Inventive Resources, Inc. (IRI)

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February 5, 2021

State Water Resources Control Board (SWRCB)
State Water Board Program
PO BOX 100
Sacramento, CA 95812-0100
Attention: Leo Cosentini, Jaime Favila

SUBJECT: AMENDED TRASH CAPTURE SUBMISSION

Dear Sirs,

Inventive Resources Inc. is pleased to submit this amendment to the application for the Water Decontaminator (WD) catch basin insert for use as a Trash Capture Device. The Water Decontaminator has been certified by the State Water Board on March 15, 2018. After several discussions and meetings with the Mosquito and Vector Control Association of California (MVCAC) we have updated the design of Water Decontaminator standard (grate) inlet configuration to provide acceptable access for mosquito and vector control technicians to inspect, sample and treat. *MVCAC has reviewed the conceptual drawings and submission for the Water Decontaminator and verifies that provisions have been included in the design that allow for full visual access to all areas for presence of standing water, and when necessary, allows for treatments of mosquitoes. MVCAC approval was issued on 4/27/20.* This update does not change the Water Decontaminator's hydraulic capability or filtration output of the standard (grate) inlet configuration. The vector control access design update includes:

1. Offsetting filter housing to one side to allow better visual access to catch basin.
2. Enlarging the view/access port on the deflector piece
3. Modifying the deflector for improved access

The following details remain the same relative to both the Water Decontaminator curb and standard (grate) inlet configurations that was previously certified by the State Water Board.

1. Polycarbonate retractable door
2. Runoff still flows through deflector and into the filter housing.
3. Filter cartridge hydraulic and filtering capabilities remain the same.
4. Hydraulic capacity and trash capture capabilities are unchanged.
5. Maintenance and servicing remain the same.

We are submitting this revised application in accordance with the State Water Resources Control Board *Trash Treatment Control Device Application Requirement*s which include the following eight elements:

1. Cover Letter
2. Table of Contents
3. Physical Description
4. Installation Guidance
5. Operation and Maintenance Information
6. Vector Control Accessibility
7. Reliability Information
8. Field/Laboratory Testing Information and Analysis

Thank you for your time in reviewing and considering this application.

This application will be submitted electronically to Mr. Leo Cosentini at Leo.Cosentini@waterboards.ca.gov and Jaime Favila at Jaime.Favila@waterboards.ca.gov. If you need additional information, I can be contacted at Evangelina@iriproducts.com or by telephone at 209-545-1663.

Respectfully submitted,
Inventive Resources Inc.

John A. Paoluccio P.E.
CEO, Inventive Resources Inc.

Evangelina Paoluccio, P.E., QSD/P
Engineering Manager, Inventive Resources Inc.

1.0 COVERLETTER

1.A General Description of Device

The Water Decontaminator (WD) catch basin insert by Inventive Resources, Inc. (IRI) is an environmental product that is placed under a catch basin grate to help remove trash, sediment, oil and contaminants from storm water runoff. Oil and contaminants are captured in a disposable cartridge. The vertical housing helps to allow for settling of incoming sediment for later disposal. Recently, a trash capture screen was added to the bypass to capture particles 5 mm and larger through the design flow rate and fulfill Trash Capture requirements adopted by the State Water Resources Control Board (SWRCB). The filter/absorber cartridge uses recycled products, essentially fighting pollution with pollution.

1.B Applicants Contact Information and Location

IRI is a licensed general and engineering contractor and has been the developer of several environmental products that are installed all over the world including the Panama Canal, major amusement parks, military, commercial developments, and residential areas. The WD owner/representative regarding this Trash Capture submission is included in Table 1:

Table 1- WD Representative Contact Information
Water Decontaminator Trash Capture Device Application Submission

Company Representatives:	Evangelina Paoluccio, P.E. QSD/QSP
Mailing Address:	5038 Salida Blvd / PO Box 1316 Salida, CA 95368
Company Telephone:	209-545-1663 General 209-545-3533 Fax 1-888-285-6158
Representative Email address:	evangelina@iriproducts.com

The WD company contact is:

Company Contact Information
Water Decontaminator Trash Capture Device Application Submission

Company Representatives:	John J. Paoluccio, President
Mailing Address:	5038 Salida Blvd / PO Box 1316 Salida, CA 95368
Company Telephone:	209-545-1663 General 209-545-3533 Fax 1-888-285-6158
Representative Email address:	John@iriproducts.com

1.C Device Manufacturer's Website

The WD catch basin inserts are manufactured and sold through Inventive Resources Inc. (IRI). IRI's website is www.iriproducts.com.

1.D Device Manufacturing Location

The WD catch basin inserts are all manufactured at our Salida, CA facility. The IRI facility is located just north of Modesto in Salida California, 80 miles east of San Francisco and 65 miles south of Sacramento. The manufacturing facility address is 5038 Salida Blvd, Salida CA 95368.

1.E Brief Summary of any field/laboratory testing results that demonstrate the Device functions as described within the application.

A discussion of Field and Laboratory results that demonstrate the WD functions as described is included in the Field/Laboratory Testing section towards the end of the report on page 42, Table 6. Flow rates based on controlled in-house testing rates vary and are dependent on site specific environmental conditions. Cartridge filters have a maximum flow rate of 60 gal/min based on multiple in-house controlled tests. Once runoff flow reaches the cartridge filter maximum flow rate, pressure head increases, and water level would potentially reach the screened bypass. Screened bypass material is Stainless steel 3/16" (4.83mm) perforated metal screen. All debris will be contained in nominal 15-20-gallon housing and only liquid and small particles under 4.83mm could potentially bypass through the 4.83mm screened bypass. The housing can hold up to 70-100 pounds of sediment before being compromised.

In-house testing was done on a portable test stand for the screened material. A 3-inch diameter screened opening was placed at the bottom of a housing unit. The screened area material was 3/16" (4.83mm) perforated metal sheet screen. The opening was covered with an energy dissipater to break up the entering water flow while letting full flow without jet streams to flow through the 3-inch screened opening. The flow rate from the hose was set when the water level in the bucket was steady at 3 inches in height above the screen. The testing flow rate was then directed to a five-gallon container and a timer recorded the time (in seconds), to fill the 5-gallon container. Multiple tests were taken, and they were all at approximately 14.5 seconds. Based on 14.5 seconds to fill a five-gallon container the flow rate was 20.69 gpm through the 3-inch screened opening. This further calculates to 421.72 gpm for 1 square foot of screen. This is conservatively rounded down to 400 gpm/sf of perforated screen. The screen design flow rate is 400 gallons per minute per square foot of screen. Table 6 presents maximum design flows through each of the models. Images 13 through 17 illustrate the test stand mechanism used for flow testing screen. More information on how the device works as described will be listed throughout this submission.

1.F Brief Summary of the Device limitations, and Operational, Sizing and Maintenance Considerations

A summary of the unit limitations, operation, and sizing and maintenance considerations is included on page 29-31 this report. Limitations include depth of catch basin to allow for

sufficient pressure head and trash containment inside the filter housing and seasonal cleaning, preferably before the first flush and after leaves have dropped for the season. Areas with more wooded and denser tree canopy would require a more intense street cleaning regimen and leaf drop check to ensure the catch basin is free of leaf debris. Older catch basin may have rust present along the support lip, if that is the case, installers will need to use a steel brush to clean the area free of rust so device can sit evenly. (See Image 6)

A regular street cleaning and catch basin filter inlet inspection schedule is essential in ensuring optimum performance of this device. Maintenance frequency for the device will ultimately be determined by the site environmental and storm water runoff conditions present. IRI recommends periodic inspections following installation to determine site specific maintenance and trash/pollutant loading characteristics. Typically, equipment needed to adequately perform maintenance on a Water Decontaminator unit includes basic hand tools including nonporous mat, heavy mil trash bags, broom, small shovel, manhole cover/grate handpick, trowel. While doing maintenance, crew should have on hand at least one replacement cartridge in case a unit might need a replacement. Inspections of WD devices should be done semiannually, and if needed cleaning maintenance can be done.

Advantages of this device include treating storm water at the street/inlet level, capturing trash, sediment, and soluble, invisible pollutants. The WD fits into any existing storm drain/catch basin system and its variable filter system is suitable for high or low water flow rates. The WD is easy to install and replacing treatment filter cartridges can be done in minutes. Standard (grate) units are shown and can be chained or drop-in units depending on catch basin configuration, custom sizes are available to suit low flow design rates to high rates. The advantages of a drop-in unit are a smaller clearance needed as well as even faster maintenance of the unit. A drop-in unit does not need the funnel portion to be removed during cleaning procedures, saving a few minutes of time. Special site-specific filter/absorber cartridges can be provided with the new trash capture features. Appendix B includes a sizing guide for properly sizing a WD to a catch basin.

1.G A description or list of locations, if any, where the device has been installed. Include name and contact information of as many as three municipality(s) purchasing device

Inventive Resources Inc. (IRI) is the manufacturer of the trash and sediment capture unit, Water Decontaminator. The WD is also licensed to Filtrexx as a catch basin filter under a different name. IRI is consistently researching and developing products that tackle environmental problems. IRI is a licensed general contractor. IRI has sold and installed thousands of WD filters throughout the United States. The WD has been issued US Patent Numbers 7,479,221 and 7,588,689. It was first used in 1999 and has been widely used at Mountain House Community Service District and other locations since 2005. Mountain House Community Service District (MHCSD) alone has over 1,400 WD units installed throughout their community. Below is contact information for MHCSD (also listed in Appendix A).

Mountain House Community Service District
230 S. Sterling Drive, Suite 100
Mountain House, CA 95391
209-831-2300

IRI will present more information on MHCSD installations in this application. Thousands of units have been placed in residential and commercial areas throughout the United States of America to capture pollutants, sediment, trash, leaves, grass, and miscellaneous debris. Appendix A has a list of locations the WD has been installed.

The unique filter/absorber cartridge can be provided with site specific media wherein higher concentrations of activated carbon, oil only sorbents, Zeolite, or other media to suit certain applications. Small lists of possible applications include:

- Urban run-off
- Fire run-off
- Parking & Maintenance areas
- Oil & fuel spills
- Military bases
- Airports
- Sumps
- Industrial, Factories
- Equipment wash-down

1.H Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons that manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

John A. Paoluccio P.E.
CEO
Inventive Resources Inc.

Evangelina Paoluccio, P.E., QSD/P
Engineering Manager
Inventive Resources Inc.

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
TRASH TREATMENT CONTROL DEVICE APPLICATION
WATER DECONTAMINATOR CATCH BASIN INSERT TRASH CAPTURE UNIT SUBMISSION

PREPARED BY
Evangelina Paoluccio P.E., QSD/P, Engineering Manager
John A. Paoluccio P.E., CEO
John J. Paoluccio, President
Originally submitted to SWRCB on February 8, 2018
Certified by SWRCB March 15, 2018
MVCAC Approval April 27, 2020
Amended Resubmission to SWRCB on February 5, 2021

FOR
INVENTIVE RESOURCES INC.
MANUFACTURER OF THE WATER DECONTAMINATOR (WD)
5038 SALIDA BLVD / PO BOX 1316
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209-545-1663

FOR SUBMISSION TO THE
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
TRASH IMPLEMENTATION PROGRAM
WATER DECONTAMINATOR (WD)TRASH CAPTURE DEVICE SUBMISSION

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
TRASH TREATMENT CONTROL DEVICE APPLICATION
WATER DECONTAMINATOR TRASH CAPTURE DEVICE SUBMISSION

3.0 PHYSICAL DESCRIPTION

The Water Decontaminator catch basin insert is a patented, environmental product that is placed under a catch basin grate to help remove trash, oil, and contaminants from runoff. Debris 5 mm and larger are captured in the housing screen up to the design flow rate. During low flow conditions runoff flows through a disposable filter cartridge filtering out pollutants. The filter absorber cartridge uses recycled waste products essentially fighting pollution with pollution. Custom and above grade are available with the trash capture feature. For clarity, the term WD, unit and device will be used interchangeably with Water Decontaminator to describe the trash capture unit in this application. Table 1has our representative contact information for any technical questions regarding the WD device. In most cases new units have a lead time of approximately three weeks, replacement cartridges are available in stock and have minimal turnaround time.

Table 1- WD Representative Contact Information
Water Decontaminator Trash Capture Device Application Submission

Company Representatives:	Evangelina Paoluccio, P.E. QSD/QSP
Mailing Address:	5038 Salida Blvd / PO Box 1316 Salida, CA 95368
Company Telephone:	209-545-1663 General 209-545-3533 Fax 1-888-285-6158
Representative Email address:	evangelina@iriproducts.com

3.A Trash Capture

The WD fits into any existing storm drain/catch basin system, as illustrated in Figure 1A, 1B and 1C. A variable filter system is suitable for high and low water flow rates. Water runoff flows through the gutter and into the storm catch basin; the water deflector directs flow straight into the WD device. All runoff, up to the design flow rate is captured by the perforated trash capture screen of the unit and filter cartridge. During rain events, water level in the housing will rise. The screened area of the unit can screen trash and release runoff with debris less than 5 mm in size. Any debris 5mm or greater will be captured in the housing and not be released into the storm drain. If a rain event occurs, greater than the design flow rate, the level of water will rise and bypass through the overflow air gap, untreated.

The run-off will undergo the following sequence through the WD device and trap particles that are 5 mm and larger in a typical rain event:

1. Low flow rates up to nominal 60 gpm will pass through the vertical filter/absorber cartridge where hydrocarbons, certain chemicals and fine sediment are captured in the deep bed loading media of the disposable filter/absorber cartridge. As the filter cartridge becomes fouled, the water level will rise in the vertical housing and in rain events, up to the design flow rate, may pass through the 3/16" (4.83mm) trash capture screen located at the top of the device. (see Figure 1A, 1B and 1C)
2. Trash capture occurs when run off up to the design flow rate, flows through the device. Low flow rates pass through the filter cartridge leaving sediment and debris behind in the housing for later disposal. As sediment and trash accumulates the debris level increases. Treated flow will occur up to the design flow rate. The design flow will pass through the 3/16" perforated screen/plate, thus preventing trash 5 mm or greater to pass through the screen, retaining all trash and debris 5 mm or greater inside the device.
3. The unit should be inspected seasonally, especially before and after heavy leaf fall to ensure optimum performance. The housing unit should not have more than 4 inches of debris inside the bottom of the housing, before cleaning procedures need to be performed.
4. Normal street sweeping and regular semi-annual inspections of units should be made to ensure that the device is in proper condition to properly treat incoming runoff.
5. Replace filter cartridge every 12 months and it is best management practice to replace cartridges when sediment accumulation in the housing reaches four (4) inches or slow flow is noticed during inspection.

