



VANDERBURGH COUNTY SURVEYOR'S

2006 ANNUAL REPORT

REGULATED DRAINS

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SURVEYOR'S 2006 ANNUAL REPORT

REGULATED DRAINS

Introduction

IC 36-9-27, Indiana's drainage statute, requires the County Surveyor to file an annual report with the County Drainage Board (the Board) declaring the condition of the various regulated drains and outlining their maintenance and repair needs.

General Condition of Regulated Drains

The overall condition of regulated drains in Vanderburgh County, Indiana, is very good. The Vanderburgh County Surveyor continues to work toward open, grassy waterways with three to one (3:1) embankment side slopes as the goal. Where the County Surveyor cannot attain the goal due to lack of funds or other restrictions, the second priority is maximum attainable waterway openings with banks stabilized by natural vegetation and other proven materials and methods.

Urban Development Considerations

The County Surveyor acknowledges the need for piping and otherwise altering, enclosing, or bridging regulated drains to promote urban land development. When reconstructing a regulated drain with pipes, the Surveyor recommends a design capable of conveying the storm water run-off expected from a storm with a return frequency of one hundred years and, generally, referred to as the "100-year storm." Maximizing the capacity of pipes and culverts minimizes the potential for backwater flooding of valuable land improvements especially in the urbanized areas of the county.

Bridge Openings

Indiana Code 36-9-27-71 requires new bridges and reconstructed bridges to meet structural and hydraulic requirements that will permit a

regulated drain to function properly. Observance of this statutory requirement is critical, and the adverse effects of not meeting the structural and hydraulic requirements of proper drain function include increased flood hazard and dramatic boosts in floodplain elevations upstream of inadequately sized culverts and bridges.

The County Surveyor continues to work with the Vanderburgh County Engineer and the Evansville City Engineer to attain bridge openings sufficient to pass the 100-year storm flow (Q100) without obstructing regulated drains. To achieve Q100 through a bridge opening, the lowest beam elevation under the deck must be set above the Q100 flow elevation, and embankments adjacent to the bridge must be laid back and remain stable to provide a sufficient waterway opening.

Where the Q-100 parameters mentioned above are not attained within the ditch channel, the floodway extends beyond the limits of the ditch banks, and the out-of-bank flow must be accommodated by an unobstructed floodway that runs parallel with the ditch. Unfortunately, Vanderburgh County has numerous floodways that exceed the width of existing regulated drains. In agricultural areas this condition results in crop loss. In urban areas the condition limits usable land and endangers existing improvements.

Single-Span Bridges/Single-Barrel Pipes

The County Surveyor continues to recommend only single-span bridges and single-barrel pipes installed in Vanderburgh County's regulated drains to maximize available waterway openings and to minimize possible obstructions caused when debris collects on intermediate bridge piers or pipe diaphragms generally located in mid-stream where the velocity and carrying capacity should be at their maximum.

Serious flood incidents result when floodwater is forced out of the channel causing debris to accumulate on bridge piers, low beams, utilities

suspended below bridges, double pipe diaphragms, and undersized pipes. Therefore, the County Surveyor recommends bridge designs, pipe diameters, and waterway openings capable of conveying Q100, or greater, through the county's system of regulated drains. Where construction and reconstruction achieves the primary goal, studies by government agencies and consulting engineers may show the floodway contained within ditch banks, or just a minimum distance immediately outside the banks, with minimum land use restrictions to owners and developers.

FEMA's Proposed New Floodplain Maps

In 2002, Federal Emergency Management Agency (FEMA) attempted to impose new floodplain maps on Vanderburgh County. The base flood elevations set by FEMA's proposed maps are based on information not current with existing conditions especially within the area bounded on the west by Stockwell Road, on the east by the Warrick County line, on the south by Lincoln Avenue, and on the north by Morgan Avenue.

Unfortunately, FEMA's contractor used antiquated data and did not confirm certain existing structures and conditions in the field. As a result, the maps proposed by FEMA in 2002 showed floodplain elevations grossly expanded over about five (5) square miles of the most valuable development land in Vanderburgh County, potentially restricting development of existing and planned commercial subdivision lots and unnecessarily escalating flood insurance premiums.

In 2003, Vanderburgh County initially hired two consultants and asked the County Surveyor to provide a licensed chief deputy and field crew to examine the FEMA floodplain study. The joint effort completed its models and published findings in 2003. The findings, which indicated discrepancies with FEMA's study, are available from the Vanderburgh County Building Commissioner.

The County's effort also discovered specific bridges, culverts, and other structures that appear not to meet the structural and hydraulic requirements for the proper operation of regulated drains. Apparent insufficient structures discovered included the following:

- The 159-inch by 117-inch pipe arch previously located in Harper Ditch west of Stockwell Road
- The twin 8-foot diameter culverts carrying Harper Ditch under Norfolk Southern Railroad west of Stockwell Road and on Wesselman Woods property
- The culverts carrying Harper Ditch under Stockwell Road south of the Rudolph batch plant entrance

The Vanderburgh County Commissioners addressed the deficiencies in Harper Ditch at Stockwell Road by letting a contract to Ragle, Inc. to install a new culvert structure designed by American Consulting Engineers. At this time, the following improvements have been completed:

- The 159-inch by 117-inch pipe arch west of Stockwell Road has been removed and replaced with an open channel.
- A new twin pipe structure has been punched under Norfolk Southern and Stockwell Road to bypass the circuitous and restricted former route.
- The twin 8-foot diameter metal culverts under Norfolk Southern west of Stockwell Road remain in place as back-up routing and to convey run-off from Wesselman Woods and Rudolph's concrete plant effluent.

At this time, the improvements are working satisfactorily with the exception of the twin metal pipes under Norfolk Southern west of Stockwell Road, which frequently become partially blocked with fallen limbs and forest litter that washes out of Wesselman Woods.

Additionally, the south embankment of the old channel through the northeast corner of Wesselman Woods approaching the twin pipes is collapsing due to unconsolidated and unprotected fill posing a threat of obstruction. Currently, Blair Borries, Canoe Evansville Program Coordinator, and Alice Rademacher, Wesselman Woods Director, are applying for a grant to stabilize the embankment of Harper Ditch within the nature preserve. The County Surveyor will be assisting the efforts and may be asking the Drainage Board to participate in supplementary funding of the project if conditions deteriorate into an emergency situation since the old channel still serves as an integral part of the outlet routing for the entire East Side Urban South Half (ESU-S½).

Continuing Floodplain Study

The County engaged Morley and Associates, Inc. to continue and expand its study of the East Side Urban Watershed in an attempt to get FEMA to revise its proposed floodplain mapping and to publish base flood elevations lower than those FEMA wishes to impose. At this time, Morley has completed an extensive study and the Indiana Department of Natural Resources (IDNR), Division of Water, has approved the study's flow rates. However, IDNR also must send an approval letter that constitutes the official response regarding base flood elevations for the entire studied area. The approval letter will allow Morley to forward the study and its conclusions to FEMA for final approval.

