Environmental Protection Agency

Governor
Lt. Governor
Director

October 31, 2011

RE: LAKE COUNTY
CITY OF WILLOWICK
CONSTRUCTION STORM WATER
LARIMAR LAKEFRONT NEIGHBORHOOD
PHASE II-IV

Chad Graber, P.E.
Foresight Engineering Group Inc.
320 Center Street, Unit F
Chardon, OH 44024

Dear Mr. Graber:

On October 24, 2011, Ohio EPA received plan sheets for the Larimar Lakefront Neighborhood Phase III. The plans were submitted to Ohio EPA for review because the design includes the use of an alternative post-construction storm water best management practice (BMP). Per Part III.G.2.e of the Ohio EPA General National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Associated with Construction Activities #OHC000003, permittees must request approval from Ohio EPA to use alternative post-construction BMPs. Our records indicate that Willowick Partners LLC obtained coverage under the NPDES permit on September 28, 2011, and this facility was assigned a permit number of 3GC05670*AG.

In reviewing an alternative post-construction BMP request, Ohio EPA uses the criteria in the NPDES permit and reviews documentation contained in the University of Massachusetts Amherst Stormwater Technologies Clearinghouse. This database is compiled as part of the Massachusetts Stormwater Technology Evaluation Project (MASTEP) and is funded through an EPA grant to assist review agencies in evaluating the performance of proprietary storm water treatment technologies. The University of Massachusetts Amherst has compiled and evaluated available test data for a number of proprietary treatment technologies and has rated practices based on the credibility of that data. Field studies are compared to the testing protocol outlined in the Technology Acceptance Reciprocity Partnerships's (TARP) Protocol for Stormwater BMP Demonstrations, while laboratory studies are compared with the New Jersey Department of Environmental Protection Total Suspended Solids (TSS) Laboratory Testing Procedure. Only practices rated a "1" have sufficient credible data to be able to evaluate pollution removal efficiency claims.

You have proposed the use of a Kristar FloGard Dual-Vortex hydrodynamic separator. A review of the MASTEP Clearinghouse shows this device is rated a "2". This indicates that sound field or laboratory performance studies exist for this technology, but some caveats exist regarding the use of the study information. A review of available credible data shows that only laboratory studies are available for this technology. Based on those laboratory studies, MASTEP staff determined mean TSS removal efficiency to be only 60%. Part III.G.2.e of the NPDES permit states that alternative BMPs must have a minimum TSS removal efficiency of 80%.

In addition, I reviewed supporting documentation from Caltrans, the department of transportation for the State of California. The Kristar FloGard Dual-Vortex hydrodynamic separator was rated as having a medium TSS removal efficiency and provides low

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environmental benefit. I also reviewed data collected from tests at the University of New Hampshire Stormwater Center. Although they have not specifically tested the Kristar FloGard Dual-Vortex hydrodynamic separator, they have tested a number of hydrodynamic separators and, as a class, hydrodynamic separators performed very poorly. Regardless of specific design, mean TSS removal efficiency for this technology was only 27%.

After review of the credible data for this product, the Kristar FloGard Dual-Vortex hydrodynamic separator does not meet the minimum requirements of the NPDES permit and is not an acceptable post-construction BMP for this project.

A review of the standard BMPs contained in Table 2 on Page 23 of the NPDES permit reveals that there are a number of BMPs on this list that can be incorporated into site design. Options include bioretention cells, dry enhanced swales, infiltration trenches and sand filters. Bioretention can fit within areas where you will already establish landscaping, e.g., driveways and roof top downspouts can be directed to the greenspace between driveways where you can locate a bioretention cell rather than the lawn or raised flower bed that may be currently planned. Enhanced swales and infiltration trenches can fit along the rear of a lot where you are already planning on installing a storm sewer system. Sand filters give you an underground option if space is your primary concern. Permeable pavement can be used to construct driveways, sidewalks and patios (for acceptable BMP design, see enclosed specification being added to ***Rainwater and Land Development***). You can find other design ideas at the US EPA website on green infrastructure at www.epa.gov/greeninfrastructure.

Taking a green infrastructure or low-impact development (LID) approach may also result in a net cost savings to the developer. A study by US EPA located at http://www.epa.gov/owow/NPS/lid/costs07/ concluded that an LID approach resulted in a cost savings of 15 to 80%. The savings come primarily by reducing the amount of curbing, piping, catch basins and other gray infrastructure typically used to collect and convey runoff.

Please review the guidance I have provided and revise the Storm Water Pollution Prevention Plan (SWP3) to include post-construction BMPs in compliance with the NPDES permit. In addition to the practices noted above, you may also consider an alternative BMP that meets NPDES permit criteria. Although Ohio EPA does not keep a list of approved alternative systems and does not endorse any particular product, there are proprietary systems that have achieved 80% TSS removal using the TARP protocol. Please review information contained in the MASTEP Clearinghouse as well as information published by the University of New Hampshire's Stormwater Center to determine which systems would meet this minimum requirement. If you still intend to use a proprietary system, please resubmit the revised SWP3 to me for approval before commencing with construction activities.

I also have the following comment regarding post-construction BMPs. Be sure that a post-construction BMP is being provided for all discharges of storm water from this project. I noted that there is currently no planned post-construction BMP for the rear of the units located on the lakeshore. This does not comply with the NPDES permit.

Finally, please note that the Notice of Intent (NOI) submitted to obtain NPDES permit coverage includes Phases II through IV of the project. The SWP3 must correspond with the NOI. Thus, the SWP3 must provide control measures for Phases II, III and IV. The plan sheets submitted to me are labeled Phase III. Please clarify the status of Phases II and IV and the post-construction BMPs that have been or will be provided for these phases. If you have not yet prepared the SWP3 for Phases II and IV, the NOI should be modified to include only Phase III.

To modify the NOI, please submit a letter of explanation requesting the change to Michael Joseph in our Division of Surface Water at:

Ohio EPA
P.O. Box 1049
Columbus, OH 43216-1049

This review did not include a review of sediment and erosion controls to be implemented during construction. That review is be provided by the Lake Soil & Water Conservation District. However, I noted on Sheet 3 that you intend to locate a temporary sediment trap on the steep slope above the Lake Erie shoreline. Please note that guidance in ***Rainwater and Land Development*** states that sediment traps shall not be located where failure of the structure will result in loss of life or cause damage to buildings, roads, utilities and other property. Locating a sediment trap on a slope may cause slope instability and the discharge from the trap may cause erosion on the slope below it. We recommend that the sediment trap be relocated to the top of slope and that the spillway discharge to a storm sewer catch basin or rock-lined channel. Or, you can provide a sediment basin with a discharge piped to either a storm sewer catch basin or pipe slope drain.

If you have any questions, please contact me at (330) 963-1145.

Sincerely,

Dan Bogoevski

Dan Bogoevski
District Engineer
Division of Surface Water

DB/cs

Cc: Kirk Betteley, Willowick Partners LCC
George Hadden, Lake County Storm Water Management Department
Chad Edgars, Lake Soil & Water Conservation District
Craig Juday, Engineer, City of Willowick
Richard Bonde, Mayor, City of Willowick