Figure 1A- Water Decontaminator Side Access Viewport Model Schematic
Water Decontaminator Trash Capture Device Application Submission

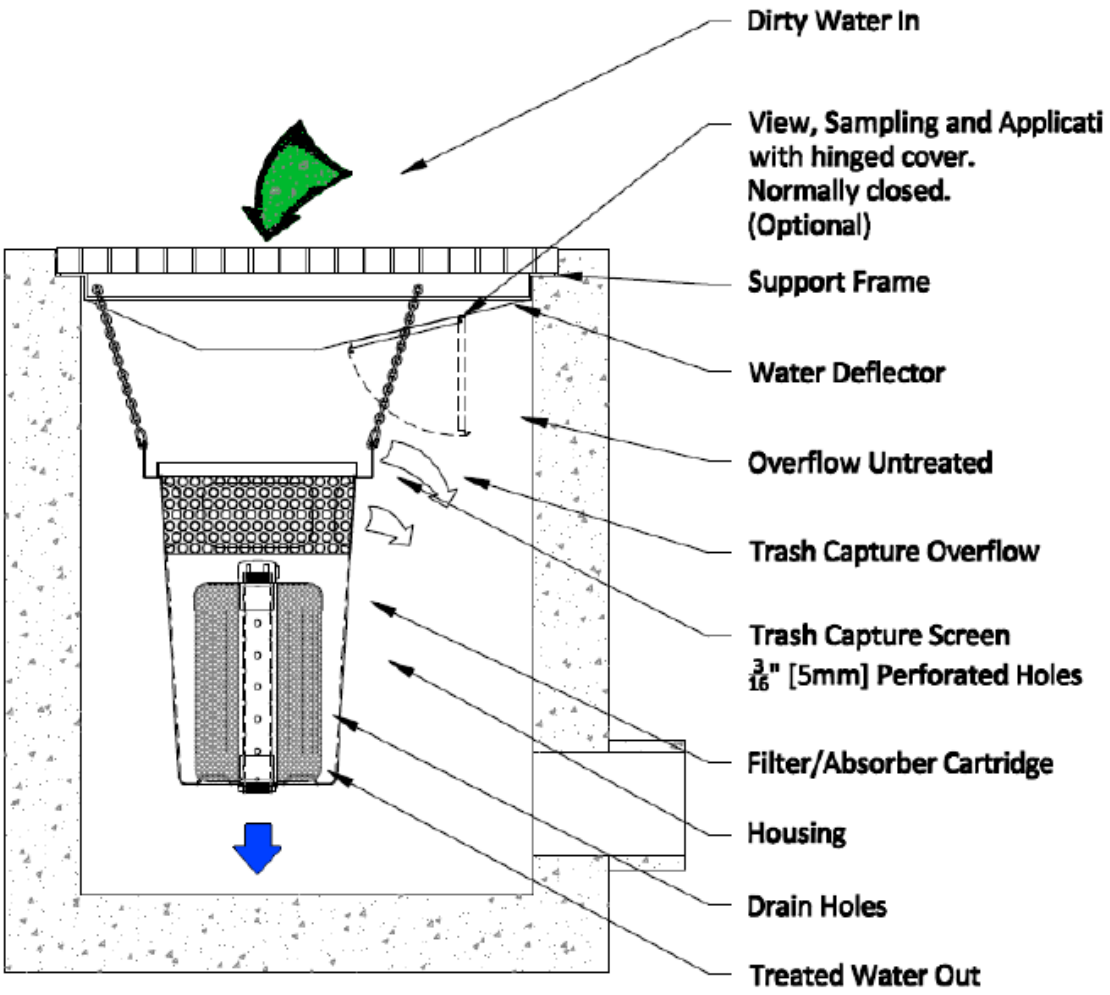


Figure 1B- Water Decontaminator Center Access Viewport Model Schematic
Water Decontaminator Trash Capture Device Application Submission

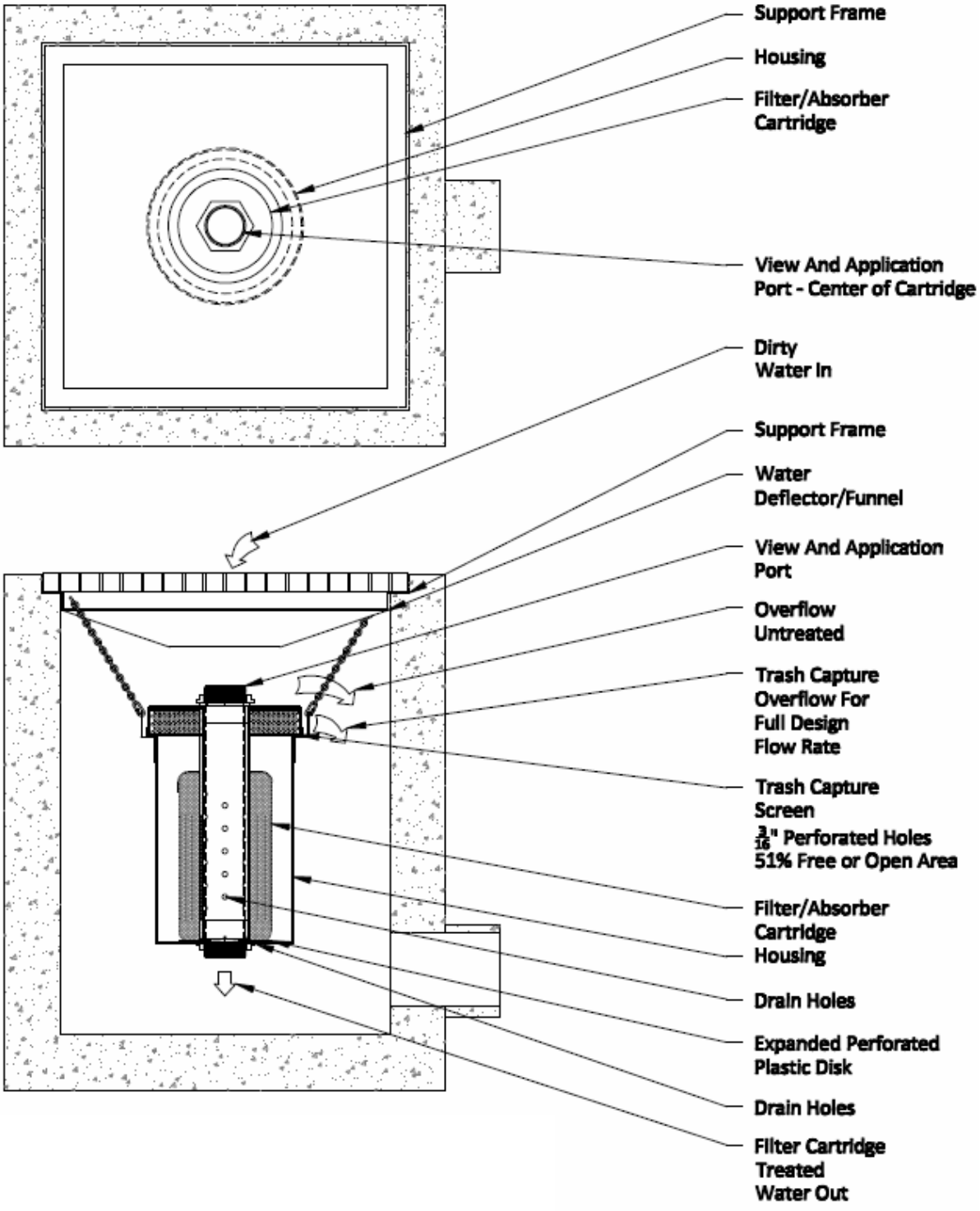
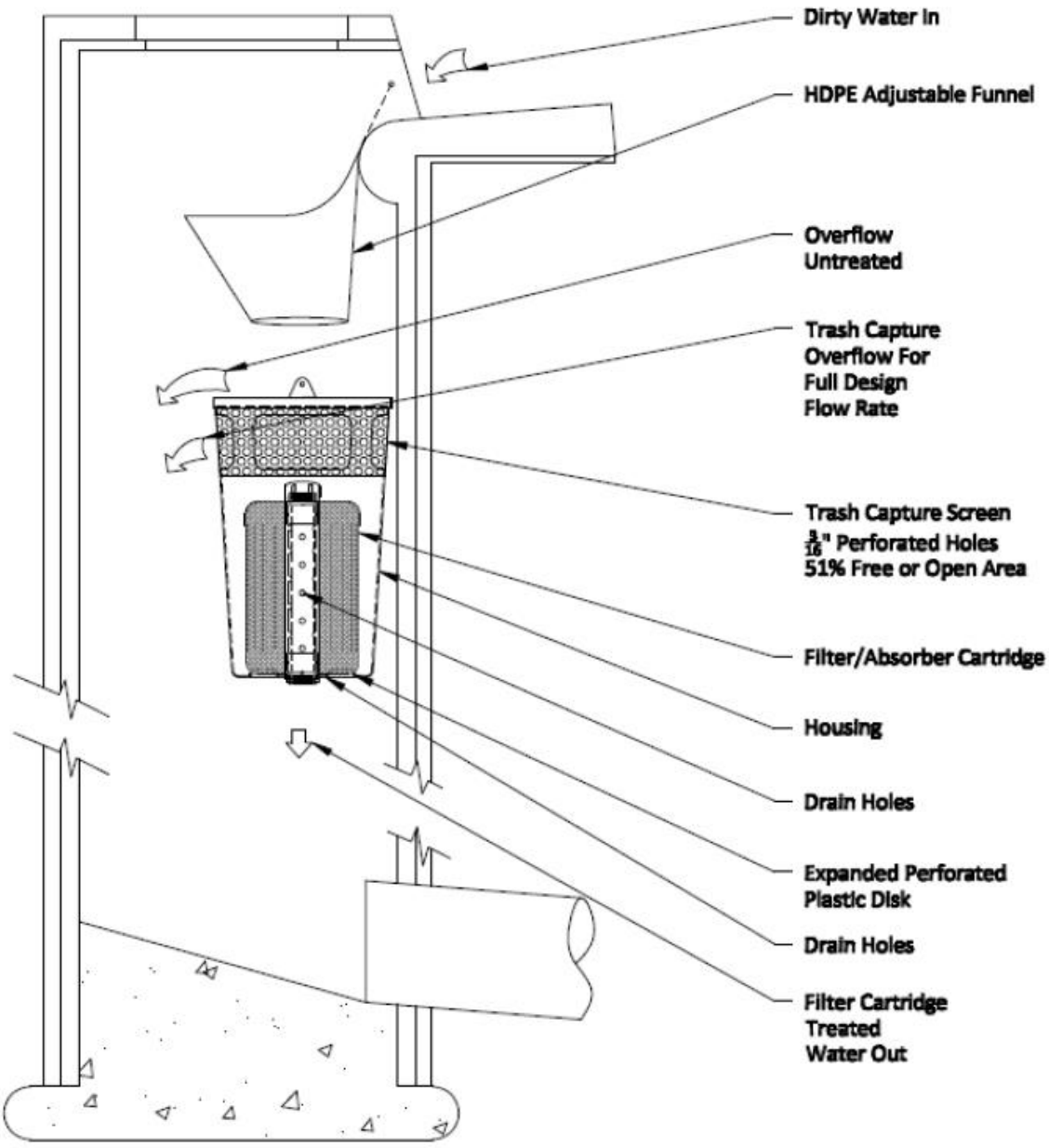


Figure 1C- Water Decontaminator Curbside Inlet Viewport Model Schematic
Water Decontaminator Trash Capture Device Application Submission



3.B Peak Flows/Trash Volumes

Table 2 presents peak flows and trash captures volumes for standard sizes of the Water Decontaminator (WD) device. Trash capture capacity is 10-15 gallons or approximately 70-100 lbs of trash and sediment. All sediment and trash are captured within the housing filter cartridge and trash capture screen. Images 4 and 5 are of prior models with sediment accumulation at maximum capacity of pure sediment. These units were replaced after inspection with new filter cartridges. Most of these units had approximately 3-12 inches of sediment accumulation; the

first unit to the left was completely full. Flow was not restricted and did not flood street. The full unit was in an area with construction activity and sediment filled the unit up, the unit still allowed flow through the cartridge; however, the unit was very heavy and required extra maneuvering to pull out the unit. Typically, the housing unit can be cleaned by dumping all the debris straight into a garbage bag and using a hand trowel to scrape any residual debris inside the housing.

The difference between models TCU-2 through TCU-P and TCU-C2 through TCU-CP is only the access viewport option as shown in Figures 1A.

Image 4: Sediment accumulation on units after one year.

Image 5: Decomposed leaves after the Fall season and leaf drop. This area was not properly street swept and all the leaves went down the catch basin and into the unit.

High rainfall rate can cause flow rates to exceed the design flow rate. The trash capture will treat up to the design flow rate and excess flow will exit the overflow opening allowing untreated water to bypass filtration and exit through the overflow air gap. Overflow area is noted on each Figure 1A, 1B and 1C.

In some cases, an external, easily cleanable, leaf/ debris pre-strainer is provided at the curb opening of certain side inlet catch basins. These cover the lower portion of the inlet opening to still allow for high flow rates to overflow the pre-strainer. These pre-strainers help prevent leaves, grass, newspapers, and larger debris from entering the catch basin. These pre-strainers may be removed after leaf fall in certain applications. Advantages of this device include treating storm water at the street/inlet level, capturing trash, sediment, and soluble, invisible pollutants.

3.C Hydraulic Capacity

3.C.1 Standard Sizes

The maximum device hydraulic capacity for all standard devices is presented in Table 2 below.