While Morley's study may not lower the base flood elevations as much as the County Surveyor had initially anticipated, the study will afford the Drainage Board a more clear indication of structures within the East Side Urban Drain that still represent obstruction to a more full conveyance of

storm water. Such potential obstructions include, but may not necessarily be limited to the following structures:

- The culvert carrying Hirsch Ditch (Old Wabash and Erie Canal) under Green River Road
- A series of private drive, railroad, and public road culverts in Hirsch Ditch between Green River Road and Burkhardt Road
- The state highway bridge carrying Morgan Avenue over Crawford Brandeis Ditch ½ mile west of Burkhardt Road
- The bridge carrying Norfolk Southern rail line over Crawford Brandeis Ditch ½ mile west of Burkhardt Road

The replacement of all structures identified as restrictions in Morley's study may prove nearly impossible with regard to available funding and the unlikely cooperation of Norfolk Southern Railways and, to a lesser extent, Indiana Department of Transportation (INDOT).

Other non-structural obstructions may exist that remain unidentified by the Morley study. Non-structural obstructions such as sediment accumulation, slumped embankments, and debris jams may be less expensive to remove and may result in significantly reducing storm water flow restrictions through the East Side Urban Drain.

In 2006, the County Surveyor recommends securing engineering services to identify within East Side Urban's outlet channel through the Old Wabash and Erie Canal, non-structural impediments, adverse channel conditions, and embankment failures. In addition, the County Surveyor recommends establishing a long-range plan of public works that appropriately addresses the identified problems in a sequence that matches the limited availability of funds. Furthermore, the study should include cost estimates for the replacement of structural impediments identified in the Morley study.

Phase II Storm Water Rules

New federal and state storm water pollution prevention rules have modified methods recommended by the County Surveyor for customary drain maintenance and repair. The County Surveyor now recommends greater use of grass filter strips, riparian corridors, native vegetation, erosion control fabrics, natural habitat improvement, wetland protection, and other management practices required to achieve compliance with newly mandated state and federal rules.

Beginning in 2003, the County Surveyor included requirements for revegetating specific areas of a project where work disturbs, destroys, or otherwise diminishes beneficial groundcover. Ditch maintenance specifications will reflect methods to adequately clear, clean, and maintain regulated drains with less disturbance or destruction of beneficial, natural groundcover.

Long-Term Water Quality Improvement Projects

In 2006, the County Surveyor encourages the Drainage Board to approve long-term projects to improve water quality, promote resource conservation, and develop natural habitat through use of practical, proven, and appropriate management practices. Regulated drains in greatest need of long-term improvement projects are those drains more severely impacted by rapid and sustained urban development and generally located on the east side of U.S. 41 in Knight and Center townships.

To initiate long-term improvement projects, the County Surveyor recommends the Drainage Board employ engineering consultants as special contract deputies to work with the County Surveyor to study and evaluate the need to enhance the capability of urban drains to convey storm water, while incorporating best management practices that appropriately treat storm water

run-off from urban land use areas. The drains for which studies are needed immediately include:

- East Side Urban South Half
- Harper Ditch
- That part of the Old Wabash and Erie Canal that outlets ESU-S¹/₂ and Harper
- Aiken Ditch
- Kolb Ditch
- Eagle Slough
- Sonntag Stevens Ditch
- Keil Ditch
- Pond Flat Main

In the case of Aiken Ditch and Eagle Slough, an immediate need exists to address developing wetlands and beaver dams that are obstructing flow from levee pump station floodgates.

Additional engineering proposals are needed to develop plans for specific repairs to Aiken Ditch south of I-164 and Pond Flat Main east of Princeton Road.

More detailed descriptions of the conditions requiring study, evaluation, and engineered plans are included in the section of this report titled “**Regulated Drains Requiring Special Maintenance, Repairs, or Reconstruction.**” (See Appendix.) Requests for Proposals and Project Descriptions for the drains needing consulting services will be submitted with the annual ditch specifications March 7, 2006.

General Specifications

General Specifications for customary annual maintenance describe annual maintenance requirements for those regulated drains in Vanderburgh County determined by the Surveyor to require only “normal” and routine maintenance by herbicide applications or mowing. The individual ditches to be maintained in accordance with the General Specifications are listed on the first page of the “**General Specifications Section**” accompanying this report.

Special Provisions

The “**Special Provisions Section**” details work required to correct specific problems identified in this report to be beyond normal annual maintenance. The intent of “**Special Provisions Section**” is to address each specific problem with a detailed project to be completed by the contractor within a specific time limit using specific methods over and above, or at variance with the General Specifications requirements. Such work may include excavation, mechanical brush removal, beaver dam and obstruction removal, embankment repairs, and contractual engineering studies. All drains requiring special ditch maintenance work will be listed on the first page of the “**Special Provisions Section**” accompanying this report.

Disclaimer

In some cases, required or recommended work identified in this report may not be accomplished in Year 2006 due to: (1) lack of adequate funds, (2) failure of qualified bidders to respond to bid invitations, (3) extended periods of high water, or (4) adverse weather conditions (all as in previous years).

Additional and Emergency Maintenance

Additional ditch problems may be identified as they occur and are reported to or discovered by the County Surveyor throughout the year, and

additional specifications and bid documents may be presented to the Drainage Board to address newly discovered conditions throughout the year as time and funds allow. The County Surveyor also will recommend that the Board contract to perform corrective work immediately whenever conditions warrant "emergency" work.

Regulated Drains Requiring Special Maintenance, Repairs, or Reconstruction

This portion of the Surveyor's Report will list regulated drains in Vanderburgh County where special maintenance, repairs, or reconstruction are needed that adequately address known conditions.

Drains Requiring Reconstruction

Aiken Ditch is a short leg of Aiken Ditch south of I-164 that runs through an area recently delineated as a wetland by the IDNR. Special permits are required to operate within the designated wetland even for every normal ditch maintenance procedure customarily employed for Aiken Ditch.

Condition: The restrictions attached to an IDNR permit prohibit adequate ditch maintenance. Lack of adequate maintenance through the designated wetland over the past few years has resulted in sediment accumulating on a regular basis against the outlet from Levee Pump Station K-1 with potentially hazardous results.

Recommendation: The County Surveyor recommends contracting an engineering consultant as special deputy to design a bypass of the wetland by rerouting Aiken Ditch through a borrow pit owned by a sand and gravel operation.

Henry Ditch recently has been impacted by rapid residential development along Green River Road and Kansas Road.

Condition: Henry Ditch may require some realignment and channel improvements that meet the statutory definition of a reconstruction. The ditch may require a hearing and, otherwise, become a complicated process requiring professional assistance.

Recommendation: The County Surveyor recommends contracting a special deputy to evaluate the need for designing a plan to repair or reconstruct Henry Ditch.

D rains Requiring Repair (All are in Armstrong/Scott Townships.)

