

PROJECT NAME:	Catch Basin Inserts – Hickory Ridge	DATE:	12/14/07
ADDRESS/BLOCK & LOT	Bethlehem Township		
FACILITY TYPE:	Existing Curb, Gutter and Detention System	PRIORITY:	>6

1. ISSUES AND CONCERNS:

During field evaluations, older residential subdivision developments were identified that use traditional curb and gutter stormwater systems to collect and discharge runoff from the roadways to a stormwater basin for detention purposes and eventual discharge to receiving waters. One subdivision of concern was identified as the Hickory Ridge development and includes an existing stormwater basin that has been minimally maintained, contains extensive woody vegetation and significant sediment deposition. Sediment primarily consists of grit and debris from roadway surfaces and is limiting effectiveness of the system in regards to meeting its original design function as well as decreasing infiltration capacity and contaminant removal efficiency. The basin is located in an area difficult to access and reach and it is expected that routine maintenance for sediment removal would have a significant impact on existing vegetation.

2. EXISTING CONDITION BASED ON FIELD EVALUATION:

The Hickory Ridge residential subdivision development is located north of Route 78 in Bethlehem Township. The stormwater management basin is not regularly maintained and access has not been provided for routine maintenance activities. It is assumed that the basin is owned by the property owners association. The drainage area is estimated at 50 acres and the basin covers an area of approximately 88,000 square feet. The original engineering design placed the inlet in very close to the outlet structure, so that during smaller rainfall events, runoff short circuits most of the basin area limiting the facility's ability to infiltrate, filter, and treat stormwater from first flush and more frequent water quality storms. The outlet structure was overgrown with woody vegetation and extensive sediment deposition was observed within the basin.

3. PROPOSED SOLUTIONS:

To address the issue of sediment deposition in the basins and potential contamination from oil, grease, metals, and PAH's associated with roadways, the plan is recommending that catch basin insert systems be considered. While extensive efforts may be needed to repair and clear the detention basins to reestablish their original design function and ensure protection of public health, safety and welfare, a retrofit to the basins to improve their water quality function is not proposed as part of this plan due to the extensive disturbance and cost associated with the work. As an alternative, the plan proposes to remove sediment from the stormwater conveyance system through catch basin inserts. Catch basin inserts filter stormwater runoff from roadways and driveways as it enters the inlets located along the curbs and traps the material before stormwater flows into the detention system. Sediment is captured near the source and can efficiently be removed from the catch basin on a routine basis minimizing disturbance to surrounding woodlands.