Table 2- Device Hydraulic Capacity
Water Decontaminator Trash Capture Device Application Submission

Model	Hydraulic Capacity	Viewport Type	Maximum Sediment/Trash Capture	Manufacturing Facility
TCU-2	260 GPM (.58 cfs)	Side Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA
TCU-4	584 GPM (1.3 cfs)	Side Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA
TCU-6	784 GPM (1.7 cfs)	Side Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA
TCU-6V	260-784 GPM (0.58-1.7 cfs)	Side Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA
TCU-P	Use above flow rates	Side Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA
TCU-C2	260 GPM (.58 cfs)	Center Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA
TCU-C4	584 GPM (1.3 cfs)	Center Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA
TCU-C6	784 GPM (1.7 cfs)	Center Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA
TCU-C6V	260-784 GPM (0.58-1.7 cfs)	Center Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA
TCU-CP	Use above flow rates	Center Port	70-100 lbs (10-15 gallons)	Inventive Resources Inc., Salida, CA

3.C.2 Alternative Configurations

Alternative configurations do not impact the hydraulic capacity of the device. Alternative configurations attach differently to the catch basin. Sediment housing, outflow and overflow are the same as the standard sizes.

3.D Comparison Table

Table 2 includes peak flow rates and maximum trash capture volumes. All sizes hold the same volume of trash/debris. Flow rates increase with the depth of the top trash capture screen band.

3.E Design drawings for all standard device sizes including dimensions and alternative configurations

Design drawings are attached to this application in Appendix B. Design drawings include dimensions and appurtenances for installation. Media mixes are not included in this report or exploded drawings of unit but can be provided in a supplemental confidential submission as some of that information would be proprietary to Inventive Resources Inc. Our previously installed models have the capability of being easily retrofitted to our trash capture models. Also included in Appendix B is a sizing guide for procuring a WD from Inventive Resources Inc. The sizing guide requests a few simple measurements of the catch basin. WD units can be connected to the catch basin by a chained connection or by a drop in connection as seen in Appendix B drawings. The advantages of a drop-in unit are a smaller clearance needed as well as even faster maintenance of the unit. A drop-in unit does not need the funnel portion to be removed during cleaning procedures, saving a few minutes of time.

3.F Alternative Configurations

There are several models/configurations of the WD. The Water Decontaminator typically includes a support frame to suit the catch basin frame and grate; Funnels are either high density polyethylene (HDPE) material or stainless steel upon request. The funnel is used to deflect runoff into housing and filtration; Housings are nominal 15 gallons and can hold up to 70-100 pounds of sediment and 10-15 gallons of trash/sediment. Images 1 through 3 illustrate a sample of the variations; these images do not picture the support frame or deflector, just the housing and filter for demonstration/visual purposes. Appendix B has additional schematic information. The model variations incorporate trash capture screen in the upper portion of the housing extending above the rim to accommodate larger design flow rates and two different types of secondary self-closing access ports for Mosquito Abatement and Vector Control agents.

Below are the new Water Decontaminator products with the new Trash Capture features. These models include the Prefix “TCU” which stands for Trash Capture unit and a “C” prefix for those that utilize a center viewport flap:

- Model TCU-2 includes housing with a 15” diameter top and a 3/16” (4.83 mm) perforated cylinder strainer (See Image 1) that extends a nominal 2” above the top rim of

he housing. This provides 0.65 sq ft. of 3/16" (4.83 mm) perforate strainer material to prevent particles 5 mm or greater to pass through. An extended rim edge on top of the strainer cylinder helps retain collected debris should the flow rate exceed the rated 260 gpm or 0.58 cfs design flow rate. (See Image 3). Viewport extends out 1.5 inches above deflector funnel to the side of the WD model, *viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily. Flap door sits flush and automatically retracts when not in use.* This model can be installed chained or as a drop-in unit.

- Model TCU-4 includes housing with a 15" diameter top and a 3/16" (4.83 mm) perforated cylinder strainer that extends a nominal 4" above the top rim of the housing. This provides 1.3 square feet of 3/16" (4.83 mm) perforate strainer material to prevent particles 5 mm or greater to pass through. An extended rim edge on top of the strainer cylinder helps retain collected debris should the flow rate exceed the rated 584 gpm or 1.3 cfs design flow rate. Viewport extends out 1.5 inches above deflector funnel to the side of the WD model, *viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily. Flap door sits flush and automatically retracts when not in use.* This model can be installed chained or as a drop-in unit.

- Model TCU-6 includes housing with a 15" diameter top and a 3/16" (4.83 mm) perforated cylinder strainer that extends a nominal 6" above the top rim of the housing. This provides 1.96 square feet of 3/16" (4.83mm) perforate strainer material to prevent particles 5 mm or greater to pass through. An extended rim edge on top of the strainer cylinder helps retain collected debris should the flow rate exceed the rated 784 gpm or 1.7 cfs design flow rate. Viewport extends out 1.5 inches above deflector funnel to the side of the WD model, *viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily. Flap door sits flush and automatically retracts when not in use.* This model can be installed chained or as a drop-in unit.

- Model TCU-6V is an adjustable version that ranges from a rated 260 gpm (0.58 cfs) to 784 gpm (1.7 cfs) trash capture design flow rate depending on screen height of nominal 2" to 6". (See Image 2) Viewport extends out 1.5 inches above deflector funnel to the side of the WD model, *viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily. Flap door sits flush and automatically retracts when not in use.* This model can be installed chained or as a drop-in unit.

- Model TCU-P is a catch basin insert with a 4" to 6" diameter by 18" height, or sized as requested, trash capture screen (3/16" (4.83mm) perforated cylinder strainer) used in lieu of the filter / absorber filter (no filter cartridge in this unit). This may be used during

periods of construction. After construction, a filter cartridge can be easily installed if requested. Viewport extends out 1.5 inches above deflector funnel to the side of the WD model, *viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily. Flap door sits flush and automatically retracts when not in use.* This unit still has all the trash capture capabilities without the added enhancement of a filter cartridge to polish runoff before release. This model can be installed chained or as a drop-in unit.

- Model TCU-C2 includes housing with a 15" diameter top and a 3/16" (4.83 mm) perforated cylinder strainer that extends a nominal 2" above the top rim of the housing. This provides 0.65 sq ft. of 3/16" (4.83 mm) perforate strainer material to prevent particles 5 mm or greater to pass through. An extended rim edge on top of the strainer cylinder helps retain collected debris should the flow rate exceed the rated 260 gpm or 0.58 cfs design flow rate. Center 2-4" cylinder viewport extends out 2 inches above strainer between the bypass and funnel, *viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily.* Flap door sits flush and automatically retracts when not in use.

- Model TCU-C4 includes housing with a 15" diameter top and a 3/16" (4.83 mm) perforated cylinder strainer that extends a nominal 4" above the top rim of the housing. This provides 1.3 square feet of 3/16" (4.83 mm) perforated strainer material to prevent particles 5 mm or greater to pass through. An extended rim edge on top of the strainer cylinder helps retain collected debris should the flow rate exceed the rated 584 gpm or 1.3 cfs design flow rate. Center 2-4" cylinder viewport extends out 2 inches above strainer between the bypass and funnel, *viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily. Flap door sits flush and automatically retracts when not in use.*

- Model TCU-C6 includes housing with a 15" diameter top and a 3/16" (4.83 mm) perforated cylinder strainer that extends a nominal 6" above the top rim of the housing. This provides 1.96 square feet of 3/16" (4.83mm) perforate strainer material to prevent particles 5 mm or greater to pass through. An extended rim edge on top of the strainer cylinder helps retain collected debris should the flow rate exceed the rated 784 gpm or 1.7 cfs design flow rate. Center 2-4" cylinder viewport extends out 2 inches above strainer between the bypass and funnel, *viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily. Flap door sits flush and automatically retracts when not in use.*

- Model TCU-C6V is an adjustable version that ranges from a rated 260 gpm (0.58 cfs) to 784 gpm (1.7 cfs) trash capture design flow rate depending on screen height of nominal 2" to 6". Center 2-4" cylinder viewport extends out 2 inches above strainer between the bypass and funnel, *viewport allows Mosquito and Vector Control agents access to storm*

drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily. Flap door sits flush and automatically retracts when not in use.

- Model TCU-CP is a catch basin insert with a 4" to 6" diameter by 18" height, or sized as requested, trash capture screen (3/16" (4.83mm) perforated cylinder strainer) used in lieu of the filter / absorber filter. This may be used during periods of construction. After construction, a filter cartridge can be easily installed if requested. Center 2-4" cylinder viewport extends out 2 inches above strainer between the bypass and funnel, *viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened with a wand dispenser easily. Flap door sits flush and automatically retracts when not in use.* This unit still has all the trash capture capabilities without the added enhancement of a filter cartridge to polish runoff before release.

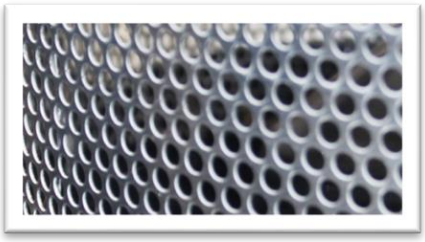


Image 1: 3/16" (4.83mm) screen.

Image 2: Model TCU-6V

Image 3: Model TCU-2

3.G Internal Bypass Design

In a typical rain event, storm water flows through the funnel and into the device housing. Low flow rates are filtered through the filter cartridge, exiting via a screened internal perforated pipe. Flow rates up to the storm design flow rate will pass through the trash capture screen thereby preventing particles 5 mm or larger to pass through. An internal bypass in the unit is essential during high intensity rain/runoff events, the internal bypass directs a portion of flow greater than the storm design flow rate around the treatment chamber and over the internal bypass trash capture screened weir. There is no need for an external bypass chamber, thus minimizing the device footprint.

In addition, the WD device includes several flow paths that cover (1) low flow rates that flow through a filter/absorber cartridge; (2) the design flow trash capture rate that flows through the 3/16" perforated trash capture screen; (3) untreated overflow, or internal bypass, for those flow rates above the design flow rate that flows through the air gap above the trash capture screen as follows:

1. Filter cartridge - Low flow rates up to 60 gpm (up to approximately 0.1 cfs) will first flow through a filter/absorber cartridge that is a nominal 10" diameter by 18" cartridge tall located in the center of the housing and that slips over a 2" perforated vertical pipe that extends through the bottom of the housing. This cartridge provides a high degree of filtration for fine sediment, hydrocarbons, and chemicals. The cartridge has a fabric screen and contains approximately 1,200 cubic inches of deep bed loading proprietary filter media.
2. Trash capture capacity - The unit includes a 3/16" diameter trash captures perforated screen that prevents particles 5 mm or greater from passing through, up through the full design flow rate. The screen size area is based on a flow capacity of 400 gpm (0.89 cfs) per square foot of screen area. Each standard device model includes trash capture screen size, in square feet, and the rated design flow rate. This allows for selection of proper model device for different flow rates. When specified, custom larger size trash capture screens can be provided to accommodate high flow rates. The standard housing holds up to 15-gallon capacity. Custom larger housings that contain 2 or 3 filter cartridges and higher volumes can be provided that include extended surface trash capture screens for extremely high flow rates. These are designed like the TCU-6 units but larger.

Internal bypass or Overflow - When a rain event provides a higher than design flow rate, the excess untreated flow, above the design flow rate will exit through the overflow opening air gap that is located above the top of the trash capture screen and the water deflector as shown on the product drawings.

3.H Previously Trapped Trash

Lack of proper maintenance in removing captured sediment and trash before heavy rain events, especially those that exceed design flow rates, can re-introduce the captured trash to the storm drain piping system. This device may reintroduce previously trapped trash in the following ways:

1. Maintenance worker error.
2. Not properly sweeping area before removing grate and device can potentially introduce debris into system.
3. Sediment buildup that is greater than capacity can cause debris to not be caught in housing.
4. A heavy rain event that is greater than design capacity of storm drain.
5. A device that has been damaged and poorly repaired.
6. An ill fitted device.
7. Unauthorized tampering of unit.

3.I Calibration Feature

There is no calibration feature on this device.

3.J Photographs

Photographs of Pre-installation and Post-Installation of the Water Decontaminator unit are included in this application. These include WD units prior to the trash capture screen being added.

3.J.1 Pre-Installation Examples

Images 7 and 8 below are of units about to be installed.

Image 7: Installation of an original unit on a side inlet. (Unit can be easily modified to meet trash capture requirements)

Image 8: Lifting of grate in a parking lot with a special lifting mechanism.

3.J.2 Post-Installation Examples

Below are images 9 through 12 of completed installations, replacement cartridge change outs and units with trash/sediment accumulation. Image 9 does *not* show a model with an access viewport.

Image 9: Installation of a unit.

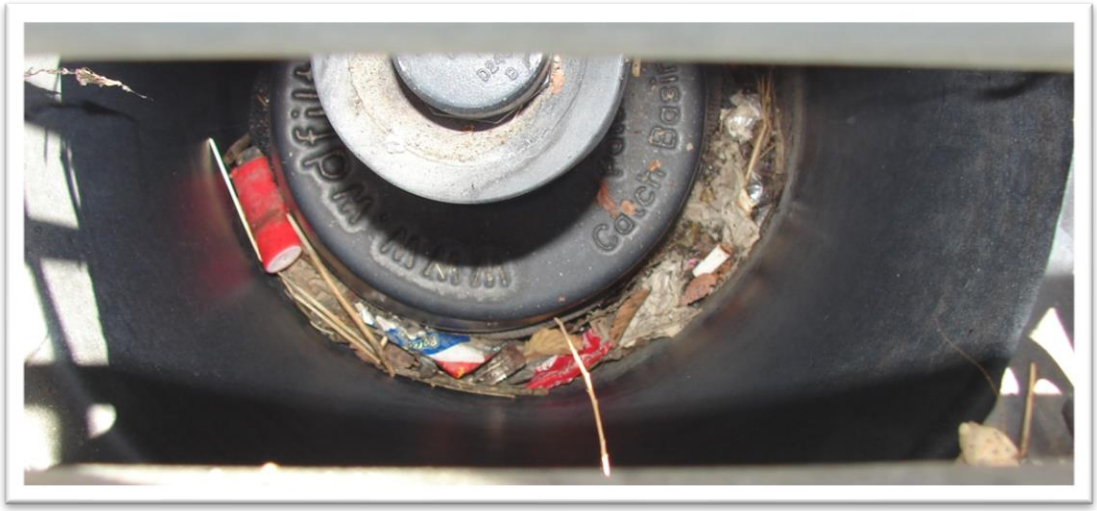


Image 10: Inspection of unit revealed some trash collection inside housing at approximately 3 inches in height within the unit.

