STAGNANT WATER BREEDS PROBLEMS

STORMCEPTOR® PROVIDES SOLUTIONS

These mosquito characteristics make Stormceptor a potentially inhospitable breeding location due to the installation depth and reduced standing water area, in comparison to catchbasins, or other underground oil grit separators.

Due to extensive media coverage, concerns have been raised regarding disease vectors associated with structural stormwater BMPs. Specifically of interest is the mosquito, which is considered to be a primary carrier of the West Nile Virus ("WNV").

WNV is transmitted to humans via insect vectors (arbovirus) and was first detected in the district of Uganda in 1937. Although found on all continents that have temperate zones and considered to be the most geographically widespread of all the arboviruses, WNV has only recently gained attention in North America. The virus lives in a natural cycle involving birds and mosquitoes and is incidentally transmitted to humans (but not between) through mosquito bites. Most infected humans develop only mild illness or show no symptoms. In less than 1% a form of encephalitis or meningitis will develop and less than 10% of these cases are fatal, with most fatalities seen in the elderly or those with weakened immune systems. (Roger Nasci, 2002)

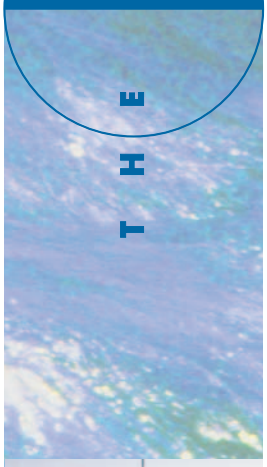
There are approximately 175 species of mosquitoes recognized in the US alone, with each preferring specific aquatic habitats for breeding. The specifics for breeding can be broadly categorized into two groups:

The first group is Floodwater mosquitoes, which lay eggs in damp soil where flooding will occur. The eggs will hatch into the larval stage only after a significant volume of rain has fallen.

The second group, and the one which is of particular interest to the topic of WNV, Culex pipiens (a Permanent Water mosquito), is considered to be the primary vector concerning transmission of WNV. Virtually any collection of stagnant water is a potential breeding location. Stagnant water is necessary for the development of the eggs because it provides small organic particles and microorganisms for feeding. These populations grow as the season progresses in relation to availability of breeding habitat and weather. Adult females lay eggs in clusters on the water surface. The typical life cycle of C. pipiens requires 1-2 days before the eggs develop into larvae or "wrigglers" that feed on the organic debris. The rest of the developmental stage is variable depending on temperature, with less time required for maturity in hot summer months.

Due to their nature, nearly all stormwater BMPs provide suitable conditions for permanent water mosquito development and can inadvertently increase the size of mosquito populations. Water which has been standing for a period greater than 72 hours is of prime concern, since this is the estimated minimum developmental time for certain mosquito species.

THE DRAINage



STORMCEPTOR SYSTEMS IN USE TO DATE

10014

STORMCEPTOR® SYSTEMS

- Inlet
- Inline
- Submerged
- Series

The argument can be made that some methods of management may provide a more successful breeding environment than others, such as ponds with large surface areas and minimal turbulence, and catch basins surrounded by vegetation.

For areas of new development all of the factors associated with suitable breeding requirements of mosquitoes can be taken into consideration when deciding on a stormwater quality management program. The goal should be to minimize vector production by engineering them out. It is possible to reduce the area of standing water in the municipal stormwater system while still achieving water quality objectives. For example, by using sumpless catch basins and treating stormwater runoff with underground structures such as Stormceptor, you can reduce the amount of standing water in your catchment area.

A recent study (George Wynn, et al. 2001) also found that C. pipiens larval development is influenced by habitat depth and surface area. When food sources are scarce, mosquito populations developing in habitats of greater depth and decreased surface area are considerably less dense. These mosquito characteristics make Stormceptor a potentially inhospitable breeding location due to the installation depth and reduced standing water area, in comparison to catchbasins, or other underground oil grit separators.

In areas with established stormwater infrastructure, retrofitting alone to minimize breeding could consume an unfeasible amount of time and resources. By using pesticides municipalities would be adding undesirable and sometimes harmful chemicals into the already sensitive ecosystem. Biological control is another option but the application is extremely limited and not possible in most types of stormwater structures.

Whatever the situation, any vector control program revolving around structural stormwater BMPs should be a diversified approach integrating engineering (to provide source reduction), surveillance and personal protection.

Jacqueline Ward, B. Sc.
Stormceptor Canada Inc.