- ┆ **Pond Flat Main**
- ┆ **Buente Upper Big Creek**
- ┆ **Barr's Creek**
- ┆ **Rexing Creek**
- ┆ **Maidlow Creek**

Pond Flat Main from Princeton Road east to U.S. 41 is the last leg of the drain that has not been restored to an adequate waterway for existing run-off conveyance needs. Pond Flat Main requires silt dipping, reestablishment of the designed flow line, and restoration of the south bank from U.S. 41 westward to the CSX rail line. Additionally, the drain needs restorative maintenance from the rail line west to Princeton Road. Pond Flat falls under IDNR jurisdiction and requires permits with stringent conditions attached.

Recommendation: The County Surveyor recommends contracting an engineering consultant as special deputy to work with the County Surveyor towards appropriate plan design and application for an excavation permit from IDNR.

Buente Upper Big Creek is in very good condition for most of its length, but requires repair at two (2) locations:

- North of Boonville New Harmony Road for ¼ mile along the west bank
- From Baseline Road northwest 4,000 feet to the mouth at Pond Flat Main

The extent of needed repairs includes removal of silt bars, restoration of designed flow line, and restoration of failed embankments.

Recommendation: Because the estimated cost of needed repairs exceeds the current account balance, the County Surveyor recommends that normal annual maintenance be suspended for 2006, and the available funds be designated for the needed repairs.

The County Surveyor's staff will prepare a plan and present it to the Board closer to crop harvest. The plan will attempt to minimize wholesale embankment disturbance and preserve vegetation where the embankment does not require excavation activities.

To maximize repairs and minimize costs, the County Surveyor may come back to the Board with a recommendation to allow certain property owners to arrange additional work using qualified contractors paid with private funds.

Barr's Creek is in very good condition except for two problem areas: (1) the uppermost portion of Barr's Creek between Buente Road and Emge Road and (2) north of Baseline Road in the first turn to the west—both areas require bank reshaping and stabilization with excavation, fabric blankets, and reseeding.

Recommendation: The design will be completed by County Surveyor personnel and presented to the Board when crop harvest is due. In order to

pay the cost of the projects, regular annual maintenance of Barr's Creek by customary methods will be suspended in 2006.

Rexing Creek is in very good condition, but requires some repairs at a location east of Princeton Road and west of CSX rail line.

Recommendation: The County Surveyor will investigate the extent of damage and prepare a simple plan to repair the north bank of Rexing Ditch at the target location. The Plan will be presented to the Board later in 2006 when crop harvest is due.

Maidlow Creek is in good shape but requires embankment stabilization on Marvin Zwalen and John Hauschild's land. The County Surveyor's staff is working with the property owners to develop a plan to present to the Board later in 2006.

Conditions of Other Armstrong/Scott Township Ditches

Pond Flat Lateral A and Lateral B are in very good condition requiring only regular annual maintenance.

Pond Flat Lateral D along the west side of CSX rail line needs embankment repair; however, the available work area lies within wet woodland on the west and CSX right-of-way on the east making the project extremely hard to permit. The Surveyor anticipates a rigid permitting process and recommends additional research and plan development before submitting plans to IDNR and CSX for approval.

Baehl, Hoefling, Kneer, Singer, and Wallenmeyer Ditches are in good condition and require only normal annual maintenance.

Drainage Requiring Study and Evaluation

- ┆ **East Side Urban South Half**
- ┆ **Harper Ditch**
- ┆ **Aiken Ditch**
- ┆ **Eagle Slough**
- ┆ **Keil Ditch**
- ┆ **Kolb Ditch**
- ┆ **Sonntag Stevens Ditch**

Condition: Each of the seven (7) urban drains listed above is subject to specific pressures associated with rapid and sustained urban development throughout the watershed served by each drain.

Recommendation: The County Surveyor recommends contracting consulting engineers to complete detailed studies and evaluations of each listed urban drain and develop plans specific to each drain that will address long-range, phased improvements with regard to storm water conveyance and water quality.

Request for Proposals submitted with this report are “**Requests for Proposals (RFPs)**” for each of the projects recommended by the County Surveyor for contractual services. Where it becomes practical, more than one of the studies for the individual seven (7) drains may be combined or contracted with the same consultant.

Other Drains Requiring Only Normal Maintenance

Union Township Ditches, for the past several decades, have been maintained by Union Township Ditch Association that customarily submits a very low bid. Some years dormant herbicidal spray applications are required in specified areas where underbrush has gotten out of control due to limited access by typical maintenance equipment, and the County Surveyor will

recommend contracts with licensed herbicide applicators with specialized equipment to perform additional maintenance.

Condition of Union Township Ditches

<u>Barnett Ditch</u>	very good
<u>Cypress Dale/Maddox</u>	very good
<u>Edmond Ditch</u>	good
<u>Helfrich/Happe Ditch</u>	good
<u>Kamp Ditch</u>	good

Recommendation: The County Surveyor's 2006 recommendation is a repeat of the same maintenance specifications for the Union Township ditches as in 2005.

East Side Urban Drains: East Side Urban South Half comprises eight (8) interconnected ditches totaling about five and one-half (5.5) miles of open ditch and two (2.0) miles of piped drain, draining all land north of Lincoln Avenue, east of Green River Road., west of Warrick County, and south of Morgan Avenue. The eight individual drains comprising ESU-S $\frac{1}{2}$ are:

- ┆ **Bonnie View**
- ┆ **Bonnie View Extension**
- ┆ **Crawford Brandeis**
- ┆ **Hirsch**
- ┆ **Kelly**
- ┆ **Nurrenbern**
- ┆ **Stockfleth**
- ┆ **Wabash Erie**

Harper Ditch is connected with ESU-S $\frac{1}{2}$ and drains most of the heavily developed area east of Stockwell Road, north of Lincoln Avenue, south of Morgan Avenue, and west of Fielding Court. Harper Ditch, however, is

maintained with a separate account due to its construction after completion of ESU Drain.

The eight ditches comprising ESU-S¹/₂ convey storm water runoff northwardly thence westward via the Old Wabash and Erie Canal, under Morgan Avenue, at the northwest corner of Wesselman Woods, thence through a natural slough into Pigeon Creek.

While Harper Ditch is maintained through a separate account, it is integral with ESU-S¹/₂. For purposes of this report, Harper Ditch conditions will be included with ESU-S¹/₂.

Effects of Development on East Side Drains: Except for a 350-acre block of remaining agricultural ground east of Burkhardt Road, north of Virginia Street, south of Oak Grove Road, and west of the county line, most of the land served by ESU-S¹/₂ is zoned residential or commercial and is under intense development pressure. As a result, land prices have escalated dramatically and developers are compelled to use every square foot of property even including some land within easements and rights-of-way.

Commercial developers and residential homeowners increasingly find open ditches objectionable for a variety of reasons—unsightliness, weeds, pests, personal safety, reduced land value. Furthermore, increased land use restrictions are complaints most often voiced by property owners requesting piped drains and easement encroachments.