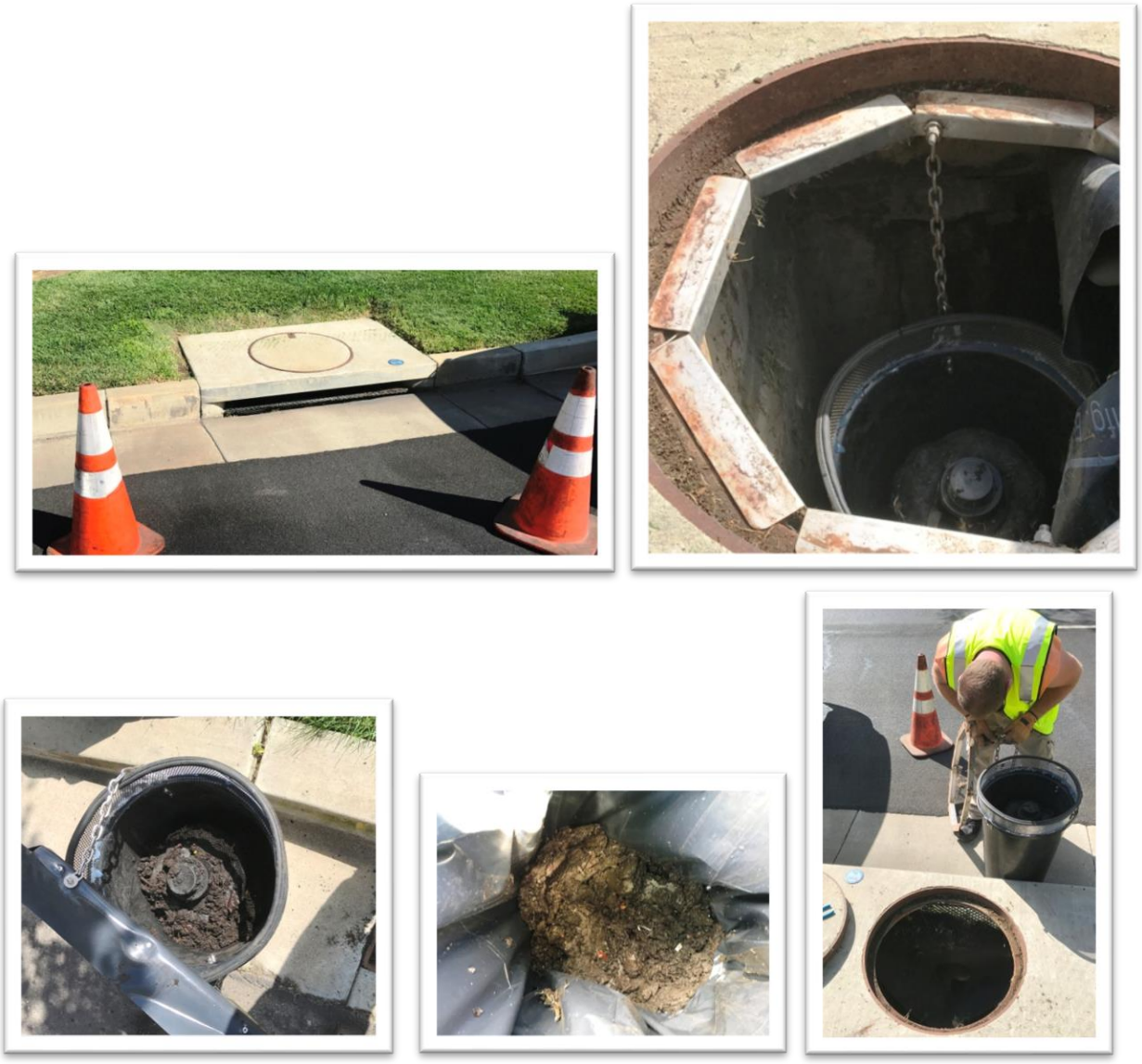


Image 11: Inspection and Cleaning of a side inlet with a Water Decontaminator Model #TCU-4. Leaves and sediment present and removed. Housing cleaned, sediment collected and disposed. Note special support frame. *(Deflector removed for visual purposes)*

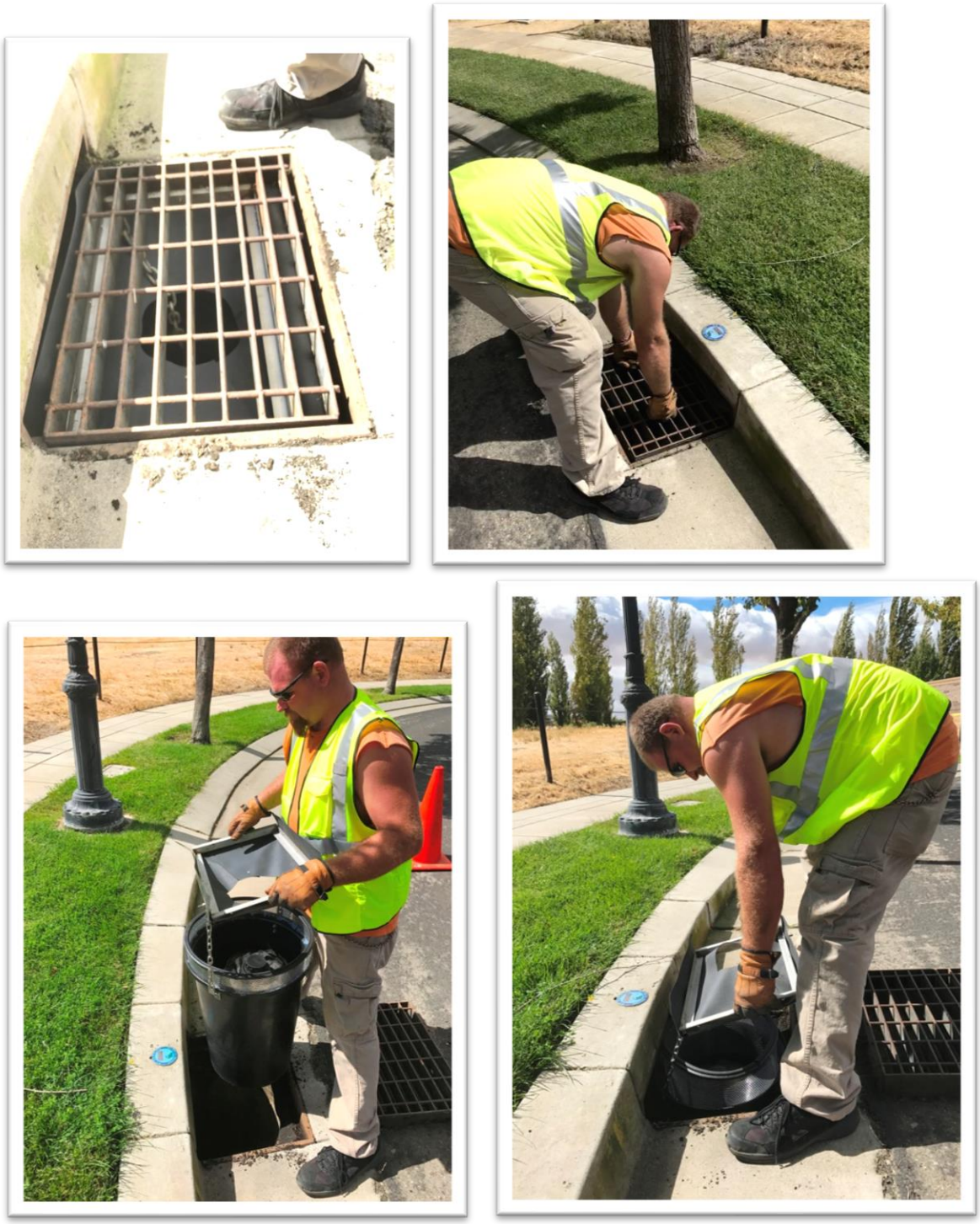


Image 12 - Inspection and Cleaning of a street side graded inlet. Model#TCU-4 inspected and cleaned.

3.K Material used to construct device

The Water Decontaminator unit is made with a combination of High-Density Polyethylene plastic (HDPE) and 304 stainless steel parts and appurtenances. HDPE is a durable, corrosion and weather resistant material. The 3/16" (4.83mm) diameter trash capture screen is 316 stainless steel equal to McNichols Co. perforated metal 3/16" hole diameter, ¼" hole spacing, 20-gauge, 51% open area or equal (See Image 1). Table 3 presents screen material specifications.

Table 3 Screened Bypass Material Specifications
Water Decontaminator Trash Capture Device Application Submission

Shape	Rectangular
Construction	Perforated
Hole Pattern	Staggered
Thickness	0.032" Aluminum/ 0.06" SS
Gauge	20 Aluminum / 16 SS
Hole Diameter	0.1875"
Open Area	51%
Hole Center-to-Center	0.25"
Width	36"
Length	40"
Material	3003 Aluminum, 316 Stainless Steel or Plastic

3.L Estimated Design/Service Life of the Device

Life expectancy for HDPE material is conservatively 50 years, but due to the nature of the application estimated service life for the WD unit is 10-15 years. Historically units installed in 2005 have shown no signs of wear on linkage, housing, and appurtenances. Filter cartridges have a service life of 12-36 months and are recommended to be replaced on an annual basis. In some cases, areas that practice good housekeeping, routine street sweeping, appropriate landscaping practices and minimal sediment disruptions, during inspections filter cartridges were deemed in excellent condition (clean, optimal flow through cartridge etc.) and have been kept in place for longer than 12 months with manufacturer approval. Obviously, high service areas (high tree canopy, propensity of runoff, undeveloped areas, and construction zones) will have units that will require more frequent maintenance. To date, (2005-15 years) we have not had to replace any portion of WD units except for annual filter cartridges. IRI warranty is for one year for all components and filter cartridge. The HDPE housing has a 5-year warranty. Terms and Conditions require periodic street cleaning and at a minimum, seasonal inspection of storm drains to visually see maximum sediment/trash buildup and if necessary, remove trash inside the housing unit. Appendix E lists Terms of Use and Warranty of the Water Decontaminator.

4.0 INSTALLATION INFORMATION

Catch basins with shallow depths can be provided with custom sizes to accommodate the frame type, be it round or rectangular, along with modified size filters, trash capture screens and drop-in unit versus a chained unit to allow head clearance. Custom size and shape units can be provided for other special applications. Appendix B includes a sizing guide to properly procure a WD unit and different funnel and connection variations.

4.A Device Installation Procedures and Considerations

When preparing an installation, it is best practice to sweep around the perimeter of the catch basin to not introduce debris into the drainage system. All swept up debris should be disposed of in an approved manner. Always follow appropriate safety precautions when installing and servicing catch basins. This includes personnel protection, traffic, and ventilation. Only experienced trained workers following OSHA's safety requirements should work around catch basins and manholes. Never leave a catch basin manhole uncovered and unsupervised. Place barrier cones at service area and appropriate traffic signage.

The WD is easy to maintain and replacing treatment cartridges can be done in minutes. Typical installation of a Water Decontaminator unit includes:

- ✓ Remove catch basin grate. (Round or Rectangular)
- ✓ Remove any visible rust or debris from metal ring. (See Image 6)
- ✓ Check measurements of ring and filter unit.
- ✓ Place unit in catch basin frame.
- ✓ Replace grate.

Image 6: Installing unit, checking lip and removing rust.

Calibration is not applicable to this device. At a minimum, semiannual inspections are recommended. During inspections, monitoring sediment in the housing should be conducted. Housing compartment should be cleaned out when sediment and debris accumulation is more

than four (4) inches. Cleaning housing is relatively simple. Typical cleaning of a Water Decontaminator unit includes:

- ✓ Place a non-porous fabric and a heavy mil trash bag near the catch basin you will service.
- ✓ Sweep up around the catch basin any debris that might fall into the catch basin and place in trash bag.
- ✓ Remove grate.
- ✓ Lift housing out and place trash bag over the unit. Lift housing and let contents of housing fall into trash bag. Tie bags appropriately.
- ✓ If a new cartridge is needed, replace filter cartridge at this time. Fasten.
- ✓ Place grate cover securely back on catch basin.
- ✓ Remove and dispose of trash, sediment and spent cartridges in an approved manner.

All standard WD units include support frame to suit the catch basin frame and grate. Standard housings are nominal 15 gallons capacity and can hold up to 100 pounds of sediment. Filter /Absorber cartridges include a variety of filter Media and may include activated carbon, fine fiber poly and an oil sorbent Absorbent "W". Zeolite and Perlite and other media can be provided. Approximately 1,200 cubic inches of filter media is included in the cartridge. The nominal 10" diameter by 18" tall cartridge covered in a fabric mesh screen includes a perforated drainpipe in the center to allow cartridge effluent to exit the bottom of the housing. Weep drain provisions in the bottom of the housing prevent standing water in the housing. Custom units can be provided in almost any size to suit the application. Allow up to 60 gpm flow rate for the standard filter/absorber cartridge. Although the Water Decontaminator is custom made to each application, IRI stocks a variety of sizes. Typically, a unit is of the following configuration as shown in Appendix B. Typical installation procedures include:

1. Place a non-porous fabric and a heavy mil trash bag near the catch basin you will service.
2. Sweep up around the catch basin any debris that might fall into the catch basin and place in trash bag.
3. Remove grate.
4. Insert frame into catch basin. (frame comes already chained to housing, drop-in unit simply slips into funnel)
5. Place grate cover securely back on catch basin.
6. Remove and dispose of trash, sediment swept in an approved manner.

4.B Device Installation Limitations

Not all catch basins are created equal. Limitations include 1) depth of catch basin to allow for sufficient pressure head and trash containment inside the filter housing and 2) Small diameter catch basins will pose an issue for allowing minimal opening for visual and sampling access. If a catch basin requires a non-standard device, the device will be customized with the largest viewport access feasible. Installation procedures would remain the same as standard devices.

