual BOD or nutrient loads	25 - 50% increase in annual BOD or nutrient loads	10 - 25% increase in annual BOD or nutrient loads (CSO + runoff)	Potential 0 - 10 % increase in annual average BOD or nutrient loads (CSO + runoff)	No impact on BOD or nutrient loads (CSO + runoff)	0 - 10% reduction in annual BOD or nutrient loads (CSO + runoff)	10 - 25% reduction in annual BOD or nutrient loads (CSO + runoff)	25 - 50% reduction in annual BOD or nutrient loads (CSO + runoff)	50 - 75% reduction in annual BOD or nutrient loads (CSO + runoff)	75%+ reduction in annual BOD or nutrient loads (CSO + runoff)	Improved capture and treatment of SSOs will provide 0 - 10 % reduction in annual BOD or nutrient loads (SSO + runoff) downstream of Jefferson County	1
Stream Flow Impacts (Peak flows)	25% + increase in peak flows	10% - 25% increase in peak flows	Up to 10% increase in peak flows	Frequent increase in flow during critical conditions	Possible increase in average flow, or minor increase in high flow peaks	No impact on peak flows	Minor reduction in flows - no significant peak reduction	Minor reduction in peak flows under some conditions	Up to 10% reduction in peak flows	10% - 25% reduction in peak flows	25%+ reduction in peak flows	Flow peaks to be reduced due to diversion of plant effluent.	3
Stream Flow Impacts (DWF only)	25%+ decrease in flow during critical conditions.	10% - 25% decrease in flow during critical conditions	0-10% permanent decrease in flow during critical conditions	Frequent decrease in flow during critical conditions	Possible decrease in average flow	No impact on average or base stream flow	Intermittent increase in stream flow - not timed to critical conditions	Intermittent increase in stream flow - often improves critical conditions	0 - 10% permanent increase in stream flow during critical conditions	10 - 25 % permanent increase in stream flow during critical conditions	25%+ permanent increase in stream flow during critical conditions.	Base flow substantially reduced, but this restores stream to its natural condition - positive and negative impacts balance out.	0

Instructions: (1.) Score each alternative for each of the seven aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	10
Total Score (Default)	10

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Aquatic and Terestrial Habitat Protection	Wet weather projects may affect both aquatic and terrestrial habitat through changes in base flow, peak flow, water quality, tree cover, channel shape and characteristics etc. Predicitive models used to evaluate wet weather control measures have a limited ability to predict biological diversity changes, erosion impacts etc., so surrogate metrics must be used to estimate future positive and negative impacts.	Project definition may specifically address changes in channel shape and configuration, tree cover etc. Predictive models will address DO and other water quality impacts. Flow models will predict base flow and peak flow rates to allow estimates of changes in erosion and water surface area.
Aesthetics - Solids and Floatables	Most CSOs have some form of solids and floatables control baffles. Improvements in capture rates can be expected with screening or other advanced treatment options. Storm water retention, constructed wetlands, and other control systems may provide solids and floatables removal as well. While reduction in solids and floatables removal efficiency is not likely, penalty points will be assessed if this is possible with any alternative.	Current solids and floatables removal efficiency has been estimated for all sites with control technology. Improvements in removal efficiencies will be estimated for all alternatives that add screening or other advanced treatment technologies. Where treatment is proposed for storm water discharges removals will be estimated based on published removal data.
Aesthetics - Odor and Air Emissions	Odors and air emissions can be generated in storage systems, pump stations, force mains, and long flat sewers. Odors are generally characterized by both the intensity and the quality of the odor. Detectable and annoying are two common descriptors of different intensities and qualities of odors from sewage handling facilities.	Odor emissions from sewage handling facilities can be modeled for intensity, quality, and geographic spread. For planning purposes this level of evaluation is not common, and will not be done except in very rare circumstances. The potential for odor and air emissions will be estimated based on typical applications and model predictions for storage time, number of events, average flow velocities etc.
Dissolved Oxygen Impacts	Dissolved oxygen in streams is dependent on a variety of factors including BOD load, nutrient load, stream flow velocity, water temperature, etc.	For BGC the Water Quality Tool will be used to estimate the impacts of various loading conditions, flows, temperatures, etc. Probable impacts of individual projects will be estimated based on comparisons to the various stream condition scenarios.
Downstream Impacts	Downstream impacts refer to conditions in the Ohio River below Jefferson County. Nutrient loadings in the Ohio (not just Jefferson County) have been identified as the source of 30 - 45% of the total nutrient loads reaching the Gulf of Mexico. BOD is not likely to persist in the river long enough to get to the Gulf, but can have detrimental impacts far downriver.	Pollutant removals will be estimated based on reductions in annual average loads, since the downstream impacts are primarily long-term and cumulative.
Stream Flow Impacts (Peak flows)	Extremenly high peak flows as are often caused by urbanization of a watershed can erode the streambed, damage aquatic and terrestrial habitat, make water based recreation unsafe or impractical.	Predictive models can estimate flow peaking factors from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various storm events.
Stream Flow Impacts (DWF only)	Diversion of flows away from a stream due to abandonment of a treatment plant etc. can reduce base flows in a stream. Alternatively, other control measures such as groundwater pumping can increase base flows with beneficial results.	Predictive models can estimate flows from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various dry weather events.