However, new federal and state rules encourage more open, green space; permeable pavements; wide, grassy channels; “constructed wetlands”; native plants; and other infiltration practices that run counter to local public opinion, practical development practices, and customary drainage concepts.

Impacted Drainage District

In 2002, the Board declared the Eastside Urban Area north of the Lloyd Expressway, west of the Warrick County Line, east of Burkhardt Road, and south of Boonville Highway to be an Impacted Drainage Area in accordance with the county drainage ordinance requirements. Impacted Drainage Areas enjoy special considerations, according to code, during site planning to ensure that existing drainage facilities and neighboring properties are not unduly impacted by the establishment of new impervious surfaces on freshly developed land.

Current Problems Identified in East Side Urban South Half

Old Wabash and Erie Canal is an old channel now comprised of individually named drains. For the purposes of this report, these drains will be called by the common name, Old Wabash and Erie Canal. These individually named drains are Kelly, Hirsch, Crawford Brandeis, and a short leg of Harper Ditch. The old channel of the Wabash and Erie Canal runs west along the south side of Morgan Avenue from the Warrick County line to Stockwell Road.

Accumulation of sediment and construction debris in the Old Wabash and Erie Canal, especially in culverts from 5300 to 5800 Morgan Avenue, are holding water in the bottom two feet of the channel for about 1,500 feet back to Burkhardt Road. The chronic standing water is saturating the embankment and causing failures. Additionally, lack of adequate and appropriate embankment vegetation is causing substantial problems in the drain.

Water quality issues caused by storm water pollution from urban uses are fostering conditions that are unhealthy to people and wildlife. As stated earlier in this report, the County Surveyor proposes to employ a contract deputy to evaluate the Old Wabash and Erie Canal channel and to develop a plan for sequencing long-term maintenance and repairs for the portion of

East Side Urban Drain alongside the Norfolk Southern rail line from Wesselman Woods east to the Warrick County Line.

Harper Ditch is not officially a part of East Side Urban Drain. Its interconnection with that system requires it be studied and evaluated together with ESU-S^{1/2}. Commercial development continues to generate storm water pollutants and assorted debris that ends up obstructing the orderly conveyance of storm water from a completely urbanized, heavily commercial watershed. Harper Ditch is piped under and serves as the only drainage outlet for four expansive shopping malls.

The County Surveyor proposes to employ a special deputy to evaluate the need for long-term, specialized maintenance to address the adverse effects of urbanized land uses within the Harper Ditch watershed.

Conditions and Recommendations for Other East Side Urban Drains

Bonnie View Extension was dipped out and reshaped in 2004. The ditch is in excellent condition and the Surveyor recommends an herbicide spraying and mechanical mowing frequency that promotes adequate grass cover of the channel banks.

Bonnie View Ditch now, because of the County Surveyor's negotiations with the developer of the Target Greatlands Complex, has a paved channel liner along its entire length south of the new Target complex and requires only occasional hand sweeping and manual removal of accumulated road grit and yard wastes with some occasional target spraying of isolated weed clumps.

Stockfleth, Nurrenbern, Kelley, Crawford Brandeis Extension, and Boesche Ditches are in good condition and require only herbicidal applications in 2006. The only significant problem is the emergence of some cattail invasion, especially in Nurrenbern Ditch south of

the Lloyd Expressway that is moving to the north and downstream. A significant infestation of cattails has occurred in Stockfleth Ditch north of Vogel Road. Intensified applications of ditch bottom sterilization is needed to adequately address the cattail infestation, and the specifications will be enhanced to include more stringent herbicide application standards.

Conditions of Drains on the Southeast Side of Knight Township

Kolb Ditch is in good condition; however, increased urban pressure on the ditch raises the need for implementation of management practices to address the quality of storm water run-off to the drain. Additionally, a lake through which the Kolb Ditch runs at the south end of Audubon Estates requires some evaluation regarding water table levels and pollution issues. As stated earlier in this report, the County Surveyor recommends employment of a special deputy to study and evaluate Kolb Ditch for long-term application of management practices related to storm water quality.

Other recommendations for annual maintenance of Kolb Ditch include bottom sterilization and side bank broadleaf herbicide applications to sections of Kolb Ditch. In addition, selective mowing includes:

One fall mowing of "Section A" beginning at the south end of a concrete box culvert under I-164 at the north end of Audubon Drive off Pollack Avenue, thence, easterly and under the intersection of Pollack Avenue and Fuquay Road and terminating at the Knight Township Levee—a total distance of 2,350 feet. Then, one mid-summer mowing and one fall mowing of "Section B" beginning at the west line of Eastland Estates (east line of Price Park), thence, southeastwardly a total of 2,125 feet to the low waterline of the lake in Audubon Estates.

Eagle Slough is in good condition. Annual Ohio River floodwater continues to prevent sufficient herbicide applications. Continuous deposits of flood debris also pose significant problems. In 2005, a significant increase in beaver activity resulted in one or more Levee Pump Stations being partially obstructed with potentially hazardous results. Additionally, increased urban

pressure has adversely affected the quality of storm water run-off to Eagle Slough.

As stated earlier in the report, the Surveyor recommends the employment of a special deputy to study, evaluate, and prepare a long-term plan for controlling beaver activity and establishing best management practices aimed at gradually vegetating the maintenance right-of-entry with native, riparian species to promote wildlife habitat and storm water control while discouraging beaver populations.

The Surveyor also recommends the Board continue its official contract with Inland Marina to dredge the channel of Eagle Slough to its maximum width from the floodgate on the west side of Waterworks Road, thence, to the Ohio River.

Weinshiemer/Williams Ditch needs some work to remove brush from the banks along the county line from Lincoln Avenue north to the Dunn Development. Warrick County normally completes the work with funds transferred from Vanderburgh properties. The Surveyor will contact Warrick County's new surveyor to determine whether he intends to continue the maintenance agreement.

Joint Vanderburgh/Warrick County Drainage Board

In 2003, the boards in Vanderburgh and Warrick Counties formed a joint board to address conditions that affect both counties especially for lands served by regulated drains along the Lloyd Expressway, Lincoln Avenue, Oak Grove Road, and for problems with Pigeon Creek.

The County Surveyor also recommends the Board reactivate its association with the Warrick County Drainage Board, via the existing Joint Drainage Board, to continue a discussion of improving drainage along the

common county line and facilitating development particularly along the Lloyd Expressway in both counties.

Center Township Drains

Sonntag-Stevens Ditch and Keil Ditch drains the Center Township industrial area between Lynch Road and St. George Road east of U.S. 41 and west of Oak Hill Road. Sonntag Stevens and Keil ditches are generally in good condition but have sustained some damage from the effects of accelerated run-off from the industrial properties and now exhibit some deleterious effects of polluted storm water run-off as well.

The County Surveyor suggests employment of a special deputy to study and evaluate the need for specific best management practices that adequately and appropriately address the long-term maintenance of a drain serving a heavily industrialized area.