REFERENCES

1. Roger Nasci, 2002 (Testimony to Congress, CDC)
http://www.cdc.gov/washington/testimony/id101002.htm
2. George Wynn, 2001
Effects of microcosm scaling and food resources on growth and survival of larval Culex pipiens

STORMCEPTOR® AND RECYCLED CONCRETE PIPE WORK WELL FOR FUEL DEPOT

Under today's environmental legislation and regulations, it is prudent for property owners to practice due diligence when storing various fuels for sale to the public.

The versatility of Stormceptor oil sediment separators and reinforced concrete pipe was demonstrated at the Taylor Fuels site in Cambridge, Ontario. The Taylor Fuels site is a retail gas station and commercial cardlock facility (24-hour self-serve purchase of gas or clear and coloured diesel, using an authorized credit card). The company retained the services of an environmental consultant to inspect one of their facilities. Under today's environmental regulations it is prudent for property owners to practice due diligence when storing various fuels for sale to the public, since landowners are responsible for any environmental mishaps that may occur. Such due diligence is especially vital if sites have drainage courses traversing their properties.

In the spring of 2002, the Stormceptor System was proposed and accepted for controlling spills and containing sediment from stormwater runoff. A Stormceptor unit was added to the storm sewer in line, near the outfall. After inspection of the reinforced concrete pipe by Tony Cherri of G. Melo Excavating (installation contractor) and Hanson Pipe & Products Canada Inc. it was evident that the pipe was not damaged by any runoff sediment and could be removed, cleaned and reinstalled. Four pieces of 450 mm diameter concrete pipe would have to be excavated to accommodate the oil sediment separator.

The Stormceptor unit was sized by Brian Lee, P.Eng. who recommended an 1800 mm diameter model STC 750. Using standard precast concrete components, the unit was comprised of a 0.305m high base slab, a 0.914m high riser, a 1.829m high riser section mounted with a fibreglass Stormceptor insert, and a 0.305m high flat cap. Kor "N" Seal rubber compound boots were used to connect the recycled pipe and existing sewer to the Stormceptor riser section mounted with a fibreglass insert to provide leak-proof joints.

The Stormceptor unit was installed within 20 feet from the outfall. Work began at 8:00 a.m. and was completed by 3:00 in the afternoon. A CAT 330 excavator, rubber tire backhoe, one truck and a crew of four were required to complete the installation.

In an attempt to be proactive, Taylor Fuels took the initiative to provide an industry-wide accepted oil/sediment removal system as part of their risk management program. Reuse of reinforced concrete pipe demonstrates the versatility and durability of

Continued on page 4

IDEAL APPLICATIONS INCLUDE

- Industrial Properties
- Commercial Parking Lots
- Gas Stations
- Transportation Terminals
- Highways / Streets
- Pond / Wetland / Infiltration Pre-Treatment

WEFTEC TRADESHOW

WEFTEC 03

October 11-15, 2003

76th Annual Technical Exhibition & Conference

Los Angeles Convention Center

Los Angeles, CA

Humeceptor™ KEEPS CASUARINA BEACH CLEAN

THE STORMCEPTOR SYSTEM IS MANUFACTURED UNDER THE NAME HUMECEPTOR IN AUSTRALIA

Project engineers, Cardno MBK on the Gold Coast, were required to incorporate stormwater treatment systems in the residential estate's design.

The Humeceptor is playing a key role in maintaining water quality and protecting environmental conditions in the new oceanfront township of Casuarina Beach on the New South Wales North Coast in Australia.

The Casuarina Beach project is a master-planned seaside residential community which has been under construction since September 2000 and will accommodate up to 6,000 people when complete in approximately 2007.

Property developers, Consolidated Properties, required the installation of oil-sediment retention units to prevent oil spills and other pollutants entering Cudgen Creek which runs through the 183ha community.

Project engineers, Cardno MBK on the Gold Coast, were required to incorporate stormwater treatment systems in the residential estate's design under Tweed Shire Council legislation.

Cardno MBK Senior Engineer, Steve Twohill, said the firm considered various stormwater treatment options before selecting Humes Humeceptor as the unit best suited to achieving the required results for the project.

"In Casuarina Beach, the requirements for the project led us to use the Humeceptor for the treatment of pollutants from roadway runoff," he said. "The units can be installed in small spaces making them ideally suited for locations around the estate."

Manufactured at Humes Yandina plant, the Humeceptor stormwater treatment devices ensure that stormwater contaminants are captured and retained at the source.

A high flow by-pass is incorporated to prevent high flows from flushing previously trapped pollutants

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Humeceptor™ KEEPS CASUARINA BEACH CLEAN

back into the drainage system and also to reduce the risk of drain blockages.

The Humeceptor STC3 has a contaminant storage capacity of 2.20m3 of sediment and 1,020 litres of oil.