4.C Methods for diagnosing and correcting installation errors

A regular street cleaning and catch basin filter inlet inspection schedule is essential in ensuring optimum performance of this device. At a minimum, catch basin insert filters should be inspected to make sure that they are not full or spent before the first flush and after heavy leaf fall. Cartridges should be replaced every twelve months or when spent, preferably right before the start of the rain season.

Seasonal cleaning, preferably before the first flush and after leaves have dropped for the season. Areas with heavy wooded and denser tree canopy would require a more intense street cleaning regimen and leaf drop check to ensure the catch basin is free of leaf debris. An older catch basin may have rust present along the support lip, if that is the case, installers will need to use a steel brush to clean the area free of rust so device can sit evenly. (See Image 6)

The most important times to have the catch basins cleaned are in the Fall and Spring. Leaves and other debris fall through the grates into the catch basin filter throughout the year, but more so after the winter months and during the fall when the trees are losing their leaves. Regular inspections and cleaning will minimize the amount of sediment and debris in the housing. Removing the captured leaves and grass before they decompose greatly extends the filter/absorber cartridge life. Sediment collected in the housing should be removed before it reaches 4 inches in height.

5.0 OPERATION AND MAINTENANCE INFORMATION

Maintenance frequency for the device will ultimately be determined by the site environmental and storm water runoff conditions present. All locations are different and offer a variety of environmental influences.

5.A Device Inspection Procedures and Inspection Frequency Considerations

With over a dozen years of manufacturing, selling, and servicing thousands of Water Decontaminator Catch Basin Insert filters IRI has learned the following for improving performance and extending filter life:

1. Encouraging the street sweeper to remove sediment, landscaping debris, leaves and grass clippings in the roadway leading to the catch basins. This helps extend the life of the filter cartridge and reduces sediment build up in the housing.
2. Encourage pruning of tree canopy that is dense over catch basins.
3. Making service inspections during leaf fall and removing leaves before they decompose extends filter life. The best time for inspections is before leaf drop and before rain season.
4. On installations at new construction areas, construction materials, plaster and landscaping debris can quickly cause the standard filter/absorber cartridge to plug up. A fine mesh construction strainer, in place of the standard cartridge can be placed over the riser pipe during the active construction period and replaced with a filter/absorber cartridge when construction is complete. The housing may need to the emptied of sediment several times during the construction period. An external fine mesh strainer fabric may also be temporally placed over the grate for certain periods of construction.

5. Established sites may have little sediment and debris entering the catch basins. Keeping roadways clean reduces service costs.
6. Industrial sites may have specific needs that include high levels of zinc from truck tires, fencing and metal roofing; or oil and grease from vehicles; or dust and chemicals from processing activities. In these cases, consulting with client in advance can lead to providing site specific media in the filter/absorber cartridges; or temporary berms or pads around grates; and special trash capture needs.
7. Even though the filter/cartridge look clean after a year it is recommended that annual replacement occur to ensure maximum efficiency in keeping contaminants out of the storm drain system.
8. Video inspections of storm drain piping where the Water Decontaminator has been used show virtually no sediment or trash accumulation in the pipelines. Before installation of these inserts, the storm drain pipelines required very costly cleaning.
9. Observations of several catch basin inserts typically show vast differences in accumulation of sediment and debris. Due to roadway slopes, distance between basins, angle of roadway and many other factors, it causes some catch basins to receive extremely high flow rates with high levels of sediment while others receive a fraction of the flow and sediment. The higher flow catch basins may require more frequent inspection and cleaning.
10. If a storm distribution system is needing CCTV inspection or a procedure requiring a Vactor Truck, the WD unit can easily be removed to allow for access for maintenance activities.

5.A.1 Performance

If excessive sediment is encountered, it can greatly decrease flow through system therefore impacting performance of unit. Areas with heavy construction activities are encouraged to abide by clean practices included increased street sweeping practices as heavy sediment greater than 15 gallons/100 lbs can potentially blind a unit. No flooding issues have been noted. No filter blinding issues have been noted. Locations such as Mountain House CSD inspect and maintain their current WD devices semiannually and collect and dispose any debris present.

5.C Maintenance Procedures including Trash Capture Screen Cleaning

We recommend periodic inspections following installation to determine site specific maintenance and trash/pollutant loading characteristics. Inspections of WD devices should be done semiannually, and if needed cleaning maintenance can be done. If sediment or trash accumulation is observed inside the housing during an inspection, Housings should be cleaned out when sediment and debris accumulation is more than four (4) inches. Cleaning housings is relatively simple. Typical cleaning of a Water Decontaminator unit includes:

1. Place a non-porous fabric and a heavy mil trash bag near the catch basin you will service.
2. Sweep up around the catch basin any debris that might fall into the catch basin and place in trash bag.
3. Remove grate.

4. Lift housing out and place trash bag over the unit. Lift housing and let contents of housing fall into trash bag. Tie bags appropriately.
5. Wipe screen free of any stuck/dry debris.
6. If a new cartridge is needed, replace filter cartridge at this time. Fasten.
7. Place grate cover securely back on catch basin.
8. Remove and dispose of trash, sediment and spent cartridges in an approved manner.

All IRI units have company/reorder information on the device. It is good practice to always have extra replacement cartridges onsite in case one is needed. To order replacement cartridges, see Table 1 for unit ordering information from IRI.

5.D Essential Equipment and Materials for Proper Maintenance Activities

Typical equipment needed to adequately perform maintenance on a Water Decontaminator unit includes basic hand tools including nonporous mat, heavy mil trash bags, broom, small shovel, manhole cover/grate handpick, trowel. While doing maintenance it is good to have on hand one (1) replacement cartridge in case a unit might need a replacement.

5.E Maintenance frequency and effects of delayed maintenance on device

Every location has different environmental conditions. Areas with heavier tree canopies such as residential areas tend to have far more leaf drops. Maintenance is a key to have optimal performance in our devices. If maintenance is delayed or ignored, sediment will accumulate, and filters can risk not functional at optimal level.

5.F Repair procedures for device structural and screening components

A device is designed to hold up to 100 lbs. of sediment and debris. If excessive weight is encountered in the unit, this can compromise the support frame and risk deforming support frame. *In addition, it is more difficult to retrieve an excessively heavy device for cleaning and may require a lifting mechanism for retrieval.*

Any structural issues of device should be addressed to Inventive Resources Inc., the manufacturer. In most cases a replacement can be sent or instructions on field repairs. Depending on location, an IRI representative may be able to stop by and remediate the issue. An IRI representative can be contacted at 1-888-285-6158.

6.0 Vector Control Accessibility

As mentioned at the beginning of this section, periodic inspections are important in ensuring optimum performance of this device. The housing should be inspected and cleaned out whenever four (4) inches of sediment is accumulated. In normal scenarios, inspections should be conducted twice annually, and housing should be cleaned out at least once per year. If slow flow is observed, replace filter cartridge.

6.A Date Device Application submitted to MVCAC

After several discussions and meetings with the Mosquito and Vector Control Association of California (MVCAC) IRI updated the design of Water Decontaminator standard (grate) inlet configuration to provide acceptable access for mosquito and vector control technicians to inspect, sample and treat. The WD Device application was submitted to MVCAC for review on 3/5/2020. Application was submitted by email to: trashtreatment@mvcac.org.

6.B Description and Video demonstration on accessibility to Mosquito Vector Control Personnel

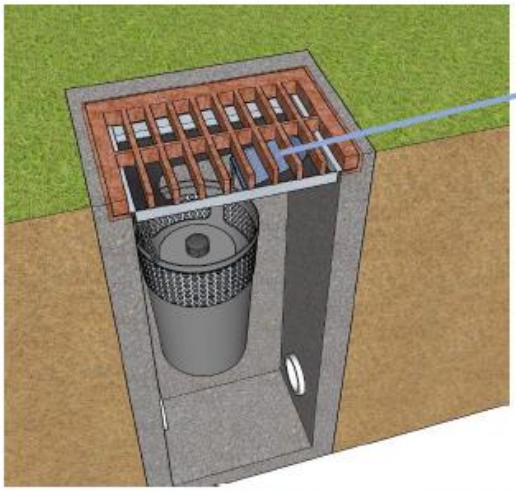
The application submitted to MVCAC included a video that demonstrates how the mosquito vector control personnel can readily access the bottom of the storm water vault or perform visual observation and mosquito treatment. The application and screenshots of the video are included in Appendix C for illustrative purposes, a video file will be included in this application for filing purposes. Figure 2A and 2B and Appendix C (page 55 of this report) illustrates the accessibility to Mosquito Vector Control Personnel on both the standard inlet and curbside inlet configuration.

MVCAC has reviewed the conceptual drawings and submission for the Water Decontaminator and verifies that provisions have been included in the design that allow for full visual access to all areas for presence of standing water, and when necessary, allows for treatments of mosquitoes. The vector control access design update includes:

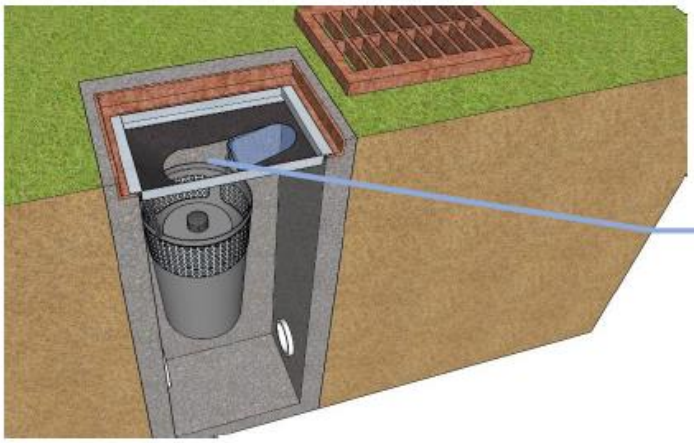
1. Offsetting filter housing to one side to allow better visual access to catch basin.
2. Enlarging the view/access port on the deflector piece
3. Modifying the deflector for improved access

This update does not change the Water Decontaminator's hydraulic capability or filtration output of the standard (grate) inlet configuration.

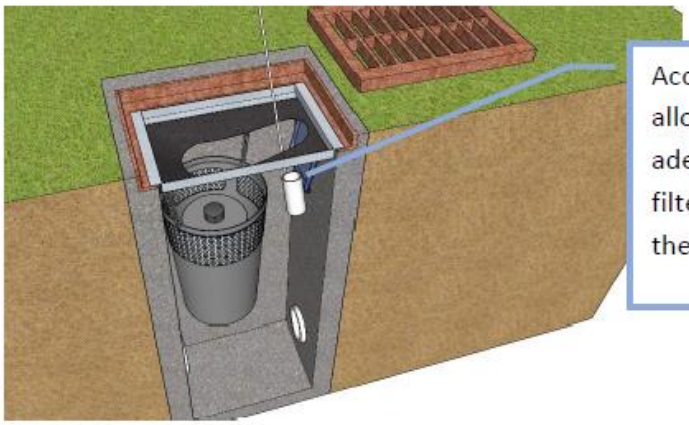
Figure 2A- Mosquito Abatement and Vector Control Accessibility – Standard Inlet Water Decontaminator Trash Capture Device Application Submission



Water Decontaminator standard configuration hangs from the catch basin by chains and can easily have a large opening (overflow) of 12″ to 3 feet depending on the depth of the catch basin. Clear polycarbonate retractable window allows for view inside the catch basin without lifting the grate.

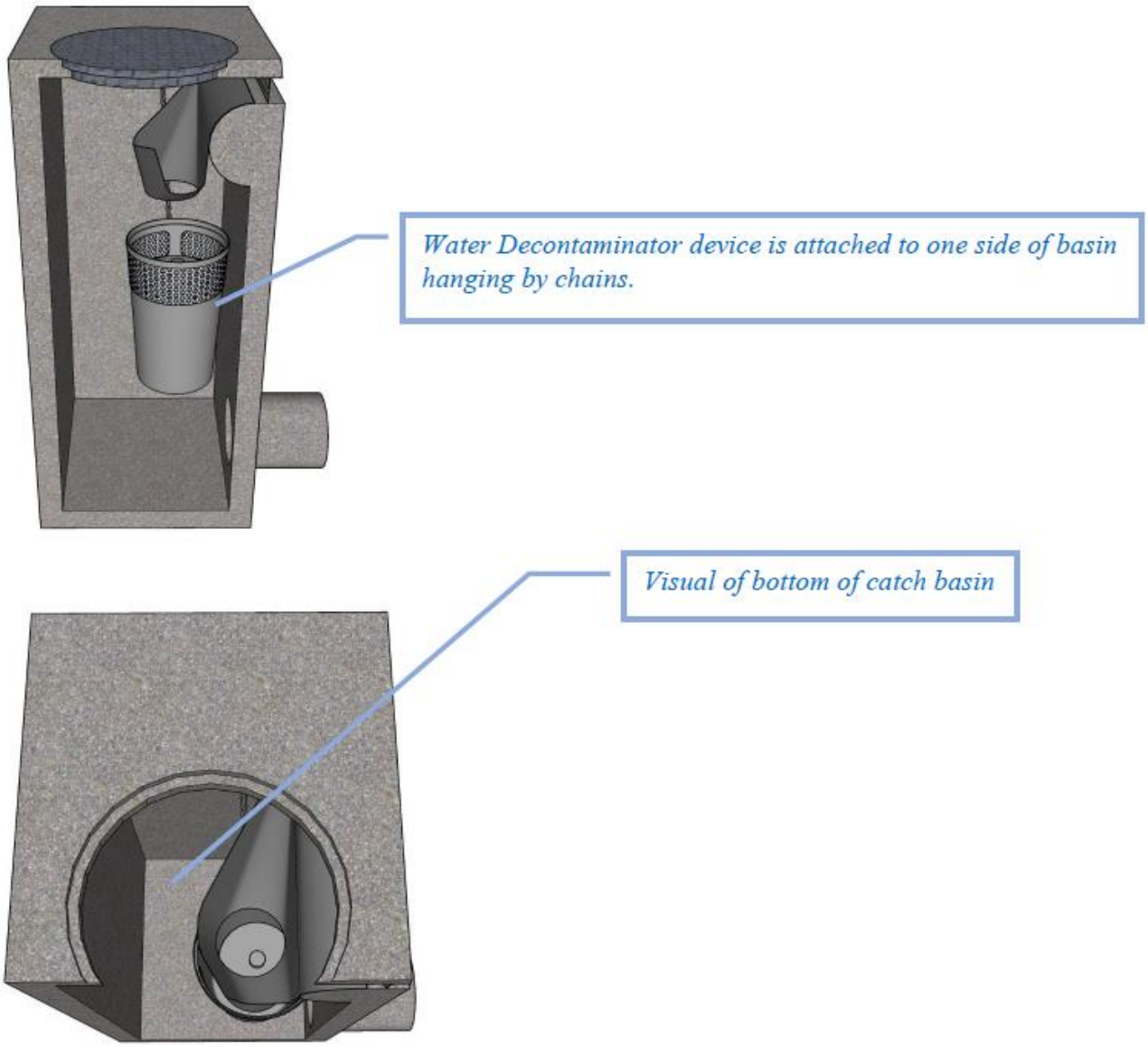


Water Decontaminator standard configuration, housing can be offset to provide a larger service window.