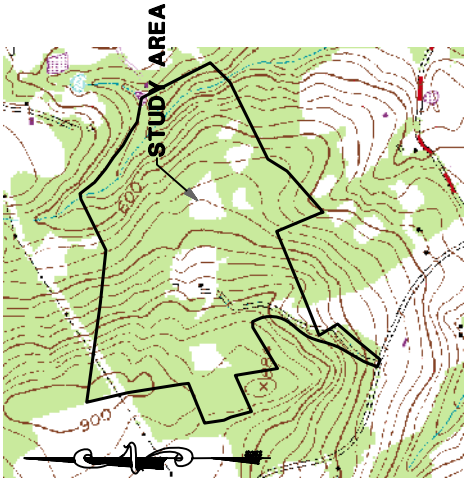
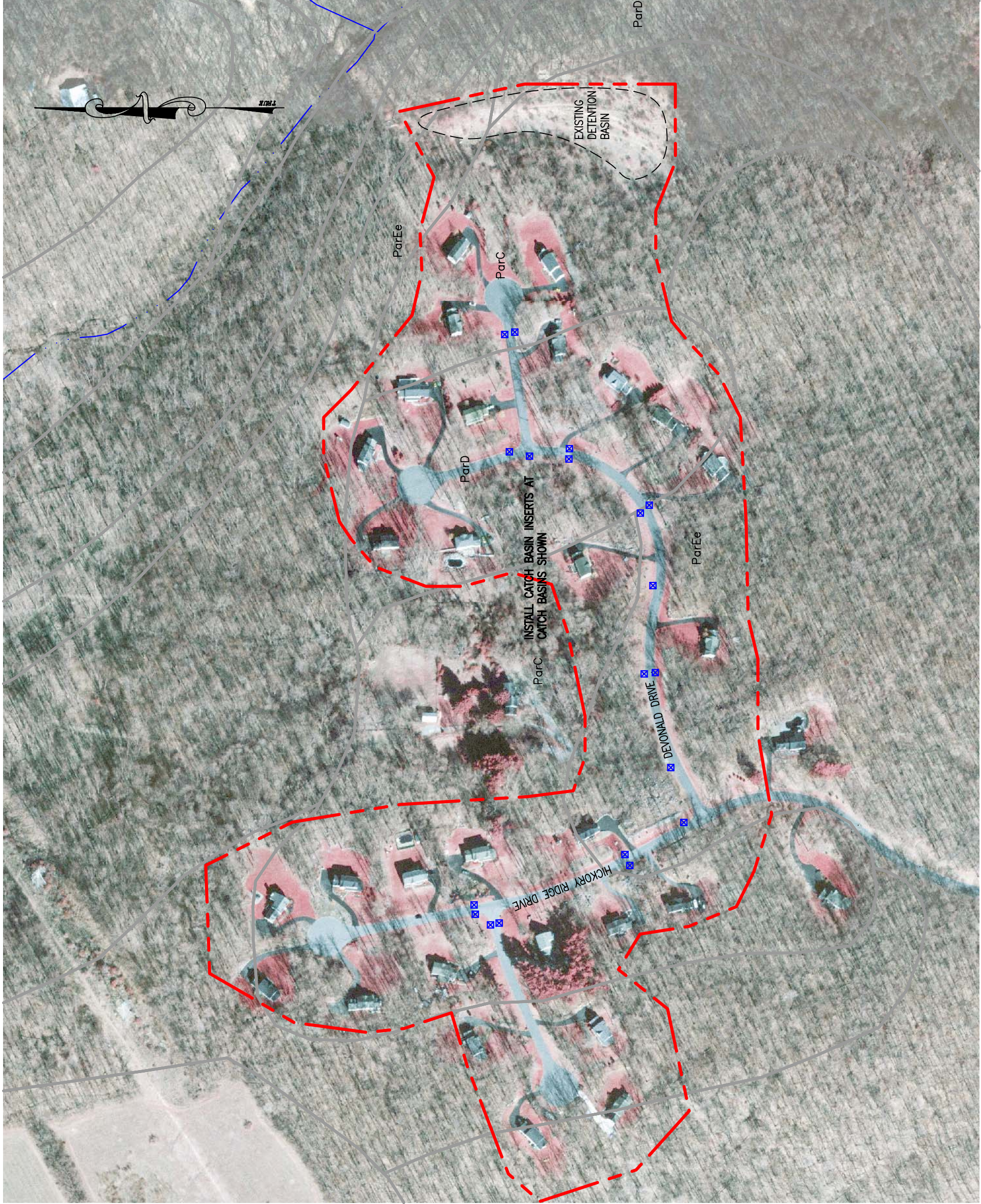
4. ANTICIPATED BENEFITS:

Catch basin inserts can effectively remove suspended sediment in stormwater runoff generated from roadways and driveways within the development. By removing sediment at the source, runoff quality can be improved without extensive costs for mobilizing a large construction effort and disturbing existing vegetation. These retrofits allow for the detention basins to perform more effectively for longer periods without extensive maintenance or improvements. The improvement of water quality in the inflowing runoff will result in higher infiltration capacity and ultimately improved runoff quality leaving the basin. If a total of 19 inlets at Hickory Ridge are retrofitted with catch basin inserts, runoff from 49 acres of the existing development will be treated. This area can contribute up to 4,900 lbs of sediment each year and with the catch basin inserts trapping and removing a minimum of 50% of the sediment, a total of 2,450 lbs of sediment can be prevented from entering the basin and receiving waterways.