The Casuarina Beach estate is divided into three sections: Precinct South, Central and North with Humeceptor units allocated as follows:

- Precinct South - Humeceptor STC9 and STC14 units
- Precinct Central - Humeceptor STC14 and 2No STC3 units
- Precinct North - Humeceptor STC3, STC9, STC14 and 2No STC18 units

During the final construction phase, a further two STC9 Humeceptor units were added to a section of the estate called The Link Road to provide additional stormwater management beneath a bikeway.

Construction of Casuarina Beach estate was completed by the New South Wales North Coast firm, South East Excavations, which successively ordered and installed the Humeceptor units as the project proceeded.

Brian Turner, Manager with South East Excavations, says Humes' delivery program dovetailed with the installation process.

A total of 12 Humeceptor units were supplied to the project with the first unit arriving in February 2001 and the last unit delivered in September 2001.

The installation time of each unit varied, based on the size of the Humeceptor, ranging from one hour for the STC3 to two hours for the STC18 units, making Humeceptor a fast and effective way of treating stormwater runoff.

Troy Marsinger, Account Manager Humes, Australia

in collaboration with Noelani Bower, Consultant

Humeceptor™ HIRES

Humes is also pleased to announce the appointment of Keron McCallum-Gaul to the position of Stormwater Products Manager. Keron has worked extensively in the stormwater industry, most recently as as an Associate - Senior Environmental and Water Quality Engineer for WBM Oceanics . He holds a Bachelor of Engineering (Civil - majoring in Environmental Engineering), from Queensland University of Technology and boasts the following designations:

Graduate member, Institution of Engineers, Australia (Grad. IEAust); Member, Institution of Engineers, Environmental Engineering Society; Member, Stormwater Industry Association (SIA); Member, Australian Water Association (AWA); Member, Queensland Environmental Law Association (QELA); Immediate Past Chairman, Queensland Environmental Engineering Society (1999 - 2001); Immediate Past Vice Chairman, National Board Environmental Engineering Society (2000 - 2001); Past National Board member, Institution of Engineers, Environmental College (2000 - 2001); Past Member, Institution of Engineers, Water Panel (2000).

RINKER UPCOMING TRADESHOWS

Texas Water
April 1-4 2003,
Corpus Christi, Texas

Texas Commission on Environmental Quality (TCEQ)
May 5-7 2003,
Austin, Texas

CANADIAN TRADESHOWS

AMO 2003 Annual Conference
August 17-20, 2003,
Royal York Hotel,
Toronto, Ontario

COMING SOON TO A CITY NEAR YOU IN THE U.S. NORTHWEST!

Oregon and Washington have over 320 units installed to date! The following is a brief listing of cities where a Stormceptor has been installed in the U.S. Northwest:

WASHINGTON – UNITS INSTALLED

Aberdeen	Granite Falls	Puyallup
Arlington	Kent	Seatac
Auburn	Lacey	Seattle
Battle Ground	Lake Stevens	Shelton
Bellevue	Lakeview	Shoreline
Bremerton	Lakewood	Snoqualmie
Burlington	Levenworth	South Hill
Camas	Lynnwood	Sultan
Chehalis	Marysville	Tacoma
Duvall	Monroe	Thurston
Edmonds	Mountlake Terrace	Vancouver
Elma	Olympia	Woodinville
Everett	Port Orchard	Woodland
Fife	Poulsbo	

OREGON – UNITS INSTALLED

Ashland	Happy Valley	Saint Johns
Beaverton	Hillsboro	Salem
Cannon Beach	Keizer	Sandy
Clackamas	Lake Oswego	Seaside
Corvallis	McMinnville	Springfield
Eugene	Milwaukie	The Dalles
Florence	Molalla	Tillamook
Gladstone	Newberg	Troutdale
Government Camp	Oregon City	West Linn
Gresham	Portland	Westport

Rinker MATERIALS™

CONTINUED FROM PAGE 2

STORMCEPTOR® AND RECYCLED CONCRETE PIPE WORK WELL FOR FUEL DEPOT

concrete pipe and the high value of concrete as an environmentally sound material. Stormceptor units and reinforced concrete pipe storm sewers are proving to be very effective drainage systems for industry.

Stormceptor Sales & Marketing,
Hanson Pipe & Products Canada Inc.

NEW STORMCEPTOR DEVELOPMENT TEAM

The Stormceptor Group of Companies is pleased to announce the formation of its new Stormceptor Development Team.