Access with a retractable door easily allows a 6″ diameter sampling dipper to adequately fit and maneuver around the filter housing without the need to remove the Water Decontaminator.

Figure 2B- Mosquito Abatement and Vector Control Accessibility – Curbside Inlet
Water Decontaminator Trash Capture Device Application Submission

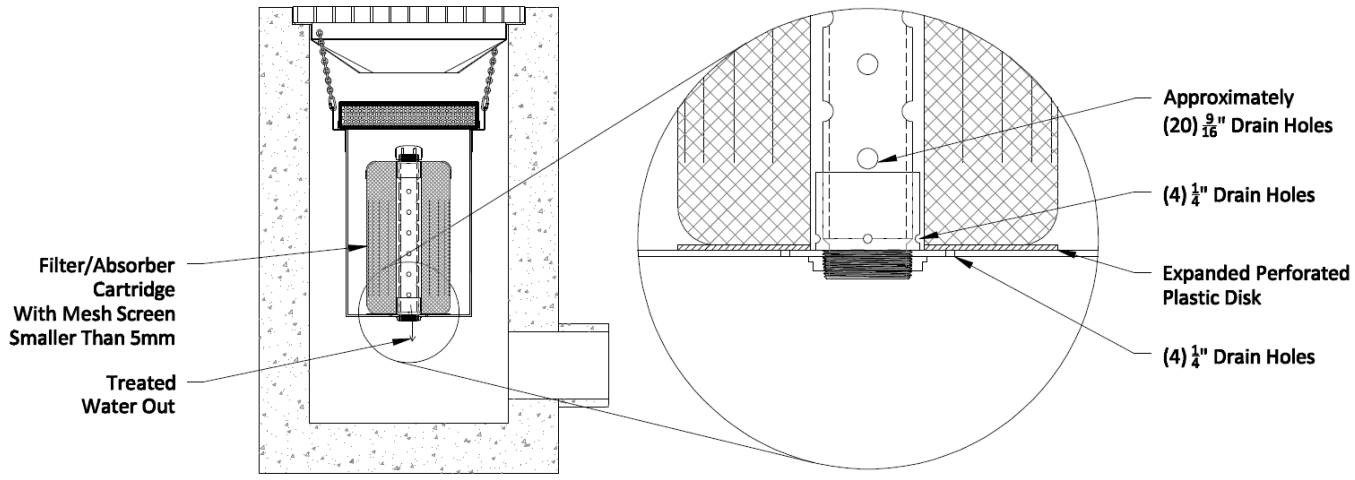


6.B.1 Vector Breeding

Weep and Drain holes in the bottom of the housing help prevent standing water in the housing should the filter cartridge become plugged. This prevents unwanted mosquito and vector issues associated with standing water in the housing. If accumulation of trash and debris, particularly caked sediment is not seasonally cleaned, this can cause reduced flows. Weep and drain holes are designed into the housing to minimize standing water and breeding grounds for mosquito and other vector issues. Redundant drainage holes are placed on the standpipe of the housing unit as

shown in Figure 3 to minimize stagnant water and continual drainage no matter the height of trash accumulation. Figure 3 does not show access viewport flap opening on deflector. Drainage holes within standpipe are approximately four (4) 1/4 inch and twenty (20) 9/16 inch, all at varying heights. Additional screened drainage holes at the bottom of the housing, below the filter cartridge also ensure complete evacuation of runoff water. It is particularly important to follow a periodic inspection of devices to ensure no stagnant water. To date, no Vector issues have been noted by any of our installations or during service maintenance. Our trash capture devices are designed to drain completely following a storm event and not hold stagnant water. In most cases, housings have drained completely, and no standing water will be present within minutes after a rain event.

Figure 3- Mosquito Abatement and Vector Control Accessibility- Drain Holes
Water Decontaminator Trash Capture Device Application Submission



Note: This figure omitted access viewport to focus on drain holes.

6.B.2 Odors

To date, no odor issues have been noted by any of our installations or during service maintenance.

6.B.3 Vector Control Accessibility

Public health and safety are a major component of storm water management. Flooding, Design integrity and mosquito management is essential for public safety and prevention of disease transmission. To date, no vector issues have been noted. However, that does not mean that periodic maintenance should be overlooked. Authorized maintenance workers can easily remove the WD device to provide service to a catch basin, no special tools are required, simply lift grate to access device and remove a 20-lb filter cartridge or clean the housing. Access viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened easily. Flap door sits flush and automatically retracts when not in use. Access viewport on the funnel deflector provides access to viewing conditions under the catch basin and/or to drop bacterial

larvicide tablets or liquid mosquito control treatment without impeding normal mosquito abatement procedures inside the catch basin or the trash capture device, see Figure 1A, 1B and 1C. The trash capture device will not hold water if proper maintenance conditions are followed. Figure 1A and 1B illustrate the different models available that offer the access viewport with automatic retractable flap door. Figure 1C, Curbside inlet, already provides sufficient visual as explained in detail in Appendix C. A curbside inlet configuration typically requires personnel to open the cover to do an inspection, once opened you can easily see the bottom of the catch basin. Appendix B illustrates these figures in 3D schematics for ease of viewing the device in-situ.

6.C MVCAC Letter of Verification

IRI received an approval letter from MVCAC on 4/27/20. This letter verifies that the device design allows full visual access for presence of standing water and treatment of mosquitoes when necessary. Approval letter from MVCAC is included in this amendment in Appendix D.

7.0 Reliability Information

In some cases, areas that practice good housekeeping, routine street sweeping, appropriate landscaping practices and minimal sediment disruptions, during inspections filter cartridges were deemed in excellent condition (clean, optimal flow through cartridge etc.) and have been kept in place for longer than 12 months with manufacturer approval. Obviously, high service areas (high tree canopy, propensity of runoff, undeveloped areas, and construction zones) will have units that will require more frequent maintenance.

7.A Estimated Design Life

As stated previously in Section 3.L, life expectancy for HDPE material is conservatively 50 years, but due to the nature of the application estimated service life for the WD unit is 10-15 years. Historically units installed in 2005 have shown no signs of wear on linkage, housing, and appurtenances. Filter cartridges have a service life of 12-36 months and are recommended to be replaced on an annual basis. To date, (2005-13+ years) we have not had to replace any portion of WD units except for annual filter cartridges.

7.A.1 Device Sensitivity to loading other than trash

Although this device can be used as a best management practice, limitations do exist. There is no ideal device that can capture trash and sediment without periodic maintenance. This device has been designed to do a high degree of trash; sediment and hydrocarbon capture during the low flow or first flush rain events. The 1200 cubic inches of deep bed loading filter media within the cartridge can filter up to 60 gpm. The housing allows heavy sediment and particles to settle to the bottom for later cleaning and disposal. In heavy sediment and leave drop prone areas pre-strainers have been used to help keep leaves and grass out of the unit because they tend to blind filter surfaces when they decompose. Areas with a high concentration of fine clay in the sediment also tend to shorten cartridge life, requiring more frequent replacement.

In residential areas, not all property owners or tenants rake leaves and bag them. IRI has no control on landscaping or construction activities of residents. However, leaves can go through the WD device and be screened into the housing with no performance issue. The device can take up to 70-100 lbs of sediment which is approximately 10-15 gallons in volume with no issue to

the structure or performance integrity. If device fills up with the maximum sediment, the unit has a bypass 3/16" (4.87mm) screen that runoff up to the design flow rate will pass through. It is recommended and referenced in the Terms of Use (Appendix F) that the unit be inspected seasonally to ensure that excessive sediment or trash accumulation is not present.

7.A.2 Existing Water Decontaminator units

IRI provides and has provided the option for municipalities to contract with servicing our brand units. IRI has installed and services over 1,400 Water Decontaminator units in Mountain House Community Service District (MHCSD) alone. These units are in a variety of sizes at this location. Many of the units have been in service for over twelve (12) years with a semiannual maintenance schedule and replacement of filter cartridges as needed. There have been no significant issues to any of the units installed in the last twelve years. Unit housing, appurtenances and links have all held up well and are structurally sound. No clogging has ever been reported. These units are inspected twice a year, and if needed, are cleaned at the time of inspection; filters are replaced at least every twelve to thirty-six months, whenever they are needed. Areas with heavier trash and sediment accumulation often see more frequent cartridge replacements and areas with no debris are clean. A sample MHCSD Maintenance Logs are included in Appendix E a complete log with service and maintenance information can be provided if requested.

These WD units could be easily upgraded with the current Trash Capture requirements by making certain modification to the housings including adding trash capture screens to the installed units. They would essentially become equal to the models TCU-2, TCU-4, TCU-6 or TCU-6V units listed in Table 2 mentioned previously.

7.A.3 Substantially similar to currently listed Certified Devices

This device is substantially similar to several devices that are currently listed on the certified devices list. Table 4 presents these similar devices and listed differences including material, structural assembly, and any differences that impact performance of the Water Decontaminator versus the substantially similar devices listed.

Table 4- Substantially Similar Certified Devices
Water Decontaminator Trash Capture Device Application Submission

Model	Similar	Differences
Revel Environmental Manufacturing Inc *REM-1 Triton BioFlex Drop Inlet Trash Guard*	• Both are a cartridge/screen type with a housing that collects and holds trash/debris. • Support frame that fits under grate, attached to housing. • Can be used for new and existing catch basins. • Made of similar materials. • Water Decontaminator is simple to clean and replace filter cartridge. • Both are similar in price.	• REM unit has a large center opening for overflow, while Water Decontaminator has a perforated screen above the housing for trash capture treating, up to the design flow rate. • Water Decontaminator has a deflector to direct all runoff into housing. • Water Decontaminator has a 3/16" (4.83mm) mesh trash capture screen that extends above the top of the housing rim perimeter. • Water Decontaminator Filter (Standard) cartridge/absorber is 10" diameter by 18" tall and

		contains approximately 1200 cubic inches of filter media. Custom and site-specific cartridges are available. • Water Decontaminator low flow runoff passes through deep bed loading media cartridge and through a perforated pipe in the center of the cartridge and water exits out the bottom of the housing. The REM unit allows filtered water to mix with the overflow water in the center of the cartridge. • Provisions for vector control accessibility.	
KriStar Enterprises Inc. *S-8HF Flow Gard®Perk Filter*	• Both devices use replaceable cartridge for filtering low flow rates, a trash capture screen above the top rim of the cartridge for trash capture of the design flow rate. • Made of similar materials. • Both have a large air gap between the support deflector and top edge of the trash capture screen that extends above the top of the housing. • Water Decontaminator is simple to clean and replace filter cartridge.	• Price point for Water Decontaminator is a fraction of this equivalent device. • Water Decontaminator can be used on both new and existing catch basins, while this equivalent device requires a special vault/catch basin in order to work. • Provisions for vector control accessibility.	

7.B Warranty Information

IRI warranty is for one-year for all components and filter cartridge. The HDPE housing has a 5-year warranty. Terms and Conditions require periodic street cleaning and at a minimum seasonal inspection of storm drains to visually see maximum sediment/trash buildup and if necessary, remove trash inside the housing unit. Appendix F lists Terms of Use and Warranty of the Water Decontaminator.

7.C Customer Support Information

IRI can provide installation, replacement filter cartridges and cleaning service contracts if needed by a client. IRI designed the Water Decontaminator units to be lightweight, easy to install, easy to service and easy to replace the filter absorber cartridge so municipalities and clients can service the units with their own maintenance crew. IRI can provide on-site demonstration on installation, maintenance, and cleaning procedures, in most cases these demonstrations are brief as installation only takes a few minutes and requires minimal basic tools. If an issue arises, Inventive Resources is available by email and telephone or an in-person appointment with a representative, see Table 5 for contact and scheduling service.

Table 5- WD Representative Contact Information
Water Decontaminator Trash Capture Device Application Submission

Company Representatives:	Evangelina Paoluccio, P.E. QSD/QSP
Mailing Address:	5038 Salida Blvd / PO Box 1316 Salida, CA 95368
Company Telephone:	209-545-1663 General 209-545-3533 Fax 1-888-285-6158

Representative Email address: evangelina@iriproducts.com

8.0 Field/Lab Testing Information and Analysis

Below are a few in house testing results that demonstrate the WD device functions as described.

8.A Laboratory Test Method

Flow rates based on controlled in-house testing rates vary and are dependent on site specific environmental conditions. Cartridge filters have a maximum flow rate of 60 gal/min based on multiple in-house controlled tests. Once runoff flow reaches cartridge filter maximum flow rate, pressure head increases, and water level would potentially reach the screened bypass. Screened bypass material is Stainless steel 3/16" (4.83mm) perforated metal screen.

Housing units are a nominal 24 inches in height and screened bypass start at the top of the housing. If a housing/filter cartridge, for any reason, were to completely be blinded the flow would reach the screened bypass. The screened bypass (See Image 1) can accommodate up to 400 gallons per minute per square foot of screened area.