5. MAJOR IMPLEMENTATION ISSUES:

The Hickory Ridge Homeowners' Association will need to endorse the project and be willing to implement and maintain the catch basin insert systems. One of the most important components of implementing catch basin inserts is to ensure that routine maintenance is provided and the systems function as they are designed.

TASK	DESCRIPTION			ESTIMATED COSTS
1	Identify and select appropriate catch basin insert system			\$2,500.00
2	Prepare construction documents and solicit quotes from contractors.			\$5,000.00
3	Install stormwater BMP retrofits			
		QUANTITY	UNITS	UNIT PRICE
	Mobilization	1	Lump Sum	\$2,500.00
	Catch Basin Insert Installation	19	Each	\$500.00
	1-Year Warranty	1	Lump Sum	\$4,750.00
	Filter Media Replacement	19	Each	\$200.00
	Total Construction Cost			\$20,550.00
TOTAL COST:				\$28,050.00
ANNUAL O&M COST:				\$500.00



USGS QUAD LOCATION MAP
(HIGH BRIDGE, NOT TO SCALE)

LEGEND

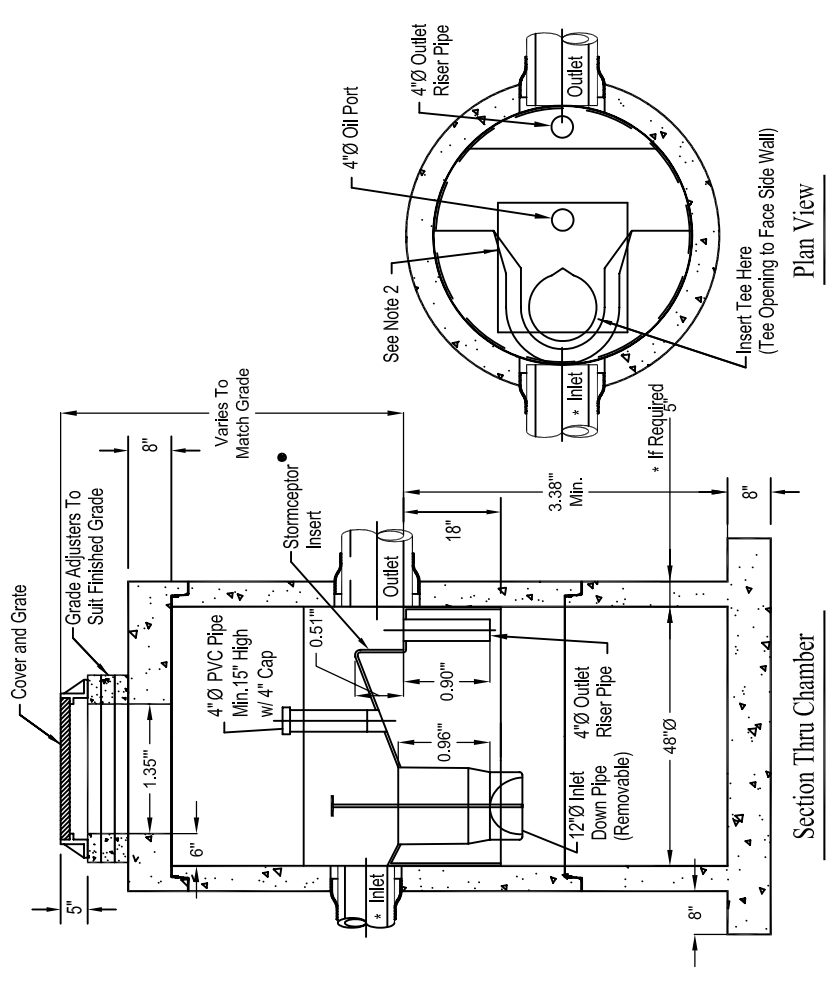
- - - DRAINAGE AREA
- · - · - STREAM
- SOILS
- ☒ CATCH BASIN INSERT

SOILS:
 ParC - Parker Cobbly Loam, 3-15% Slopes
 ParD - Parker Cobbly Loam, 15-25% Slopes
 ParEe - Parker Cobbly Loam, 18-40% Slopes, extremely stony



