



www.bayerbecker.com

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planners
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January 30, 2004

Ms. Kathy Dorman
Stormwater Engineer
City of Mason
Engineering and Building Department
6000 Mason-Montgomery Road
Mason, OH 45040

**Re: Hoff Run Watershed Study
Engineering Design Services Proposal**

Dear Kathy,

Bayer Becker is pleased to present our proposal for the Hoff Run Watershed Study. With four local offices and more than 90 employees, Bayer Becker has the time, resources, experience and personnel to complete the Hoff Run Watershed Study.

We have an excellent working relationship with the FEMA, ODNR, the Corps of Engineers and the Ohio EPA and the City of Mason. We look forward to working with everyone again to create another successful project for the City of Mason.

Consultant Qualifications & Proposal Information

1. *List of projects under design and completed.*

Bayer Becker's project personnel are currently designing the Industrial Road Improvements project for Boone County, Kentucky and the Western Row & Snider Roads Intersection Improvements for the City of Mason.

Most recently, we completed a watershed study for Monroe Crossings located in Butler County, Ohio. The study was challenging because the original HEC-2 models were lost by FEMA. Bayer Becker had to recreate the flood study for Coldwater Creek and Gregory Creek. We completed the HEC-HMS and HEC-RAS study and are awaiting our CLOMR from FEMA.

Bayer Becker is also experienced in the design of stormwater detention basins. In particular, we have exceptional experience in the design of regional detention basins. Two recent examples of our work are found in the City of Fairfield. Bayer Becker designed two Class I dams, named A and C for the City. Each dam was approximately 30' in height. The analysis required for each is similar to that which is required for the Hoff Run Watershed Study.

700 Nilles Road
Fairfield, OH 45014

14 East Eighth Street
Covington, KY 41011

6900 Tylersville Road
Mason, OH 45040

777 Eads Pkwy, Suite C
Lawrenceburg, IN 47025

Dam A was situated in a well-established neighborhood where the residents were sensitive to the removal of the mature trees behind their homes. The alternative solutions presented will have to keep this sensitive issue in mind.

Dam C required over a million cubic yards of excavation and is now the home of a 9-hole golf course and aquatic facility. The City is more than pleased with this wonderful combination of form and function in a regional detention basin. It is quite possible that the alternative solutions could incorporate a park-like atmosphere.

Detailed project descriptions of the Dam A and Dam C projects are provided in Attachment A – Project Experience, along with a list of stormwater projects recently completed by Bayer Becker and client reference contact information.

2. Detailed resumes of personnel

Mr. Ray Schork, P.E. will serve as the project manager assigned to the Hoff Run Watershed Study:

Mr. Ray Schork, P.E.
Project Manager
rayschork@bayerbecker.com

Bayer Becker proposes the following team to complete the Hoff Run Watershed Study for the City of Mason:

- **Etta Reed, P.E. – Principal In Charge**
- **Ray Schork, P.E. – Project Manager**
- *John DeVerne, P.E. – Project Engineer*
- *Dave Siegert, P.E. – Project Engineer*
- *Jeff Lambert, P.L.S. – Project Surveyor*

Resumes for the project team are provided in Attachment B – Resumes.

3. Projected workload over the next 90 calendar days

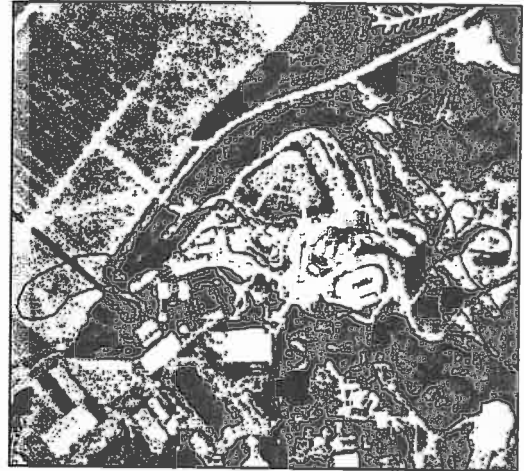
Currently, the workload of Bayer Becker's project office over the next 90 calendar days is expected to be approximately 80% (10,650 hours) on current projects, with 20% (2,662 hours) available time.