In house testing was done on a portable test stand. A 3-inch diameter screened opening was placed at the bottom of a housing unit. The screened area material was 3/16" (4.83mm) perforated metal sheet screen. The opening was covered with an energy dissipater to break up the entering water flow while letting full flow without jet streams to flow through the 3-inch screened opening. The flow rate from the hose was set when the water level in the bucket was steady at 3 inches in height above the screen. The testing flow rate was then directed to a five-gallon container and a timer recorded the number of seconds to fill the 5-gallon container. Multiple tests were taken, and they were all at approximately 14.5 seconds. Based on 14.5 seconds to fill a five-gallon container the flow rate was 20.69 gpm through the 3-inch screened opening. This further calculates to 421.72 gpm for 1 square foot of screen. This is conservatively rounded down to 400 gpm/sf of perforated screen. The screen design flow rate is 400 gallons per minute per square foot of screen. Table 6 presents maximum design flows through each of the models available in the trash capture series. Images 13 through 17 illustrate the test stand mechanism used for flow testing screen. Model TCU-6V is adjustable and can accommodate up to 784 GPM if requested.

Table 6- Design Flow Rates Through Bypass Screen
Water Decontaminator Trash Capture Device Application Submission

Model[a]	Hydraulic Capacity
TCU-2	260 GPM (.58 cfs)
TCU-4	584 GPM (1.3 cfs)
TCU-6	784 GPM (1.7 cfs)
TCU-6V	*260-784 GPM (0.58-1.7 cfs)*

TCU-C2	260 GPM (.58 cfs)
TCU-C4	584 GPM (1.3 cfs)
TCU-C6	784 GPM (1.7 cfs)
TCU-C6V	*260-784 GPM (0.58-1.7 cfs)*

[a] *Custom units can be provided to suit larger design flow rates. Specify desired trash capture design flow rate, based on a 400 GPM per square foot of trash capture screen. Shop drawings will be provided in advance of construction.*

Image 13: 3/16" Screen at 3 inch diameter opening.

Image 14: Energy Dissipater added to top of opening to avoid jet flow.

Image 15: Laboratory clock

Image 16: Testing Stand with air gap.

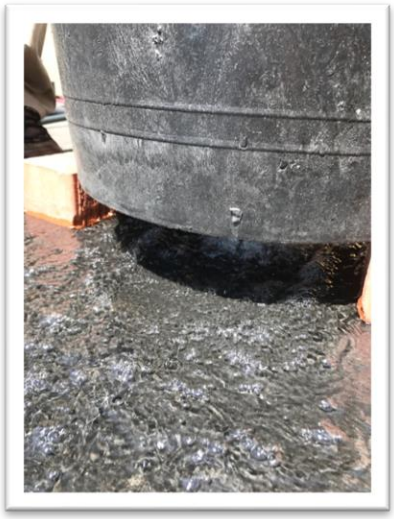


Image 17: Water flowing out of screen at 20.69 gpm

8.B Pollutant Removal

Pollutant removal is different at all locations. The filter cartridge can reduce pollutants entering the catch basin. Our proprietary media mixes have the ability to bind fine sediments, petroleum hydrocarbons, heavy metals, pesticides, herbicides, and other pollutants, reducing their leachability, transport in runoff, and absorption by plants and introduction in water bodies. Appendix G has influent and effluent laboratory data on field case studies.

APPENDIX A
Contact Information of Clients purchasing device

The following is contact information for a few of our Water Decontaminator clients:

Appendix A
Water Decontaminator Trash Capture Device Application Submission
List of Locations and Contact Information

Location

Mountain House Community Service District
230 S. Sterling Drive, Suite 100
Mountain House, CA 95391
209-831-2300

APPENDIX B
Drawings and Sizing Guides

Images of drop in Water Decontaminator variations

Images of chained Water Decontaminator variations

Water Decontaminator Schematic

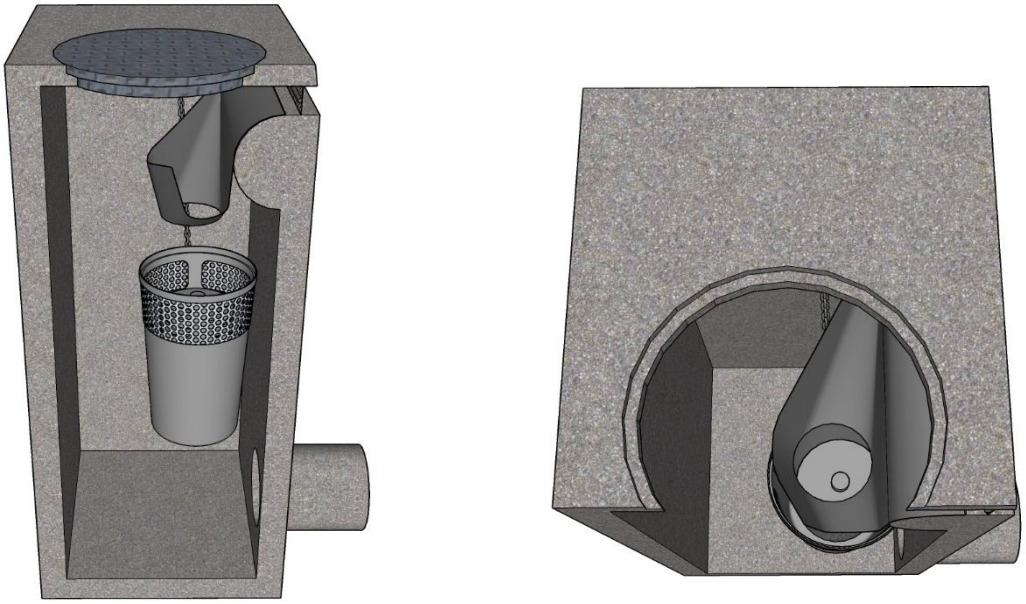


Image 1: Curbside Inlet Configuration

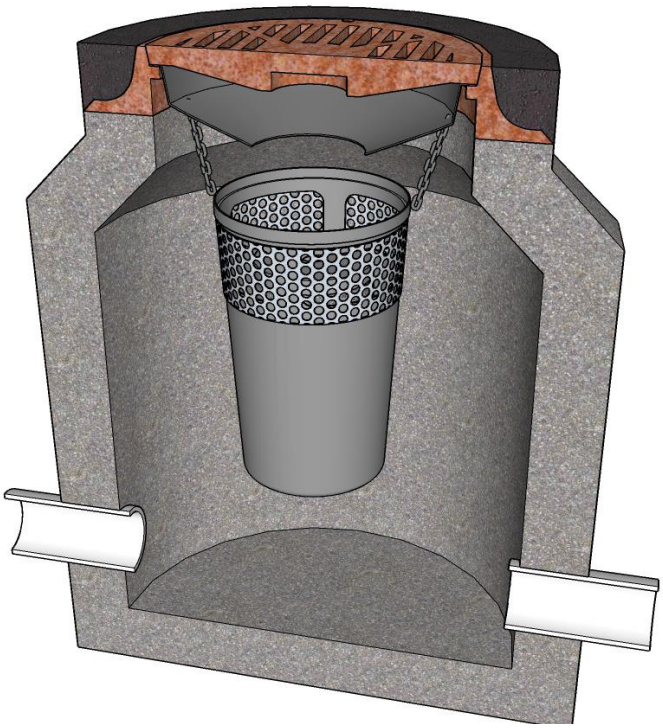
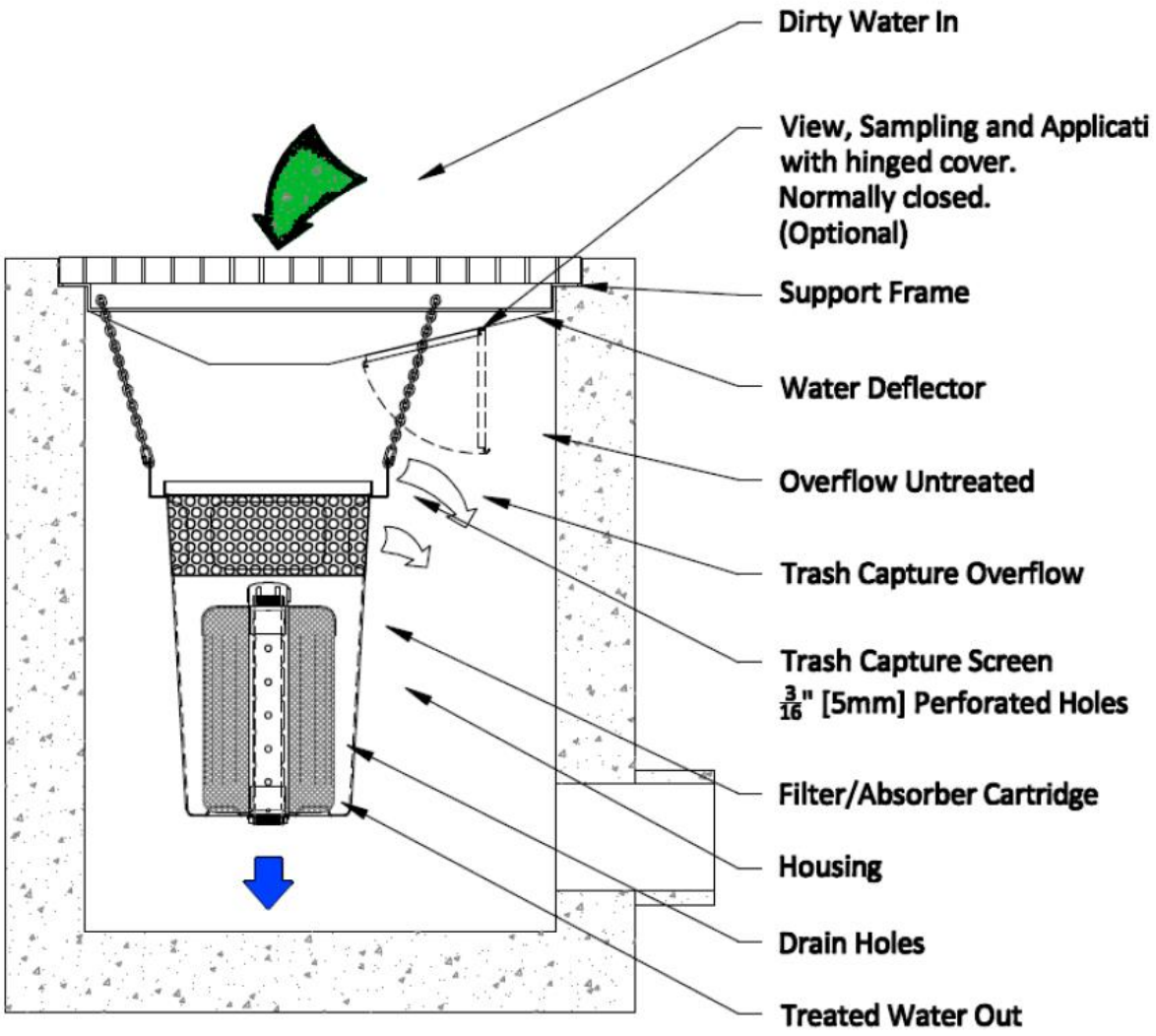
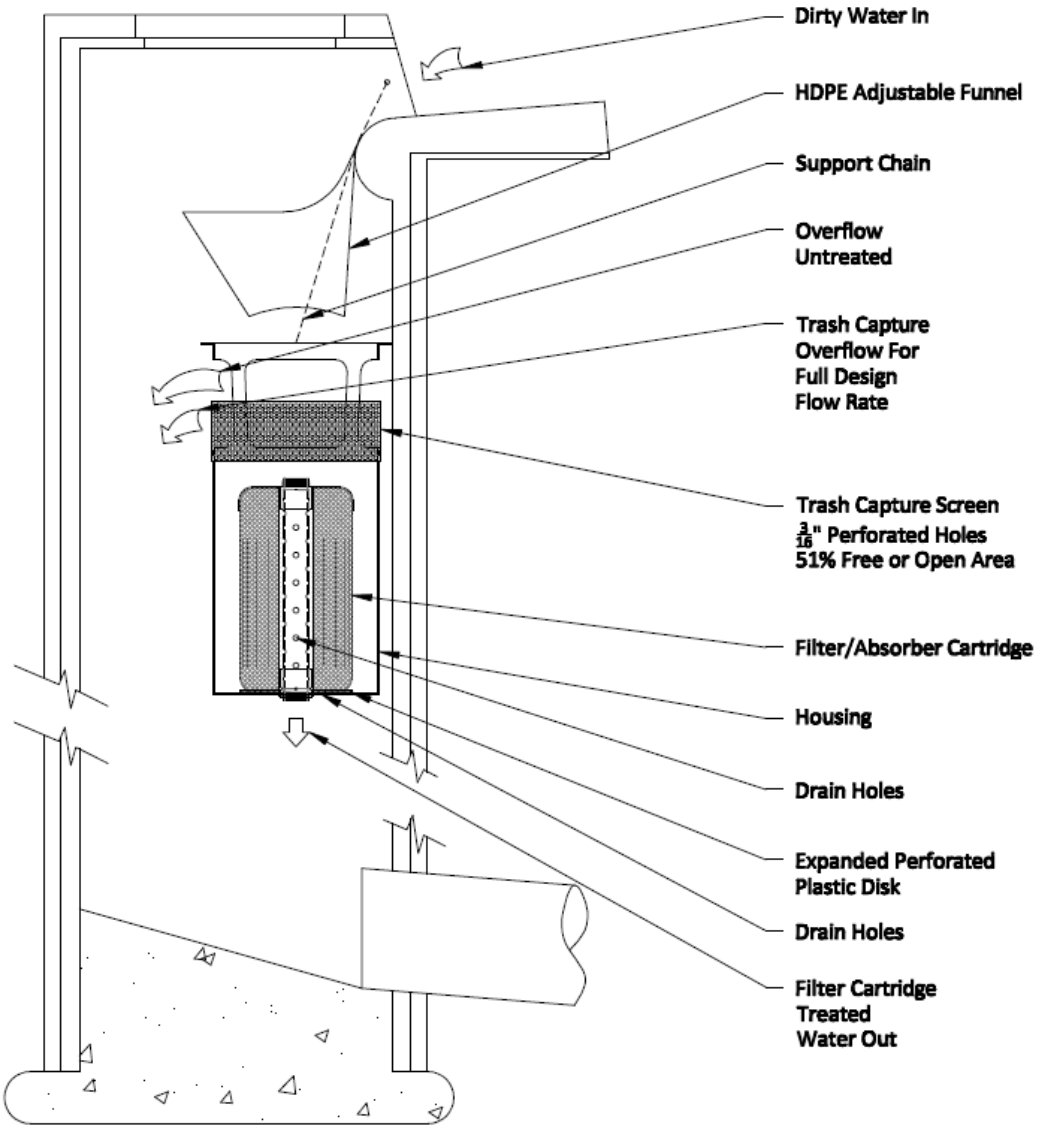