SITE PLAN	
HICKORY RIDGE CATCH BASIN INSERTS	
DATE: DECEMBER 14, 2007	RIGHT OF WAY BETHLEHEM TOWNSHIP HUNTERDON COUNTY, NEW JERSEY
SCALE: 1" = 250'	OMNI ENVIRONMENTAL
SHT. NO. 2 of 2	321 WALL STREET PRINCETON, NJ 08540 PH: (609) 924-8821 FAX: (609) 924-8851

STC 450i Precast Concrete Stormceptor®
(450 U.S. Gallon Capacity)



Notes:

1. The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Inlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.

Rinker 027

STORMCEPTOR DETAIL - RINKER MATERIALS
SOURCE: WWW.RINKERSTORMCEPTOR.COM

NOTE: BMP DETAILS ARE GENERIC AND ARE NOT MEANT FOR DETAILED BMP DESIGN.

CATCH BASIN INSERTS

MULHOCKAWAY CREEK
STORMWATER BMP RETROFITS

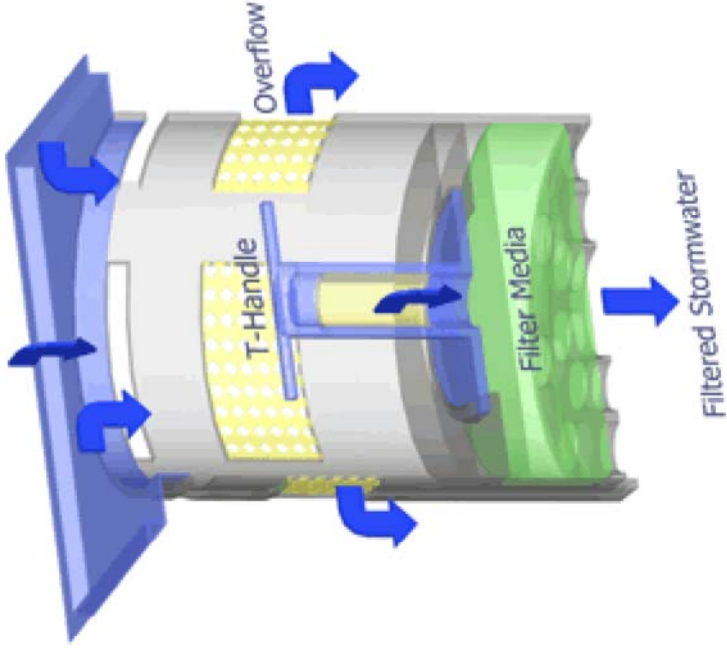
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SCALE: NTS

