



## Quick-Start Design Guide with SNOUT<sup>®</sup> to Structure Ratio (STSR) Methodology

### Background:

The SNOUT system from Best Management Products, Inc. (BMP, Inc.) is based on a vented hood that can reduce floatable trash and debris, free oils, and other solids from stormwater discharges. In its most basic application, a SNOUT hood is installed over the outlet pipe of a catch basin or other stormwater quality structure that incorporates a deep sump (see Installation Drawing). The SNOUT forms a baffle in the structure that collects floatable debris and free oils on the surface of the captured stormwater, while permitting heavier solids to sink to the bottom of the sump. The clarified intermediate layer is forced out of the structure through the open bottom of the SNOUT by displacement from incoming flow. The resultant discharge contains considerably less unsightly trash and other gross pollutants, and can also offer reductions of free-oils and finer solids. What follows are basic design tips to optimize the performance of SNOUT systems.

### Design Recommendations for Site:

- ❖ Establish SNOUT to Structure Ratio (**STSR**) for site as follows:

**Heavy Traffic and Pollutant Loading Applications (STSR 1:1):** This includes gas stations, convenience stores, fast food restaurants, vehicle repair facilities, stores with “drive through” service (e.g. banks, drug stores, dry cleaners, coffee shops), loading docks, distribution facilities, marinas, hospitals, transportation terminals (air, bus, train, sea, shipping), school bus loading areas, maintenance facilities, light industrial sites, waste disposal facilities or “dumpster areas”, parking and roadway areas of shopping centers close to the stores, etc. In “Heavy Traffic and Pollutant Load” areas a SNOUT in every structure is indicated (STSR 1:1). The exception will be where an inlet can not be maintained. In this case, and where additional treatment is desired, non-inlet polishing structures can be added to the drainage network prior to discharge (e.g. with a cover not a grate thus it receives no surface flow). Bio-Skirts<sup>®</sup> may also be deployed in structures that will receive heavy hydrocarbon loading and Turbo Plates<sup>®</sup> may be added to a polishing structure to increase solids removals.

**Moderate Traffic and Pollutant Loading Applications (STSR 1:2):** This includes office buildings, multi-residential complexes, schools (other than bus areas), most shopping mall parking areas, mixed retail commercial facilities, municipal/government buildings, athletic/entertainment/recreational facilities, non-fast food restaurants, special event/remote parking areas, etc. In “Moderate

Traffic and Pollutant Load” areas a SNOOT in at least every other structure is indicated (STSR 1:2). The downstream structures (prior to discharge) are most critical. Bio-Skirts® may also be deployed in structures that will receive heavy hydrocarbon loading and Turbo Plates® may be added to a polishing structure to increase solids removals.

**Low Traffic and Pollutant Loading Applications (STSR 1:3):** This includes grassy or vegetated areas, single family residences, parks\*, parking for offices within residences, flow excess from permeable paving areas, etc. In Low Traffic and Pollutant Load areas one SNOOT in every three structures may be adequate (STSR 1:3).

*\* If discharge in a park setting is to a “high-value” water body, additional treatment may be indicated even if it is otherwise defined as a low traffic low load area.*

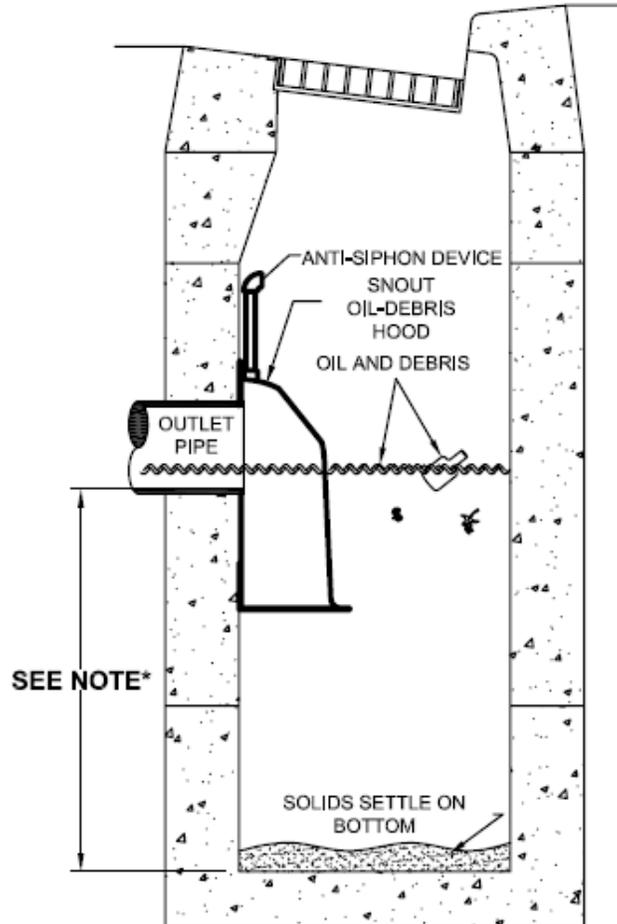
**STSR Note:** A large site may have different STSR areas, just like it may have different runoff coefficients. For instance, a shopping mall may have an STSR of 1:1 in heavy traffic roadways and loading/unloading areas, but may have a STSR 1:2 in a remote parking area. Therefore apply the appropriate STSR to each area of the site to arrive at the total number of SNOOT equipped structures for the project.

### **Design Recommendations for Individual Structures:**

- ❖ As a rule of thumb, BMP, Inc. recommends *minimum* sump depths based on outlet pipe inside diameters of 2.5 to 3 times the outlet pipe size. (Special Note for Smaller Pipes: A minimum sump depth of 36 inches for all pipe sizes 12 inches ID or less, and 48 inches for pipe 15-18 inches ID is required if collection of finer solids is desired.)
- ❖ The plan dimension of the structure should be up to 7 times the flow area of the outlet pipe.
- ❖ Bio-Skirt® oil reducing skirted booms (for hydrocarbons in any structure) and Turbo Plates® (for settleable solids in a final polishing structure) can increase pollutant removals. Bio-Skirts are highly recommended for gas or vehicle service stations, convenience stores, restaurants, loading docks, marinas, or high traffic applications. They are optimally effective when used in conjunction with a SNOOT.
- ❖ The “R” series SNOUTs are available for round manhole type structures of up to 96” ID with pipes up to 60” ID; the “F” series SNOUTs are available for flat walled box type structures for pipes up to 72” ID; the “NP” series SNOUTs are available for PVC structures up to 36” ID.

Further structural design guidelines including CAD drawings, hydraulic spreadsheets, and site inspection and maintenance field reports and installation inspection sheets are available from BMP, Inc.

### TYPICAL INSTALLATION



\*NOTE- SUMP DEPTH OF 36" MIN. FOR  $\leq$  12" DIAM. OUTLET. FOR OUTLETS  $>$ OR= 15", DEPTH = 2.5-3X DIAM.

### Contact Information:

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The SNOUT, Bio-Skirt and TrashScreen are protected by: US Patents 6126817, 7857966, 7951294 and 8512556. More US patents are pending and BMP holds Canadian patents for much of the technology patented in the US. Canadian Patents numbers include 2285146, 2688012, 2690156 and 2740678. The SNOUT<sup>®</sup>, Bio-Skirt<sup>®</sup> Turbo Plate™ and Stainless TrashScreen™ are trademarks of Best Management Products,