Additionally, a recent infestation of cattails particularly downstream of the intersection of Hitch Peters and Lynch Road requires intensified herbicide applications for Sonntag Stevens Ditch in 2006.

Special Provisions and Specifications

A complete edition of Special Provisions describing work required to correct special problems addressed in this report will be available with publication of the attached Notice to Bidders.

Notice to Bidders should be advertised March 10, and March 17, 2006, to allow at least ten (10) working days following the second advertisement before bids are due for submittal to Ms. Madelyn Grayson in the County Auditor's office no later than noon, local time, Tuesday, April 4, 2006.

Ms. Grayson will carry the submitted bids to the Commissioners' hearing room to be opened by the County Drainage Board at the April 4, 2006, meeting.

In past years after opening the bids and reading them aloud at the meeting, the Board customarily takes the bids under advisement for a week or two, to allow the Surveyor time to prepare recommendations for bid awards. At bid opening, the Board sets a special meeting in April, for the purpose of awarding the bids so the contractors can begin work by April 15, 2006.

NOTICE TO BIDDERS

This Instrument shall serve as Public Notice that Sealed Proposals for the maintenance of Regulated Drains in Vanderburgh County, Indiana, by mowing, herbicide application, excavation, hauling, disposal, brush cutting and chipping, and other related activities shall be received by Ms. Madelyn Grayson in the Office of the Vanderburgh County Auditor, Room 208 of the Civic Center until noon local time on Tuesday, April 4, 2006, at which time proposals received shall be delivered to the Vanderburgh County Drainage Board, opened, and read aloud at the Board's regular meeting of that date in the County Council Chambers, Room 301 Civic Center Complex, One Northwest Martin Luther King Jr. Boulevard, Evansville, Indiana. Any proposal received unsealed or past the designated time shall be returned to the bidder unopened.

Proposals must be submitted on approved forms, properly executed, and accompanied by a certified check, cashier's check, or other approved security in the amount of five (5) percent of the total bid.

Proposals and securities shall be sealed together in an envelope bearing the name and address of the bidder and the title of the work, including the name(s) of the drain(s), and all prepared according to such particulars as shall be described in this document and in other specification and bid documents available from the Vanderburgh County Surveyor, Room 325 Civic Center Complex, One Northwest Martin Luther King Jr. Boulevard, Evansville, Indiana, 47708, or by calling (812) 435-5210.

Improperly completed proposals may be disregarded by the Board. Successful bidders shall sign contracts with the Board within five (5) days of the award. A performance bond may be required of the contractor by the Board. The bid bonds of the unsuccessful bidders will be returned within thirty (30) days of the awards.

APPROVED BY THE VANDERBURGH COUNTY DRAINAGE BOARD:

Bill Nix, President

Cheryl A.W. Musgrave, Member

Tom Shetler, Jr., Member

ATTEST:

William J. Fluty, Jr., County Auditor

Date

CERTIFIED:

Bill Jeffers, County Surveyor

Date

APPENDIX

REGULATED DRAINS REQUIRING SPECIAL MAINTENANCE, REPAIRS OR RECONSTRUCTION



VANDERBURGH COUNTY SURVEYOR'S OFFICE

Linda Freeman
Chief Deputy

Bill Jeffers, County Surveyor

Doug McDonald PE, LS,
Special Deputy



March 7, 2006

NOTICE OF REQUEST FOR PROPOSALS FOR ENGINEERING SERVICES

This request for proposals (RFP) is the official notice of needed professional services for the study, evaluation and preliminary engineering for the rehabilitation of the following Vanderburgh County Regulated Drains: Aiken, Eagle Slough, East Side Urban, Harper, Kolb, Pond Flat Main, Sonntag Stevens, and Keil. Attached to this RFP are descriptions of the proposed scope of work for each contemplated project. A consulting firm should indicate which of the individual projects the consultant is interested in pursuing.

This notice is sent to consulting engineering firms currently on file with the Vanderburgh County Engineer and known to be qualified for work similar to or the same as that required for the contemplated projects.

Each consulting firm interested in providing requested services should submit current information on the firm's qualifications along with a brief proposal containing the information outlined below.

Each proposal shall include the following information:

1. Description of the proposed project
2. Description of anticipated work elements
3. Proposed staffing for the project including designation of Project Manager
4. Proposed schedule of work (in calendar days)
5. Anticipated work to be sublet
6. Current information on the firm's qualifications.
7. Information concerning current overhead rate as prepared by a Certified Public Accountant (CPA) or registered accountant or as approved by the Indiana Department of Transportation
8. Location of office where work is to be performed
9. List of references from at least three (3) Indiana Counties where the firm has worked in the past three (3) years

Interested consulting firms should submit six (6) copies of their qualifications and brief proposals no later than noon on Tuesday, April 4, 2006 to:

Bill Jeffers, Vanderburgh County Surveyor
Civic Center Complex Room 325
One Northwest Martin Luther King Jr. Boulevard
Evansville, IN 47708-1833

Only proposals received by the stated time will be given consideration. The County Surveyor will distribute the copies to Vanderburgh County Drainage Board members and support staff.

The proposals and statements of qualification will be taken under review with an anticipated selection to be made on or by April 25, 2006.

NOTICE OF REQUEST FOR PROPOSALS FOR ENGINEERING SERVICES

Selection of a professional consultant by the Vanderburgh County Drainage Board is not based on competitive bidding. Selection is based on the firm's professional qualifications, experience, and expertise of key personnel to be assigned to the project. Consideration will be given to the following criteria:

1. Performance evaluation on similar projects
2. Familiarity with the particular project and project area
3. Staff personnel available for the project
4. Ability to complete the work in the time required
5. The firm's existing workload
6. Special or unique expertise offered by the firm
7. The firm's proximity to the project
8. Extent of work that must be subcontracted by the firm and its proposed method of accomplishing the project objectives

Vanderburgh County Drainage Board

Bill Nix, President

Cheryl A. W. Musgrave, Member

Tom Shetler, Jr., Member

Bill Jeffers, County Surveyor

PROPOSED SCOPE OF WORK

Aiken Ditch: A Study, Evaluation, and Construction Plan

Project Goals

The 2006 Aiken Ditch Study, Evaluation, and Construction Plan must identify storm water management and conveyance concerns within that portion of Aiken Ditch south of I-164, thence to South Green River Road. The Study must result in and include an engineered Construction Plan to relocate the channel through a borrow pit and around a wetland as designated by the Indiana Department of Natural Resources.