Acronyms
BGC - Beargrass Creek
BOD - Biological oxygen demand
CSO - Combined sewer overflow
DO - Dissolved oxygen
DWF - Dry weather flow
mg/l - Milligram per liter
S&F - Solids and floatables

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Project #1	S_JT_JT_NB01A_03_C
Value:	Environmental Enhancement

Aspect	Scoring											Assumptions	Score Per Aspect
	-5	-4	-3	-2	-1	0	1	2	3	4	5		
Aquatic and Terrestrial Habitat Protection	Elimination of habitat for rare or endangered species	Elimination of significant amount of common habitat	Elimination of minor amount of common habitat	Significant habitat impairment	Minor impairment to existing habitat	No impact on habitat	Minor enhancement of existing habitat	Significant enhancement of existing habitat	Creation of minor amount of common habitat	Creation of significant amount of common habitat	Creation of critical habitat for rare or endangered species		
Aesthetics - Solids and Floatables	75%+ reduction in volume of flow with no S&F capture	50 - 75% of flow with no S&F removal	25 - 50% of flow with no S&F removal	10 - 25% of flow with no S&F removal	Reduces efficiency of existing S&F control device. 0 - 10% of flow with no S&F removal	No change in S&F removal	0 - 10% of discharged flow treated with positive S&F removal (screens)	10 - 25 % of discharged flow treated with positive S&F removal (screens)	25 - 50% of discharged flow treated with positive S&F removal (screens)	50 - 75% of discharged flow treated with positive S&F removal screens	75% + of discharged flow treated with positive S&F removal (screens)		
Aesthetics - Odor and Air Emissions	Create annoying odor source affecting > 20 customers often	Create annoying odor source affecting <20 customers often or >20 customers occasionally	Create annoying odor source affecting <20 customers occasionally	Create detectable odor source affecting > 50 customers often	Create detectable odor source affecting < 50 customers occasionally	No impact on odors	Eliminate detectable odor source affecting < 50 customers occasionally	Eliminate detectable odor source affecting > 50 customers often	Eliminate annoying odor source affecting <20 customers occasionally	Eliminate annoying odor source affecting <20 customers often, or >20 customers occasionally	Eliminate annoying odor source affecting >20 customers often		
Dissolved Oxygen Impacts	Reduction of in-stream DO by 2 mg/l + during critical flow periods	Continuous reduction of in-stream DO of 2 mg/l +	Continuous reduction of in-stream DO of 0 - 2 mg/l, possible reduction of in-stream DO 2 - 4 mg/l during critical conditions	Intermittent reduction of in stream DO 2 mg/l + possible during non-critical conditions, reduction of DO 0 - 2 mg/l during critical conditions	Intermittent reduction of in stream DO 0 - 2 mg/l possible during non-critical conditions	No DO impacts	Intermittent improvement of in-stream DO 0 - 2 mg/l	Intermittent improvement of in-stream DO 2 mg/l + , intermittent critical condition improvements 0 - 2 mg/l	Continuous improvement of in-stream DO 0 - 2 mg/l, intermittent critical condition improvements 2-4 mg/l	Continuous improvement of in-stream DO 2 mg/l +	Continuous improvement of critical condition in-stream DO 2 mg/l +		
Downstream Impacts	75%+ increase in annual BOD or nutrient loads	50 - 75% increase in annual BOD or nutrient loads	25 - 50% increase in annual BOD or nutrient loads	10 - 25% increase in annual BOD or nutrient loads (CSO + runoff)	Potential 0 - 10 % increase in annual average BOD or nutrient loads (CSO + runoff)	No impact on BOD or nutrient loads (CSO + runoff)	0 - 10% reduction in annual BOD or nutrient loads (CSO + runoff)	10 - 25% reduction in annual BOD or nutrient loads (CSO + runoff)	25 - 50% reduction in annual BOD or nutrient loads (CSO + runoff)	50 - 75% reduction in annual BOD or nutrient loads (CSO + runoff)	75%+ reduction in annual BOD or nutrient loads (CSO + runoff)		
Stream Flow Impacts (Peak flows)	25% + increase in peak flows	10% - 25% increase in peak flows	Up to 10% increase in peak flows	Frequent increase in flow during critical conditions	Possible increase in average flow, or minor increase in high flow peaks	No impact on peak flows	Minor reduction in flows - not significant peak reduction	Minor reduction in peak flows under some conditions	Up to 10% reduction in peak flows	10% - 25% reduction in peak flows	25%+ reduction in peak flows		
Stream Flow Impacts (DWF only)	25%+ decrease in flow during critical conditions	10% - 25% decrease in flow during critical conditions	0-10% permanent decrease in flow during critical conditions	Frequent decrease in flow during critical conditions	Possible decrease in average flow	No impact on average or base stream flow	Intermittent increase in stream flow - not limited to critical conditions	Intermittent increase in stream flow - often improves critical conditions	0 - 10% permanent increase in stream flow during critical conditions	10 - 25 % permanent increase in stream flow during critical conditions	25%+ permanent increase in stream flow during critical conditions		