Tim Patriquin joins the Stormceptor Group as the Division Manager after 23 years with the Canadian Forces. Tim was a senior officer with the Canadian Military Engineers and has 18 years of Construction Engineering experience. He worked on construction and maintenance projects in Trenton, ON, Alert, NWT, Petawawa, ON and Toronto, ON. He also served as the Engineer Troop Commander with the Canadian Logistics Battalion in Croatia and as the Task Force Engineer in Bosnia-Hercegovina. Tim is a professional engineer and brings an extensive background in facilities maintenance, project management, long-term development plans and personnel management. Tim has a Bachelor of Engineering (Civil) from Royal Military College and an Executive MBA from Queen's University.

Brian Lee joins the Stormceptor Group as as a Stormwater Specialist. Brian graduated with a Bachelor of Engineering (Civil) from Ryerson University, Toronto. He is a Professional Engineer with an extensive background in the precast concrete pipe industry. Brian began his career as an Assistant Engineer with Lafarge Pipe & Precast in 1996. In 1998, he joined Centennial Concrete Pipe & Products Canada, Inc (a joint venture company between Blue Circle and Lafarge) as a Special Projects Engineer. In 1999, Brian took on a new role as the Marketing Engineer for the Stormceptor System in Ontario, Canada. Brian's experience in marketing and technical support with a precast concrete drainage pipe manufacturer in Ontario will be an invaluable asset to the Stormceptor Team worldwide.

Penh Tov joins the Stormceptor Group as a Stormwater Specialist. Penh graduated from the Environmental Engineering program at the University of Guelph. She has spent three years working in the engineering consulting field with Acres & Associated Environmental Ltd. and Conestoga-Rovers & Associates. In addition to site assessment and investigation experience, Penh also brings product development and research skills to the Stormceptor team.

Fabio Tonto is a Professional Engineer, and a graduate of the Environmental Engineering program at the University of Guelph. After graduation Fabio spent three years working as an environmental consultant with Environment Management Group Ltd, a consulting engineering firm located in Toronto, Ontario. This position consisted of conducting environmental site assessments, report reviews, and site investigations. Since 2001, Fabio has been at his present position as a Stormwater Specialist with Stormceptor Group of Companies. Fabio has been an important part of the Stormceptor team assisting with technical support, marketing strategies and product development.

DESIGN ONLINE!

Visit our website **www.stormceptor.com** to design online with our interactive **Expert System Tool**

THE STORMCEPTOR® SYSTEM

The Stormceptor® System is a vertically-oriented stormwater separator that removes oil, sediment and other pollutants from urban runoff. Its built-in bypass feature prevents trapped contents from flushing out during intense rainstorms.

Performance Claim Verified by the ETV Program

MOE MANUAL

Ontario Ministry of the Environment (MOE) Stormwater Management Planning and Design Manual

The new MOE manual was released in March, 2003. The manual provides guidance for the design of Oil/Grit separators (OGS) for new and infill development. OGS may be used for stand-alone applications, pre-treatment, or in a multi-component approach.

The manual may be purchased from the MOE or downloaded from the following think:

http://www.ene.gov.on.ca/envision/gp/index.htm

OPS APPROVAL

Effective February 18, 2003, the Stormceptor System has been classified as "Accepted for Use" by the Ontario Provincial Standards (OPS), Product Management Committee. The Stormceptor System is approved for use in Ontario applications (through performance or end-result achievement) by an infrastructure owner (such as a province, state, major municipality, etc.).

Further information may be found at www.roadauthority.com.

Stormceptor is manufactured under license by:

IN CANADA Lafarge Canada Inc. · Hanson · Lecuyer · Stresscon Limited · The Langley Concrete Group

IN AUSTRALIA Humes

IN THE USA Rinker Materials · The Cretex Companies, Inc. · Carder Concrete Products · Wyoming Concrete Products · Cadillac

THE STORMCEPTOR GROUP OF COMPANIES
12 Madison Avenue
Toronto, ON M5R 2S1
Tel: 800-565-4801
Fax: 416-960-5637

THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS
Canadian Patent No. 2,009,208
Canadian Patent No. 2,137,942
Canadian Patent No. 2,175,277
Canadian Patent No. 2,180,305
Canadian Patent No. 2,206,338
Australian Patent No. 693,164
Australian Patent No. 707,133

RINKER MATERIALS HYDRO CONDUIT DIVISION
6560 Langfield, Building 3
Houston, Texas 77092
Tel: 800-909-7763
Fax: 832-590-5399

THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS
U.S. Patent No. 4,985,148
U.S. Patent No. 5,498,331
U.S. Patent No. 5,725,760
U.S. Patent No. 5,753,115
U.S. Patent No. 5,849,181
U.S. Patent No. 6,068,765
U.S. Patent No. 6,371,690