Project Objectives

- Examine the project site map provided by the County Surveyor, visit the project site, examine existing conditions, and schedule necessary personnel to complete the study and evaluation of the project site conditions.
- Evaluate the practicality and the ability to relocate the channel of Aiken Ditch from its current alignment through a certain designated wetland so that the new channel passes through a certain borrow pit and reconnects to the existing channel west of the borrow pit.
- The consulting engineer must serve as Special Contract Deputy for:
 - Any reconstruction hearings
 - Preparation of reconstruction schedules and notices
 - Acquisition of necessary permits from state and federal agenciesIn accordance with applicable sections of IC 36-9-27—state drainage statute, the consulting engineer also must serve as chief construction inspector for the implementation of the engineered plan.
- Construction plans, shop drawings, bid documents, notices, permit applications, permits, field notes, and other documents related to the project become the property of Vanderburgh County and must be surrendered in good condition for permanent storage in the County Surveyor's records.

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PROPOSED SCOPE OF WORK

Pond Flat Main: A Study and Construction Plan

Project Goals

The 2006 Pond Flat Main Study must develop an engineered plan to restore Pond Flat Main's channel, side banks, and over bank area within the project limits to designed, appropriate, and adequate condition.

Project Objectives

- The consulting engineering firm (the Firm) selected for the project will visit and examine the project site designated by the County Surveyor and schedule necessary, qualified personnel to complete the gathering and compilation of data into an engineered plan ready to implement by qualified contractors and subcontractors.
- The County Surveyor has completed a field survey including cross sections of the drain from U.S. 41 westward and downstream to the CSX railway a distance of approximately one-half (0.5) mile. The data will be available to the Firm for compilation into a plan.
- The County Surveyor contemplates reestablishment of the ditch bottom, restoration of the designed flow line, and excavation of the south bank of the drain to restore the designed channel shape. The resulting spoil should be deposited on the south over bank in a manner that will facilitate proper conveyance and flood control. The establishment of a grass filter strip on the south bank in accordance with USDA (United States Department of Agriculture), (Natural Resource Conservation Service) NRCS guidelines is encouraged, and the plan should include provisions for such.

The work briefly described above is subject to state and federal regulations regarding construction and leaving deposits in a floodway.

Additionally, the length of the drain from the CSX railway westward to Old Princeton Road, a distance of about one-half (0.5) mile, will be studied and evaluated for necessary improvements and channel restoration as a part of the same plan. This second stretch of ditch channel passes through an area bordered by what may be considered wet woodland, and the plan must contain provisions addressing work in such an area in accordance with applicable state and federal regulations.

The County Surveyor alleges a bridge carrying Old Princeton Road over Pond Flat Main obstructs the flow of run-off from a storm having the return period of less than one hundred (100) years. Princeton Road is overtopped by flood water that cannot pass under the bridge and is forced out into adjacent property. The study generated by the Firm also should address this specific condition with proposed solutions. If the condition can be addressed with channel improvements, the study should include a proposed plan to do so.

If the condition can only be addressed by bridge reconstruction, the study should include an appropriate recommendation.

PROPOSED SCOPE OF WORK

Work required to complete the projects will be subject to IC 36-9-27- 53.5, which in part imposes the following requirements:

- An individual permit under Section 404 of the federal Clean Water Act (33 U.S.C. 1344)
- Written notification of the Division of Water of the Department of Natural Resources
- An onsite field review conducted by a team consisting of representatives from the:
 - County
 - Department of Natural Resources
 - Department of Environmental Management
 - Local Soil and Water Conservation District

The Firm will act as Special Deputy to coordinate and participate in the field review.

The Division of Water requires the plan to be formatted in a particular fashion and submitted prior to the field review. The Firm will accomplish the preparation and submittal of the plan to Division of Water.

The plan must comport with certain other requirements of IC 36-9-27-53.5 and with certain other federal and state administrative rules and policies known to consulting firms qualified for work, such as that contemplated by this Request for Proposal.

The Firm should break the proposed channel improvement plan into two (2) parts as follows:

- Pond Flat Channel Improvements from U.S. 41 to CSX Railway
- Pond Flat Channel Improvements from CSX Railway to Old Princeton Road

The purpose of separating the recommended improvements is **logistical** as well as **budgetary**.

Logistics – Access and permitting issues may require different timelines and services from contractors with varying skills, experience, and equipment.

Budget concerns – The County Surveyor will only recommend annual projects that expend available funds from regular annual ditch assessments.

The study and evaluation completed by the Firm must result in a report that includes, at a minimum, the following components:

- A description of the work necessary to accomplish the recommendations of the study
- An engineered plan for the work recommended for the first section of drain from U.S. 41 westward to CSX Railway
- A description and general depiction of a plan necessary to accomplish the recommendations of the study regarding the leg of the drain from CSX Railway westward to Old Princeton Road

PROPOSED SCOPE OF WORK

- A general evaluation of the Old Princeton Road Bridge over Pond Flat Main with regard to its impact on over bank flooding during a specified rainfall event for the watershed above Old Princeton Road
- An identification of the required permits and permissions from the various regulatory agencies with jurisdiction over the recommended work

The Firm will provide a draft copy of its report and plans to the County Surveyor at least thirty (30) days prior to final publication of the report. The County Surveyor will reply with suggestions to modify the draft report if necessary within thirty (30) days of his receipt of the draft report.

The Firm will provide the Drainage Board with at least five (5) copies of the final report, and will provide the County Surveyor with two (2) copies of the final report and plans, along with Mylar films of the engineered plans to be used for any contractual project associated with the plan.

The Firm will provide a reasonably accurate engineer's estimate of the work to be accomplished in accordance with the plans.

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PROPOSED SCOPE OF WORK

Eagle Slough: A Study and Evaluation

Project Goal

The goal of developing the Eagle Slough Study and Evaluation is to identify and analyze storm water management concerns within the study area and to provide a long-range plan that appropriately addresses identified deficiencies.

Project Objectives

Representatives of the selected consulting engineer's firm (the Firm) will visit the project site designated by the County Surveyor, briefly examine existing conditions, and schedule necessary personnel to complete the study and evaluation of the project site conditions in accordance with the following requirements:

1. Evaluate Structural Conditions

The Firm will study and evaluate existing conditions in Eagle Slough from Waterworks Road thence east approximately 6.5 miles to the uppermost point of the drain. Personnel from the Firm will locate, catalog, define, describe, and depict existing flow obstructions, particularly beaver dams and accumulations of sediment, trash, and logjams blocking the channel. The study and evaluation must pay particular attention to any obstructions to the discharge of storm water from levee pump stations, levee gates, channels therefrom, and other storm water conveyance structures serving the urbanized area.

2. Identify Inhibited Passage Points

The firm will identify points at which lateral ditches entering Eagle Slough inhibit passage along one or both banks by vehicles and equipment required for annual maintenance and inspection of the drain.

3. Characterize Storm Water Run-off Quality

The Firm will study, evaluate, and characterize existing deleterious storm water quality as it is found to exist within Eagle Slough and identify the points at which such pollution enters the drains. The study must define known or probable sources of identified pollution and describe the impact of identified storm water pollution with regard to the NPDES (National Pollutant Discharge Elimination System) Phase II program.

4. Propose Solutions

The Firm will recommend solutions for each identified obstruction with particular attention given to solving or adequately addressing the beaver infestation with a long-term plan. The study's proposed solutions must include a plan to install adequately sized pipes at the mouths of the laterals and to create a continuous maintenance pathway alongside the drain.