Instructions: (1.) Score each alternative for each of the seven aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	4
Corrected Score	4

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Aquatic and Terrestrial Habitat Protection	Wet weather projects may affect both aquatic and terrestrial habitat through changes in base flow, peak flow, water quality, tree cover, channel shape and characteristics etc. Predictive models used to evaluate wet weather control measures have a limited ability to predict biological diversity changes, erosion impacts etc., so surrogate metrics must be used to estimate future positive and negative impacts.	Project definition may specifically address changes in channel shape and configuration, tree cover etc. Predictive models will address DO and other water quality impacts. Flow models will predict base flow and peak flow rates to allow estimates of changes in erosion and water surface area.
Aesthetics - Solids and Floatables	Most CSOs have some form of solids and floatables control baffles. Improvements in capture rates can be expected with screening or other advanced treatment options. Storm water retention, constructed wetlands, and other control systems may provide solids and floatables removal as well. While reduction in solids and floatables removal efficiency is not likely, penalty points will be assessed if this is possible with any alternative.	Current solids and floatables removal efficiency has been estimated for all sites with control technology. Improvements in removal efficiencies will be estimated for all alternatives that add screening or other advanced treatment technologies. Where treatment is proposed for storm water discharges removals will be estimated based on published removal data.
Aesthetics - Odor and Air Emissions	Odors and air emissions can be generated in storage systems, pump stations, force mains, and long flat sewers. Odors are generally characterized by both the intensity and the quality of the odor. Detectable and annoying are two common descriptors of different intensities and qualities of odors from sewage handling facilities.	Odor emissions from sewage handling facilities can be modeled for intensity, quality, and geographic spread. For planning purposes this level of evaluation is not common, and will not be done except in very rare circumstances. The potential for odor and air emissions will be estimated based on typical applications and model predictions for storage time, number of events, average flow velocities etc.
Dissolved Oxygen Impacts	Dissolved oxygen in streams is dependent on a variety of factors including BOD load, nutrient load, stream flow velocity, water temperature, etc.	For BGC the Water Quality Tool will be used to estimate the impacts of various loading conditions, flows, temperatures, etc. Probable impacts of individual projects will be estimated based on comparisons to the various stream condition scenarios.
Downstream Impacts	Downstream impacts refer to conditions in the Ohio River below Jefferson County. Nutrient loadings in the Ohio (not just Jefferson County) have been identified as the source of 30 - 45% of the total nutrient loads reaching the Gulf of Mexico. BOD is not likely to persist in the river long enough to get to the Gulf, but can have detrimental impacts far downriver.	Pollutant removals will be estimated based on reductions in annual average loads, since the downstream impacts are primarily long-term and cumulative.
Stream Flow Impacts (Peak flows)	Extrememly high peak flows as are often caused by urbanization of a watershed can erode the streambed, damage aquatic and terrestrial habitat, make water based recreation unsafe or impractical.	Predictive models can estimate flow peaking factors from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various storm events.
Stream Flow Impacts (DWF only)	Diversion of flows away from a stream due to abandonment of a treatment plant etc. can reduce base flows in a stream. Alternatively, other control measures such as groundwater pumping can increase base flows with beneficial results.	Predictive models can estimate flows from individual sources, and the Water Quality Tool has a hydraulic component to estimate stream flows during various dry weather events.