Bayer Becker has approximately 26 staff located in the project office, and more than 90 total staff located in four local Tri-State regional offices.

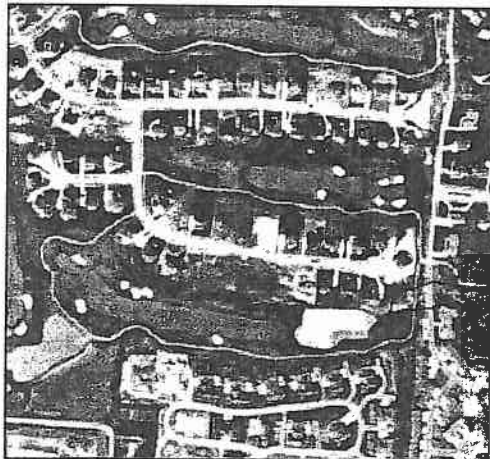
4. *Project Analysis, Possible Design Concepts and Outline of scope*

We are pleased to present our proposal for engineering services for the Hoff Run Watershed Study. We have the resources, experience, time and personnel to complete a project of this nature. We are accustomed to preparing watershed studies with our site development projects and we look forward to working with the City again on this project.

It is understood that increased flow and excessive erosion west of I-71 has initiated this study. In a telephone interview with Jeff Gramke, Manager of Engineering and Construction for Paramount's Kings Island (PKI), we understood more of the dynamic nature of the flooding issues in Section II of this watershed. Jeff commented that since the installation of the 60" concrete pipe under the parking lot, they have had no problems until the development west of I-71 occurred. Jeff recalled one minor and two major flooding events during which cars in the parking lot were swept downstream. These events may have been due to the installation of a 60" pipe at the Top Gun ride, which was sized by matching the size of the pipe under the parking lot. To help alleviate these problems, PKI hired Stephen Schaffer and Associates to perform a flood study and a gabion wall design for a portion of the creek. PKI has also installed other structures downstream, such as the 550' box culvert under the Son of Beast ride that is much larger than the upstream 60" pipe. We discussed some options to control the water, such as an impact basin at the outlet of the 60" pipe or maybe constructing an earth dam just upstream of the Top Gun ride. Jeff commented that each of these options is feasible. However, to control the flow rate leaving the 60" pipe under the parking lot some sort of detention or retention facility must be constructed west of I-71.



Erosion and flooding at Kings Island are a problem.



Study to begin at Eagle View Drive.

We have examined the RFP and have delineated Section II of the study area onto the Warren County orthophoto, as shown above. Currently the study area is planned to begin at Eagle View Drive. In reality, the study area must extend to the west, to Fairway Drive or the top of the drainage area in order to be able to find suitable areas for retention or detention. The extension of the study area to the west is included in our fee.

4. *Project Analysis, Possible Design Concepts and Outline of scope (Cont.)*

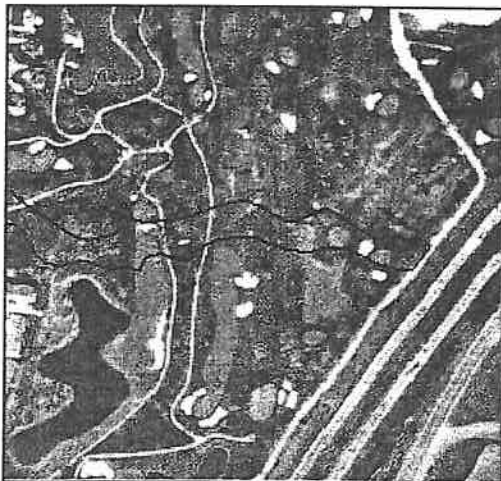
In order to prepare this study we propose that an aerial map be prepared at 1' contour intervals for the study area. Outside of this area, the Warren County topographic map and orthophoto will be used to delineate drainage areas and to determine land uses. The aerial map in the study area will exclude planimetric features, which are the most expensive part of an aerial topographic map. Hence, only the digital terrain model (DTM) will be prepared. The Warren County Orthophoto will be used to delineate physical features such as homes. Areas obscured in the aerial map and drainage features such as culverts will be shot in the field by our survey crews. The aerial topographic map will be much more accurate and economical than creating the contours from a few cross sections. Cross sections will be used to verify the accuracy of the aerial topographic map.