The Firm will provide a list of best management practices (BMPs) recommended to implement within and adjacent to the drain, and within the urbanized watershed

PROPOSED SCOPE OF WORK

contributing to the drain, to address appropriately identified deleterious storm water quality. The study must specify BMPs for each condition and describe the work required to implement the BMPs, along with known manufacturers and suppliers of specific materials. The recommendations should include public participation efforts that likely will result in a better quality of storm water run-off from the urban watershed area.

5. Develop Long-Range Plan

The Firm will develop a long-range plan (the Plan) that sets out proposed phases of work that adequately and appropriately address the discovered adverse conditions in a schedule that can be accomplished using funds available from annual drainage assessments.

6. Estimate Costs

The Plan must include estimates of anticipated costs associated with developing engineered plans and letting contracts for phased works projects to be accomplished by the County Surveyor and the Drainage Board to address the obstructions and structural improvements.

The water quality issues regarding the urbanized watershed within the City of Evansville will be forwarded to the City administration for follow-up, and no cost estimates regarding the implementation of such work are necessary.

7. Identify Required Permits

The Firm will identify the government agencies and other entities from whom permits are required and with whom coordination is necessary to complete proposed works projects to address all identified components of recommended work.

8. Compile a Draft Report

The Firm must compile a report (Report) containing the elements of the study, evaluation, plan, estimates, and permit requirements set out above and present a draft copy of the Report to the County Surveyor. The County Surveyor will proofread the draft Report and make suggested changes if needed.

9. Present Report to the Board

The Firm will present the Board with ten (10) copies of the finished Report.

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PROPOSED SCOPE OF WORK

East Side Urban Drain: A Study and Evaluation

Project Goal

The goal of developing the East Side Urban Drain Study and Evaluation is to identify and analyze storm water management concerns within the study area and to provide a long-range plan that appropriately addresses identified deficiencies.

Project Objectives

Representatives of the selected consulting engineer's firm (the Firm) will visit the project site designated by the County Surveyor, briefly examine existing conditions, and schedule necessary personnel to complete the study and evaluation of the project site conditions in accordance with the following requirements.

1. Evaluate Structural Conditions

The Firm will study and evaluate existing conditions in the designated drains. Personnel from the Firm will locate, catalog, define, describe, and depict existing flow obstructions such as undersized culverts and bridges, embankment failures, sheet erosion, erosion at inlet and outlet points, flow line degradation, in-channel sediment deposits and log or trash dams, inadequate or inappropriate vegetative cover in the flow line and on the embankments, and other channel and embankment deficiencies.

2. Propose Conveyance and Stability Solutions

The Firm will recommend solutions for each identified obstruction and other structural or natural adverse condition. The proposed solutions must include specific remedies and describe the work required to implement the recommendations.

3. Characterize Storm Water Run-off Quality

The Firm will study, evaluate, and characterize existing deleterious storm water quality as it is found to exist within the drains and identify the points at which such pollution enters the drains. The study must define known or probable sources of identified pollution and describe the impact of identified storm water pollution with regard to the NPDES (National Pollutant Discharge Elimination System) Phase II program.

4. Propose Management Practices for Water Quality

The Firm will provide a list of best management practices (BMPs) recommended to implement within the drains that appropriately address identified deleterious storm water quality. The study must specify BMPs for each condition and describe the work required to implement the BMPs, along with known manufacturers and suppliers of specific materials.

PROPOSED SCOPE OF WORK

5. Develop Long-Range Plan

The Firm will develop a long-range plan (the Plan) that sets out proposed phases of work that adequately and appropriately address the discovered adverse conditions in a schedule that can be accomplished using funds available from annual drainage assessments.

6. Estimate Costs

The Plan must include estimates of anticipated costs associated with developing engineered plans and letting contracts to accomplish the phased works projects.

7. Identify Required Permits

The Firm will identify the government agencies and other entities from whom permits are required and with whom coordination is necessary to complete proposed works projects to address all identified components of recommended work.

8. Compile a Draft Report

The Firm must compile a report (Report) containing the elements of the study, evaluation, plan, estimates, and permit requirements set out above and present a draft copy of the Report to the County Surveyor. The County Surveyor will proofread the draft Report and make suggested changes if needed.

9. Present Report to the Board

The Firm will present the Board with ten (10) copies of the finished Report.

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PROPOSED SCOPE OF WORK

Harper Ditch: A Study and Evaluation

Project Goal

The goal of developing the Harper Ditch Study and Evaluation is to identify and analyze storm water management concerns within the study area and to provide a long-range plan that appropriately addresses identified deficiencies.

Project Objectives

Representatives of the selected consulting engineer's firm (the Firm) will visit the project site designated by the County Surveyor, briefly examine existing conditions, and schedule necessary personnel to complete the study and evaluation of the project site conditions in accordance with the following requirements:

1. Evaluate Structural Conditions

The Firm will study and evaluate existing conditions in the designated drains. Personnel from the Firm will locate, catalog, define, describe, and depict existing flow obstructions, embankment failures, sheet erosion, erosion at inlet and outlet points, flow line degradation, in-channel sediment deposits and log or trash dams, inadequate or inappropriate vegetative cover in the flow line and on the embankments, and other channel and embankment deficiencies.

2. Propose Conveyance and Stability Solutions

The Firm will recommend solutions for each identified obstruction and other structural or natural adverse conditions. The proposed solutions must include specific remedies and describe the work required to implement the recommendations.

3. Characterize Storm Water Run-off Quality

The Firm will study, evaluate, and characterize existing deleterious storm water quality as it is found to exist within the drains and identify the points at which such pollution enters the drains. The study must define known or probable sources of identified pollution and describe the impact of identified storm water pollution with regard to the NPDES (National Pollutant Discharge Elimination System) Phase II program.

4. Propose Management Practices for Water Quality

The Firm will provide a list of best management practices (BMPs) recommended to implement within the drains to address appropriately identified deleterious storm water quality. The study must specify BMPs for each condition, and describe the work required to implement the BMPs along with known manufacturers and suppliers of specific materials.

5. Develop Long-Range Plan

The Firm will develop a long-range plan (the Plan) that sets out proposed phases of work that adequately and appropriately address the discovered adverse

PROPOSED SCOPE OF WORK

conditions in a schedule that can be accomplished using funds available from annual drainage assessments.

6. Estimate Costs

The Plan must include estimates of anticipated costs associated with developing engineered plans and letting contracts to accomplish the phased works projects.

7. Identify Required Permits

The Firm will identify the government agencies and other entities from whom permits are required and with whom coordination is necessary to complete proposed works projects to address all identified components of recommended work.

8. Compile a Draft Report

The Firm must compile a report (Report) containing the elements of the study, evaluation, plan, estimates, and permit requirements set out above and present a draft copy of the Report to the County Surveyor. The County Surveyor will proofread the draft Report, and make suggested changes if needed.