Acronyms
BGC - Beargrass Creek
BOD - Biological oxygen demand
CSO - Combined sewer overflow
DO - Dissolved oxygen
DWF - Dry weather flow
mg/l - Milligram per liter
S&F - Solids and floatables

MSD
Louisville and Jefferson County
Metropolitan Sewer District

Jeffersontown Blending Elimination Evaluation - Alternative 3

Value: Eco-Friendly Solutions

Aspect	Scoring -5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Non-Renewable Energy Consumption	Primary energy consumption is greater than secondary treatment	Primary energy consumption equal to 75 - 100% of secondary treatment	Primary energy consumption equal to 30 - 75% of secondary treatment	Primary energy consumption equal to 15 - 30% of secondary treatment	Primary energy consumption equal to 0 - 15% of secondary treatment	No energy consumption except for cleaning and maintenance	Cleaning and maintenance not needed, no primary consumption	NA	NA	NA	NA	Energy consumption needed for storage and pump station at the plant. 60% of flow pumped, secondary treatment still required end of pipe	-2
Use of Natural Systems	Constructed facilities permanently displace 5+ acres wetlands or 50% locally available green space	Constructed facilities permanently displace 3 - 5 acres wetlands or 25 - 50% locally available green space	Constructed facilities permanently displace 1 - 3 acres wetlands or 10 - 15% locally available green space	Constructed facilities permanently displace 0 - 1 acre wetlands or up to 10% locally available green space	Constructed facilities temporarily disrupt wetlands or green space	Alternative does not use or affect natural systems, wetlands, or green space	Alternative doesn not use natural systems, but enhances green space or wetland	Natural systems play a minor role in alternative function, up to 1 acre wetland or 10% additional green space created	Natural systems are significant part of alternative function, 1 - 3 acres of wetland created or 10 - 25% additional green space	Alternative fully uses natural systems, 3 - 5 acres of wetland created or 25-50% additional green space	Alternative results in multi-use natural system development, 5+ acres of wetland or 50% additional green space	Construction would temporarily disrupt green space, but potentially allow new green space to be created at the existing plant site	1
Multiple-Use Facilities	Constructed facilities permanently eliminate recreational opportunity	Constructed facilities significantly impair recreational opportunity	Constructed facilities moderately impair recreational opportunity	Constructed facilities have minor impacts on recreational opportunity	Construction temporarily impacts recreational opportunity	No impacts on recreational opportunities	Alternative improves access to existing recreational areas	Alternative has limited positive impact on recreation	Alternative significantly enhances recreational opportunities	Alternative increases recreational opportunities in area	Alternative results in multi-use facility	Portion of plant site could be converted to multi use recreation when treatment process is decommissioned.	2
Source Control of subwatershed pollutant loads	Pollutant loadings are increased by 50%	Pollutant loadings are increased by 30 - 50%	Pollutant loadings are increased by 10 - 30%	End of pipe pollutant loadings are increased by 0 - 10%	End of pipe pollutant loadings impacts are inconsistent, but likely higher	End of pipe pollutant loadings are unchanged	Diversion transfers more than 25% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 50% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 75% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 90% of pollutant loadings to less sensitive receiving water	Diversion transfers more than 100% of pollutant loadings to less sensitive receiving water	59% of pollutant loads transferred to Ohio River, a less sensitive watershed.	2
Non-Obtrusive Construction Techniques	Permanent loss of green space or sensitive area disruption	Main thoroughfare closures, sensitive area temporary disruptions	Widespread dust and noise, blasting, secondary street closures	Localized dust, noise and local street closures	Minor dust and noise, traffic lane closures	No construction impacts	NA	NA	NA	NA	NA	Construction would cause localized dust and noise with street closures	-2
Consistent Land Use	Intrusive or nuisance facilities inconsistent with neighborhood or land use.	Facilities inconsistent with neighborhood or land use.	Facility characteristics mitigated to reduce impact on neighborhood	Facilities have significant impact on development density or land use	Facility has minor impact on development density or land use	No impact on land use or no above ground facilities	Alternative mitigates existing compatibility problem	Alternative removes facility inconsistent with neighborhood	Alternative removes nuisance facility from neighborhood	Alternative enhances property values in neighborhood	Alternative provides enhancements that significantly improve neighborhood	Facilities on plant site will be reduced to a pump station and storage facility, eliminating the existing incompatable use of a treatment facility.	2
Impermeable Surfaces	5 acres + of impermeable surfaces are added	3 - 5 acres of impermeable surfaces are added	1 - 3 acres of impermeable surfaces are added	up to 1 acre of impermeable surfaces are added	Minor increase in impermeable surfaces added	No change in impermeable surface	Minor reduction in impermeable surfaces	Up to 1 acre of impermeable surfaces removed	1 - 2 acres of impermeable surfaces removed	3 - 5 acres of impermeable surfaces removed	More than 5 acres of impermeable surfaces removed	No change in impermeable surface in all options	0
LEEDS Performance	NA	NA	NA	NA	NA	LEEDS not applicable or LEEDS score <10	LEEDS Score 10 - 25	LEEDS Certified	LEEDS Silver	LEEDS Gold	LEEDS Platinum	LEEDS not applicable or LEEDS score < 10	0