Study should extend to Fairway Drive.

We will delineate the drainage areas, determine time of concentrations and begin to determine land uses to develop the Curve Numbers for Bulletin 71. We shall use Section 8 for rainfall amounts for a 24-hour storm unless otherwise directed by the City. Using HEC-HMS we shall build the hydrologic model of the watershed. The model shall be calibrated to historical storm events, including the July 17-18, 2001 storm, based on interviews with City staff and members of the surrounding community.

Once the flow rates have been determined for the various year storms we will begin to develop the Hydraulic model using HEC-RAS. We will combine the field information with our aerial topographic map. Cross sections will be extracted from the surface model in Eagle Point and imported into our HEC-RAS model. At this point, we will begin to look at the flooding areas and to work with the City on solutions to the flooding problems. One possible solution is a detention basin on the golf course property as shown in the photo to the left.



A detention basin on the golf course is a possible solution.

4. ***Project Analysis, Possible Design Concepts and Outline of scope (Cont.)***

Our fee shall include the following (Section I or Section I and Section II as appropriate):

- Aerial topographic map (DTM only) of the study area as defined above. For estimating purposes approximately 500' each side of the creek centerline was assumed.
- Field survey of drainage structures, obscured aerial topography and minimum openings in the study area as defined above. Field survey shall be tied to FEMA's benchmark and checked with the City's geodetic control.
- Extending the study area to Fairway Drive or the top of the watershed.
- Pre-study meeting with the City.
- Submittal to FEMA to gather existing HEC-2 models.
- Interviews with residents and the City.
- Monthly meetings with the City on the progress of the project.
- HEC-HMS model of the watershed area and HEC-RAS model of the study area.
- Summary report (10 copies).
- A map delineating the 100-year flood boundary.
- A map showing hydrologic information.
- Two effective design solutions.
- Profile plots.
- Three public input meetings.

Our fee does not include the following, which can be provided for an additional fee (Section I or Section I and Section II as appropriate):

- Courthouse research for property owners, deeds, plats, etc. (City and Warren County GIS information shall be used).
- Field survey of property markers.
- Field location of flood boundaries or results from the study.
- Submittal and information request fees.
- Plans for alternative solutions.
- Plats, legal descriptions, easements, etc.
- LOMR (as built) submittal to FEMA.

5. *Time Schedule*

<i>TASK</i>	<i>FEBRUARY</i>				<i>MARCH</i>				<i>APRIL</i>				<i>MAY</i>			
Kickoff Meeting			X													
Complete Aerial Topo Map			X	X												
Fieldwork				X	X											
Prepare Basemap					X	X										
Hydrologic Study (HEC-HMS)							X	X								
Hydrologic Water Surface Profile Study (HEC-RAS)									X	X	X					
Prepare and report findings to City of Mason												X				
Finalize Design Options													X	X		

6. Fees

Task (Section I)	Fee
Aerial Topographic Map (DTM Only)	\$7,200
Field Survey	\$7,200
Preliminary Investigations/Data Collection	\$3,600
Floodplain Delineation (HEC-HMS & HEC-RAS)	\$10,800
Alternative Solutions	\$3,600
Report	\$3,600
Project Management/Progress Meetings	\$1000
Public Input Meetings (3)	\$3,000
Total Section I	\$40,000
Task (Section I and II)	Fee
Aerial Topographic Map (DTM Only)	\$13,800
Field Survey	\$13,800
Preliminary Investigations/Data Collection	\$4,600
Floodplain Delineation (HEC-HMS & HEC-RAS)	\$25,600
Alternative Solutions	\$3,600
Report	\$5,600
Project Management/Progress Meetings	\$1,000
Public Input Meetings (3)	\$3,000
Total Section I and II	\$71,000

January 30, 2004
Ms. Kathy Dorman
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Thank you for the opportunity to propose on the Hoff Run Watershed Study. We look forward to continuing our relationship with the City of Mason. As always, if you have any questions, please feel free to contact me.

Sincerely,

Etta M. Reed, P.E.
Principal