9. Present Report to the Board

The Firm will present the Board with ten (10) copies of the finished Report.

NOTE: Because Harper Ditch is connected to and operates in concert with the Old Wabash and Erie Canal channel (outlet for East Side Urban, South Half), the Harper Ditch Study and Evaluation will be performed by the same consulting engineer as the East Side Urban Study and Evaluation. The separation of the projects into two (2) Requests for Proposals is due to separate ditch accounts and assessment schedules.

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PROPOSED SCOPE OF WORK

Kolb Ditch: A Study and Evaluation

Project Goal

The goal of developing the Kolb Ditch Study and Evaluation is to identify and analyze storm water management concerns within the study area and to provide a long-range plan that appropriately addresses identified deficiencies.

Project Objectives

Representatives of the selected consulting engineer's firm (the Firm) will visit the project site designated by the County Surveyor, briefly examine existing conditions, and schedule necessary personnel to complete the study and evaluation of the project site conditions in accordance with the following requirements:

1. Evaluate Structural Conditions

The Firm will study and evaluate existing conditions in Kolb Ditch. Personnel from the Firm will locate, catalog, define, describe, and depict existing flow restrictions, embankment failures, sheet erosion, erosion at inlet and outlet points, flow line degradation, in-channel sediment deposits, inadequate or inappropriate vegetative cover in the flow line and on the embankments, and other channel and embankment deficiencies.

2. Propose Conveyance and Stability Solutions

The Firm will recommend solutions for each identified structural deficiency and adverse water quality issue. The proposed solutions must include specific remedies and describe the work required to implement the recommendations.

The proposed remedies for water quality issues should include measures that may be addressed by private property owners and public participation efforts as well as public works projects the County Surveyor and Drainage Board should implement through contractual services.

3. Characterize Storm Water Run-off Quality

The Firm will study, evaluate, and characterize existing deleterious storm water quality as it is found to exist within Kolb Ditch and identify the points at which such pollution enters the drains. The study must define known or probable sources within the Kolb Ditch watershed of identified pollution and describe the impact of identified storm water pollution with regard to the NPDES (National Pollutant Discharge Elimination System) Phase II program.

4. Propose Management Practices for Water Quality

The Firm will provide a list of best management practices (BMPs) recommended to implement within the drains that appropriately address identified deleterious storm water quality. The study must specify BMPs for each condition and

PROPOSED SCOPE OF WORK

describe the work required to implement the BMPs, along with known manufacturers and suppliers of specific materials.

5. Develop Long-Range Plan

The Firm will develop a long-range plan (the Plan) that sets out proposed phases of work that adequately and appropriately address the discovered adverse conditions in a schedule that can be accomplished using funds available from annual drainage assessments.

6. Estimate Costs

The Plan must include estimates of anticipated costs associated with developing engineered plans and letting contracts to accomplish the phased works projects.

7. Identify Required Permits

The Firm will identify the government agencies and other entities from whom permits are required and with whom coordination is necessary to complete proposed works projects to address all identified components of recommended work.

8. Compile a Draft Report

The Firm must compile a report (Report) containing the elements of the study, evaluation, plan, estimates, and permit requirements set out above and present a draft copy of the Report to the County Surveyor. The County Surveyor will proofread the draft Report and make suggested changes if needed.

9. Present Report to the Board

The Firm will present the Board with ten (10) copies of the finished Report.

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PROPOSED SCOPE OF WORK

Sonntag Stevens and Keil Ditch: A Study & Evaluation

Project Goal

The goal of developing the Sonntag Stevens and Keil Ditch 2006 Study and Evaluation is to identify and analyze storm water management concerns within the study area and to provide a long-range plan that appropriately addresses identified deficiencies.

Project Objectives

Representatives of the selected consulting engineer's firm (the Firm) will visit the project site designated by the County Surveyor, briefly examine existing conditions, and schedule necessary personnel to complete the study and evaluation of the project site conditions in accordance with the following requirements:

1. Evaluate Structural Conditions

The Firm will study and evaluate existing conditions in the designated drains. Personnel from the Firm will locate, catalog, define, describe, and depict existing flow obstructions such as undersized or damaged culverts and bridges, embankment failures, sheet erosion, erosion at inlet and outlet points, flow line degradation, in-channel sediment deposits and log or trash dams, inadequate or inappropriate vegetative cover in the flow line and on the embankments, and other channel, embankment, and maintenance pathway deficiencies.

2. Propose Conveyance and Stability Solutions

The Firm will recommend solutions for each identified obstruction and other structural or natural adverse condition. The proposed solutions must include specific remedies and describe the work required to implement the recommendations.

3. Characterize Storm Water Run-off Quality

The Firm will study, evaluate, and characterize existing deleterious storm water quality as it is found to exist within the drains and within the contributing watersheds.

The study and evaluation must identify the points at which storm water pollution enters the drains, define known or probable sources of identified pollution, and describe the impact of identified storm water pollution with regard to the NPDES (National Pollutant Discharge Elimination System) Phase II program.

4. Propose Management Practices for Water Quality

The Firm will provide a list of best management practices (BMPs) recommended to implement within the drains that appropriately address identified deleterious storm water quality. The study must specify BMPs for each condition and describe work the County Surveyor and Drainage Board should contract to implement the structural and vegetative BMPs along with known manufacturers and suppliers of specific materials.

PROPOSED SCOPE OF WORK

The study and evaluation should also provide BMPs that can be implemented by private residential, commercial, and industrial landowners within the watershed as well as BMPs that can be implemented by the City of Evansville and the Vanderburgh County highway departments for the streets within their respective jurisdictions served by the two drains.

5. Develop Long-Range Plan

The Firm will develop a long-range plan (the Plan) that sets out proposed phases of work that adequately and appropriately address the discovered adverse conditions in a schedule that can be accomplished using funds available from annual drainage assessments.

6. Estimate Costs

The Plan must include estimates of anticipated costs associated with developing engineered plans and letting contracts to accomplish the phased works projects to accomplish the needed improvements within the drains and within thirty (30) feet either side of the drain.

No cost estimates are required for work or private efforts needed outside of that contemplated to be completed by the County Surveyor, the Drainage Board, or contractors for the same.

7. Identify Required Permits

The Firm will identify the government agencies and other entities from whom permits are required and with whom coordination is necessary to complete proposed works projects to address all identified components of recommended work.

8. Compile a Draft Report

The Firm must compile a report (Report) containing the elements of the study, evaluation, plan, estimates, and permit requirements set out above and present a draft copy of the Report to the County Surveyor. The County Surveyor will proofread the draft Report and make suggested changes if needed.

9. Present Report to the Board

The Firm will present the Board with ten (10) copies of the finished Report.

NOTE: Because Sonntag Stevens and Keil ditches are interconnected and serve interconnected urban watersheds, the study and evaluation will be combined, let to the same Firm and paid for jointly out of the two separate accounts.

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