Instructions: (1.) Score each alternative for each of the eight aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.

Total Raw Score Calculated	**3**
Total Score (Default)	**3**

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

Aspect	Rationale	Measurement Method
Non-Renewable Energy Consumption	Eco-friendly solutions would be expected to be low consumers of non-renewable energy. Benchmarking energy consumption against conventional secondary treatment provides penalty points for high energy consuming alternatives.	Evaluation of primary energy consumed per MG of flow treated, compared to the energy consumed at the WCWTP per MG treated.
Use of Natural Systems	Natural systems replace concrete and steel construction with wet bottom storage lagoons, constructed bioswales, rain gardens etc. that increase green space of various kinds. Options that reduce wetlands and green space get penalty points.	Acres of wetlands and other types of green space created or eliminated. Also includes subjective evaluation of the "basis" of the alternative - "green" or "grey".
Multiple-Use Facilities	Eco-friendly solutions create recreational opportunities for both water-based and riparian recreation. Boating, canoing, kayaking, fishing, wading, swimming etc. would be direct water-based recreation. Bird watching, hiking, biking, picnicing, camping etc. would be considered related riparian recreation.	Subjective evaluation of changes predicted in the aquatic or riparian environment as a result of better water quality, increased base flow or decreased flow peaks, increased tree cover or vegitated riparian areas etc.
Source Control of subwatershed pollutant loads	Controlling pollutant loads at the source through behavior modification, product replacements or stormwater management BMPs that capture pollutants thereby avoiding end of pipe treatment requirements	Modeled land-side pollutant loading reductions as calculated by the BGC Water Quality Tool or by comparision to literature values or pilot program measurements.
Non-Obtrusive Construction Techniques	Probable construction impacts on traffic, noise and dust are all measures of the friendliness of an alternative. Construction impacts get penalty points for creating nuisance conditions.	Subjective evaluation of probable construction impacts based on the type of construction envisioned for the alternative.
Consistent Land Use	Alternative configuration can either enhance or detract from the surrounding property. For example, an extremely unfriendly pump station can be noisy, smelly, and ugly. The same pump station can be "disguised" as a residence that fits right in with the neighborhood. If a larger parcel of land is available, a pump station can be hidden from view by landscaping, and a community garden or other green space added to enhance the neighborhood.	At the planning level, projects can be defined to avoid negative impacts on the surrounding properties. Depending on the availability of land, enhancements are possible. This aspect encourages project definition and budgets to enhance, not detract.
Impermeable Surfaces	Adding impermeable surfaces increases total runoff volume, peak runoff flowrates, and the total transport of any pollutant deposited on the surface from any source. Conversely, permeable surfaces can reduce flow volume and peaks, and provide filtering mechanisms for pollutants.	Acres of permeable surfaces created or eliminated.
LEEDS Performance	LEED standards are applicable to alternatives that include above-ground building structures.	Application of LEED evaluation points.