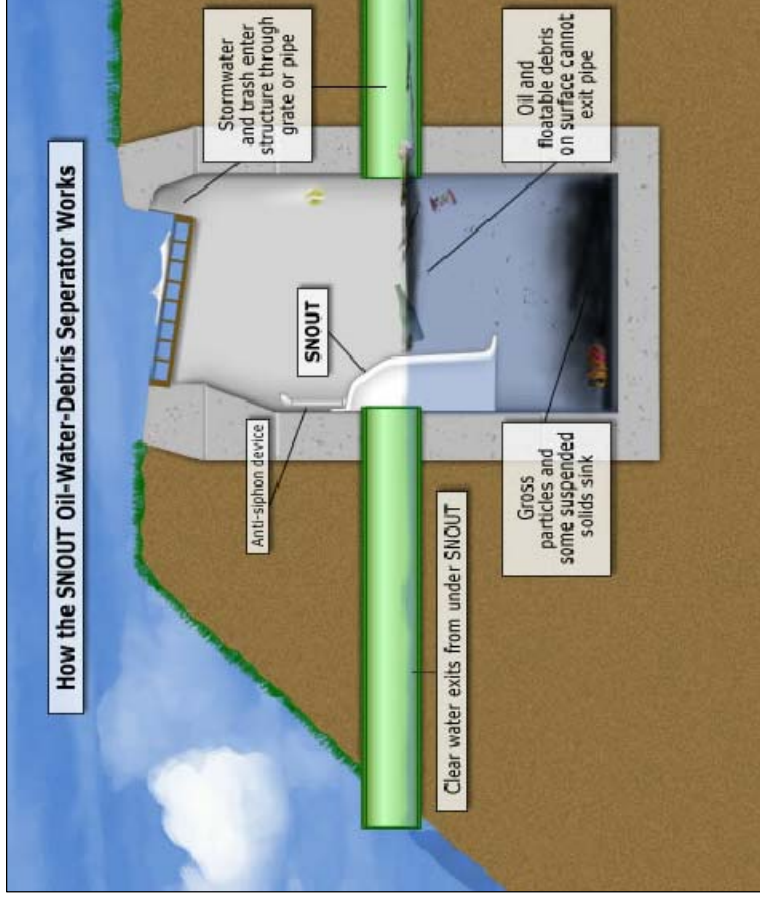
SHT. NO. 1 of 1

OMNI ENVIRONMENTAL

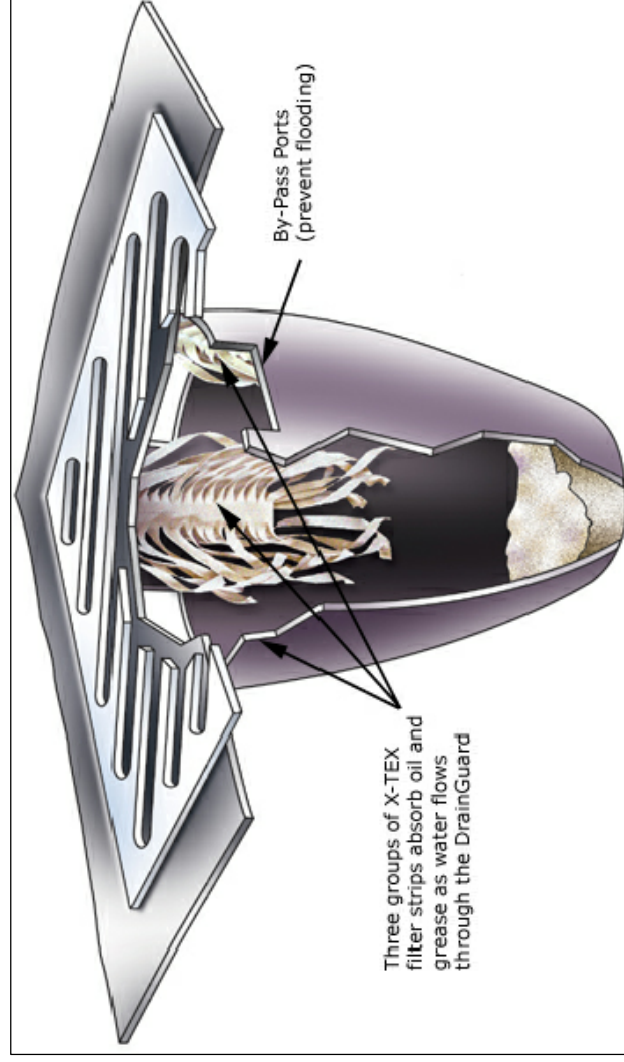
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AQUA-GUARD DETAIL - AQUASHIELD, INC.
SOURCE: WWW.AQUASHIELDINC.COM



SNOUT DETAIL - BEST MANAGEMENT PRODUCTS, INC.
SOURCE: WWW.BESTMP.COM



DRAINGUARD DETAIL - ULTRATECH INTERNATIONAL, INC.
SOURCE: WWW.STORMWATER-PRODUCTS.COM