Acronyms
BGC - Beargrass Creek
LEEDS - Leadership in Energy and Environmental Design
MG - million gallons
WCWTP - West County Wastewater Treatment Plant

MSD
Louisville and Jefferson County Metropolitan Sewer District

Project #1	S_JT_JT_NB01A_03_C												
Value:	Eco-Friendly Solutions												
	Scoring												
Aspect	-5	-4	-3	-2	-1	0	1	2	3	4	5	Assumptions	Score Per Aspect
Non-Renewable Energy Consumption	Primary energy consumption is greater than secondary treatment	Primary energy consumption equal to 75 - 100% of secondary treatment	Primary energy consumption equal to 30 - 75% of secondary treatment	Primary energy consumption equal to 15 - 30% of secondary treatment	Primary energy consumption equal to 0 - 15% of secondary treatment	No energy consumption except for cleaning and maintenance	Cleaning and maintenance not needed, no primary consumption	NA	NA	NA	NA	Energy consumption due to increase in pumping	-1
Use of Natural Systems	Constructed facilities permanently displace 5+ acres wetlands or 50% locally available green space	Constructed facilities permanently displace 3 - 5 acres wetlands or 25 - 50% locally available green space	Constructed facilities permanently displace 1 - 3 acres wetlands or 10 - 15% locally available green space	Constructed facilities permanently displace 0 - 1 acre wetlands or up to 10% locally available green space	Constructed facilities temporarily disrupt wetlands or green space	Alternative does not use or affect natural systems, wetlands, or green space	Alternative doesn not use natural systems, but enhances green space or wetland	Natural systems play a minor role in alternative function, up to 1 acre wetland or 10% additional green space created	Natural systems are significant part of alternative function, 1 - 3 acres of wetland created or 10 - 25% additional green space	Alternative fully uses natural systems, 3 - 5 acres of wetland created or 25-50% additional green space	Alternative results in multi-use natural system development, 5+ acres of wetland or 50% additional green space	Force Main construction temporarily disrupts green space	-1
Multiple-Use Facilities	Constructed facilities permanently eliminate recreational opportunity	Constructed facilities significantly impare recreational opportunity	Constructed facilities moderately impare recreational opportunity	Constructed facilities have minor impacts on recreational opportunity	Construction temporarily impacts recreational opportunity	No impacts on recreational opportunities	Alternative improves access to existing recreational areas	Alternative has limited positive impact on recreation	Alternative significantly enhances recreational opportunities	Alternative increases recreational opportunities in area	Alternative results in multi-use facility	No impact	0
Source Control of subwatershed pollutant loads	Pollutant loadings are increased by 50%	Pollutant loadings are increased by 30 - 50%	Pollutant loadings are increased by 10 - 30%	End of pipe pollutant loadings are increased by 0 - 10%	End of pipe pollutant loadings impacts are inconsistent, but likely higher	End of pipe pollutant loadings are unchanged	Pollutant loadings impacts are inconsistent, but likely lower	Source control reduces pollutant loadings by 0 - 10%	Source control reduces pollutant loadings by 10 - 30%	Source control reduces pollutant loadings by 30 - 50%	Source control reduces pollutant loadings by more than 50%	End of pipe pollutant loadings impacts are inconsistent, but likely higher in all options	-1
Non-Obtrusive Construction Techniques	Permanent loss of green space or sensitive area disruption	Main thoroughfare closures, sensitive area temporary disruptions	Widespread dust and noise, blasting, secondary street closures	Localized dust, noise and local street closures	Minor dust and noise, traffic lane closures	No construction impacts	NA	NA	NA	NA	NA	Force main construction would result in minor dust and lane closures	-1
Consistent Land Use	Intrusive or nuisance facilities inconsistent with neighborhood or land use.	Facilities inconsistent with neighborhood or land use.	Facility characteristics mitigated to reduce impact on neighborhood	Facilities have significant impact on development density or land use	Facility has minor impact on development density or land use	No impact on land use or no above ground facilities	Alternative mitigates existing compatibility problem	Alternative removes facility inconsistent with neighborhood	Alternative removes nuisance facility from neighborhood	Alternative enhances property values in neighborhood	Alternative provides enhancements that significantly improve neighborhood	No impact on land use or above ground facilities in all options	0
Impermeable Surfaces	5 acres+ of impermeable surfaces are added	3 - 5 acres of impermeable surfaces are added	1 - 3 acres of impermeable surfaces are added	up to 1 acre of impermeable surfaces are added	Minor increase in impermeable surfaces added	No change in impermeable surface	Minor reduction in impermeable surfaces	Up to 1 acre of impermeable surfaces removed	1 - 3 acres of impermeable surfaces removed	3 - 5 acres of impermeable surfaces removed	More than 5 acres of impermeable surfaces removed	No change in impermeable surface in all options	0
LEEDS Performance	NA	NA	NA	NA	NA	LEEDS not applicable or LEEDS score <10	LEEDS Score 10 - 25	LEEDS Certified	LEEDS Silver	LEEDS Gold	LEEDS Platinum	LEEDS not applicable or LEEDS score < 10 in all options	0
Instructions: (1.) Score each alternative for each of the eight aspects of the value. Scores can be positive or negative, depending on the impact of the alternative on the value. (2.) Total the scores for each aspect to get the total score for this alternative in this value. (3.) Shaded area represents "fatal flaw". Alternatives that score in this area should not be proposed.										**Total Raw Score Calculated**			-4
										Corrected Score			-4

Aspect	Rationale	Measurement Method
Non-Renewable Energy Consumption	Eco-friendly solutions would be expected to be low consumers of non-renewable energy. Benchmarking energy consumption against conventional secondary treatment provides penalty points for high energy consuming alternatives.	Evaluation of primary energy consumed per MG of flow treated, compared to the energy consumed at the WCWTP per MG treated.
Use of Natural Systems	Natural systems replace concrete and steel construction with wet bottom storage lagoons, constructed bioswales, rain gardens etc. that increase green space of various kinds. Options that reduce wetlands and green space get penalty points.	Acres of wetlands and other types of green space created or eliminated. Also includes subjective evaluation of the "basis" of the alternative - "green" or "grey".
Multiple-Use Facilities	Eco-friendly solutions create recreational opportunities for both water-based and riparian recreation. Boating, canoing, kayaking, fishing, wading, swimming etc. would be direct water-based recreation. Bird watching, hiking, biking, picnicing, camping etc. would be considered related riparian recreation.	Subjective evaluation of changes predicted in the aquatic or riparian environment as a result of better water quality, increased base flow or decreased flow peaks, increased tree cover or vegitated riparian areas etc.
Source Control of subwatershed pollutant loads	Controlling pollutant loads at the source through behavior modification, product replacements or stormwater management BMPs that capture pollutants thereby avoiding end of pipe treatment requirements	Modeled land-side pollutant loading reductions as calculated by the BGC Water Quality Tool or by comparision to literature values or pilot program measurements.
Non-Obtrusive Construction Techniques	Probable construction impacts on traffic, noise and dust are all measures of the friendliness of an alternative. Construction impacts get penalty points for creating nuisance conditions.	Subjective evaluation of probable construction impacts based on the type of construction envisioned for the alternative.
Consistent Land Use	Alternative configuration can either enhance or detract from the surrounding property. For example, an extremely unfriendly pump station can be noisy, smelly, and ugly. The same pump station can be "disguised" as a residence that fits right in with the neighborhood. If a larger parcel of land is available, a pump station can be hidden from view by landscaping, and a community garden or other green space added to enhance the neighborhood.	At the planning level, projects can be defined to avoid negative impacts on the surrounding properties. Depending on the availability of land, enhancements are possible. This aspect encourages project definition and budgets to enhance, not detract.
Impermeable Surfaces	Adding impermeable surfaces increases total runoff volume, peak runoff flowrates, and the total transport of any pollutant deposited on the surface from any source. Conversely, permeable surfaces can reduce flow volume and peaks, and provide filtering mechanisms for pollutants.	Acres of permeable surfaces created or eliminated.
LEEDS Performance	LEED standards are applicable to alternatives that include above-ground building structures.	Application of LEED evaluation points.

Note: The total score calculated may be more than 25. In the instances where this might occur, a default maximum score of 25 will be calculated.

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BGC - Beargrass Creek
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MG - million gallons
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