Image 2: Standard Inlet Configuration

Water Decontaminator Installation Schematic of a Standard Inlet
Trash Capture Device Application Submission





NOTES:

1. All dimensions are nominal size in inches.
2. Support frame can be made to fit catch basins from 12" to 48".
3. Trash capture screen height changes depending on model number.*

Model	Flow (GPM)	Flow (CFS)
TCU-2	260	0.58
TCU-4	548	1.30
TCU-6	784	1.70
TCU-6V	Varies as above	

Water Decontaminator
Trash Capture Unit
Side Inlet

Inventive Resources, Inc.
5038 Salida Blvd. PO Box 1316
Salida CA 95368
Phone (888) 285-6158
Fax (209) 545-3533

DRAWING NO. WDT-201020AS | DATE 04-19-18 | Sheet 7 of 7

THE WATER DECONTAMINATOR

Sizing Guide - Round Grate Support

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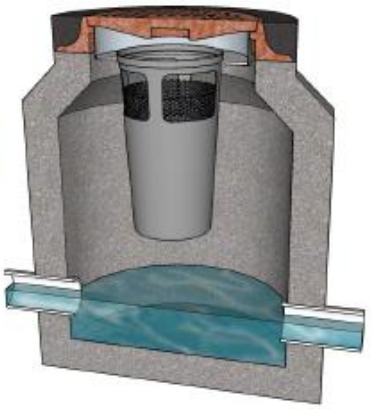


The following information is required for proper installation of the Water Decontaminator. Indicate whether grate style is 1,2 or 3. Then measure all required dimensions of grate and catch basin.

Company: _____

Name: _____

Phone: _____

Email: _____

Cover Style (1, 2 or 3): _____

OD: Outside diameter of lip _____

(For tapered frames measure smallest diameter at base of frame.)

ID: Inside diameter of opening _____

A: Drop ring diameter _____

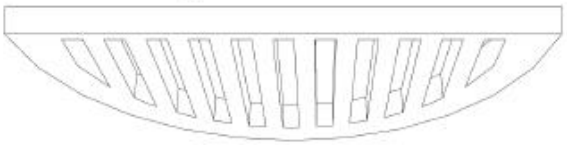
(Measure largest diameter at top of ring. Does not apply to style 1 covers)

B: Drop ring depth _____

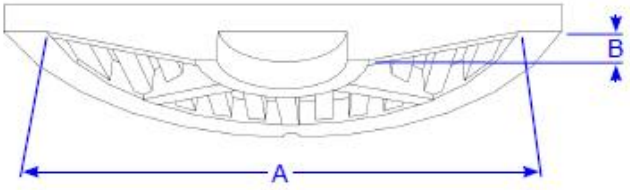
(Does not apply to style 1 covers)

C: Depth of catch basin _____

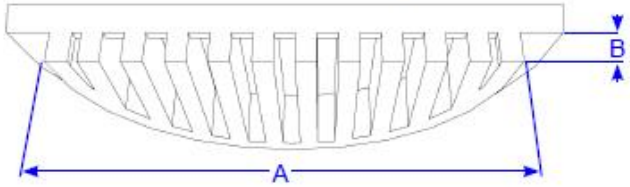
Type 1 Flat Grate

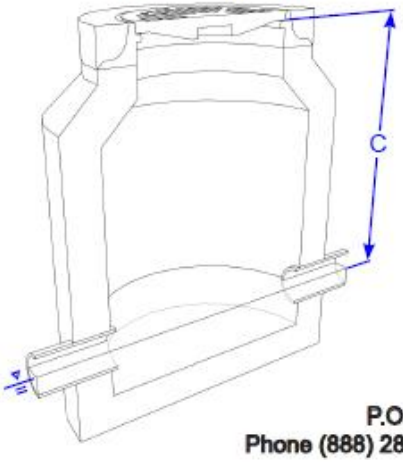


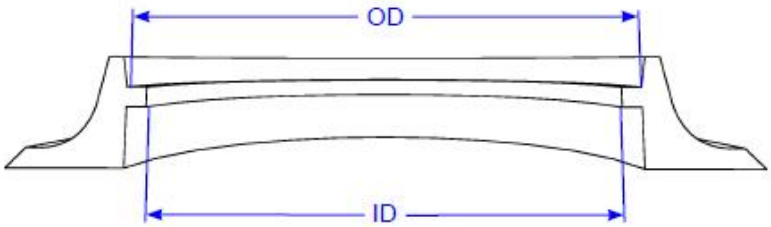
Type 2 Tapered Drop Ring



Type 3 Square Drop Ring







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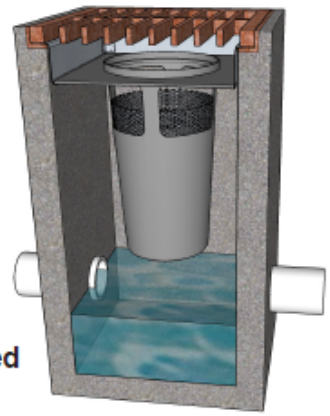
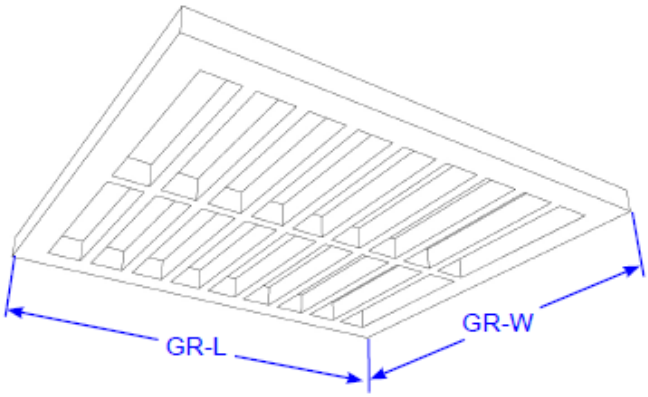
THE WATER DECONTAMINATOR

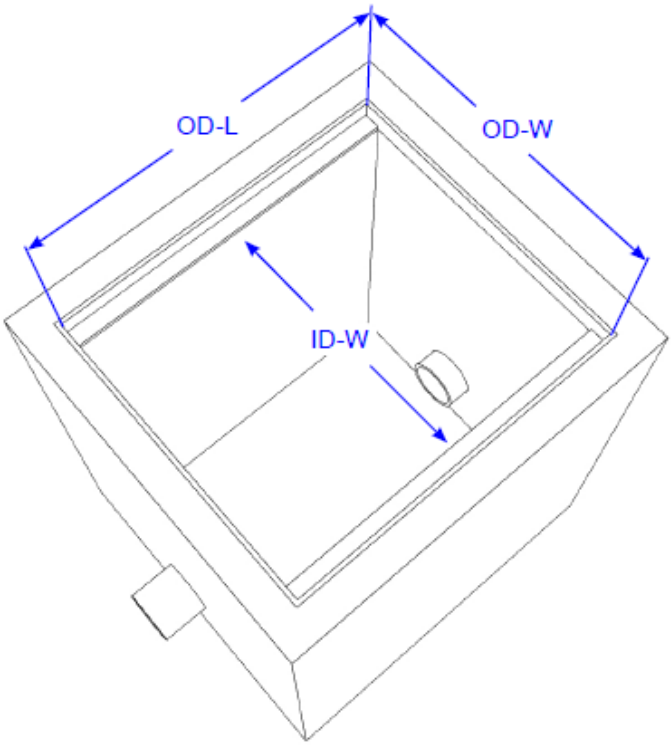
Sizing Guide - Two Sided Support



Patented www.iriproducts.com

The following information is required for proper installation of the Water Decontaminator catch basin insert. Please measure all required dimensions of grate and catch basin.





Company: _____

Name: _____

Phone: _____

Email: _____

OD-L: Outside length of lip _____

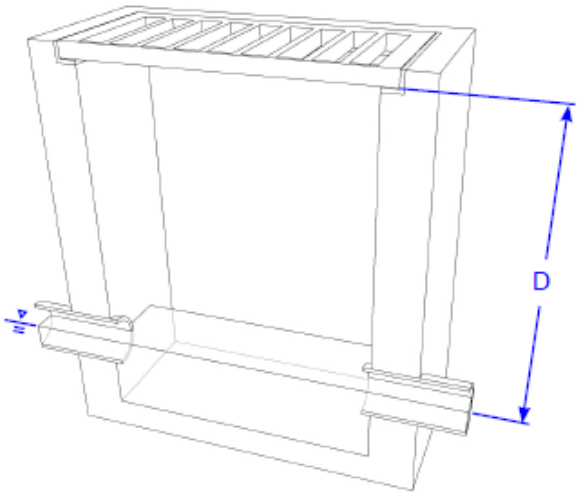
OD-W: Outside width of lip _____

ID-W: Inside width of opening _____

GR-L: Grate length _____

GR-W: Grate width _____

D: Depth of catch basin _____



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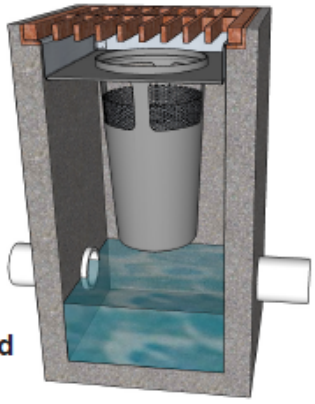
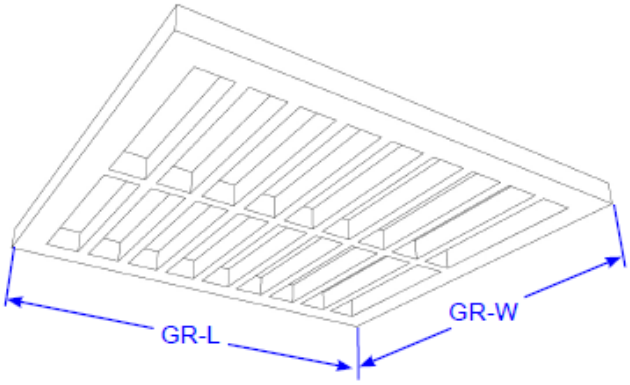
THE WATER DECONTAMINATOR

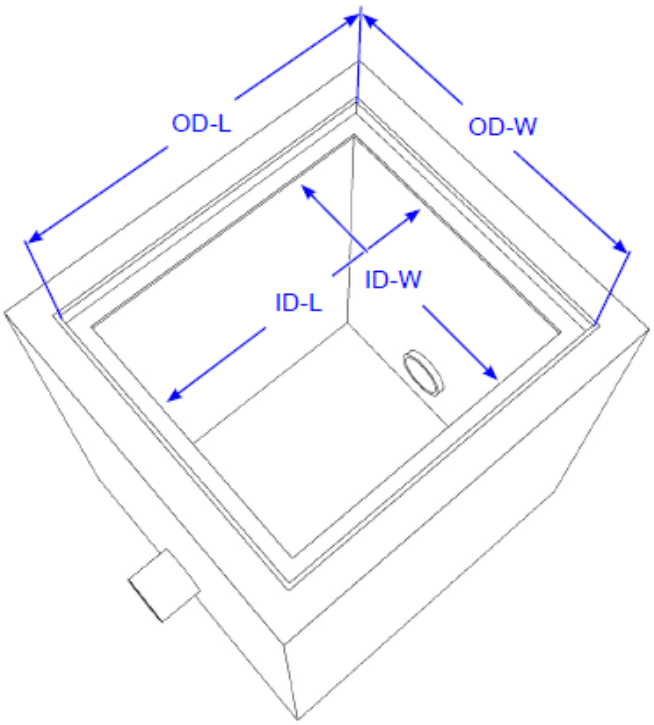
Sizing Guide - Four Sided Support



Patented www.iriproducts.com

The following information is required for proper installation of the Water Decontaminator catch basin insert. Please measure all required dimensions of grate and catch basin.





Company: _____

Name: _____

Phone: _____

Email: _____

GR-L: Grate length _____

GR-W: Grate width _____

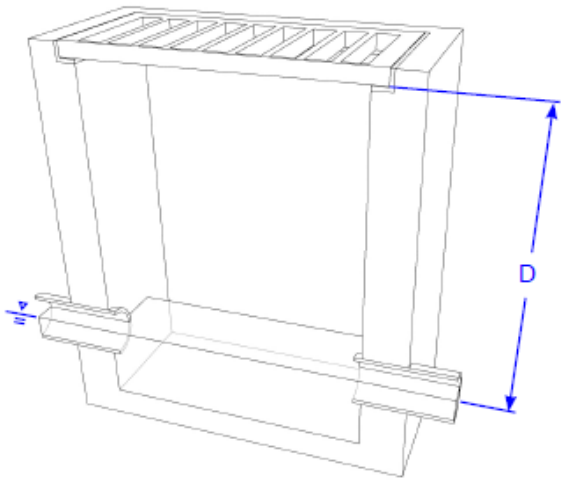
OD-L: Outside length of lip _____

OD-W: Outside width of lip _____

ID-L: Inside length of opening _____

ID-W: Inside width of opening _____

D: Depth of catch basin _____



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THE WATER DECONTAMINATOR

Sizing Guide - Side Inlet

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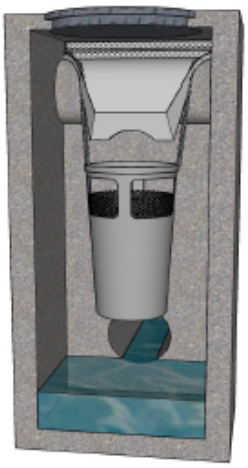
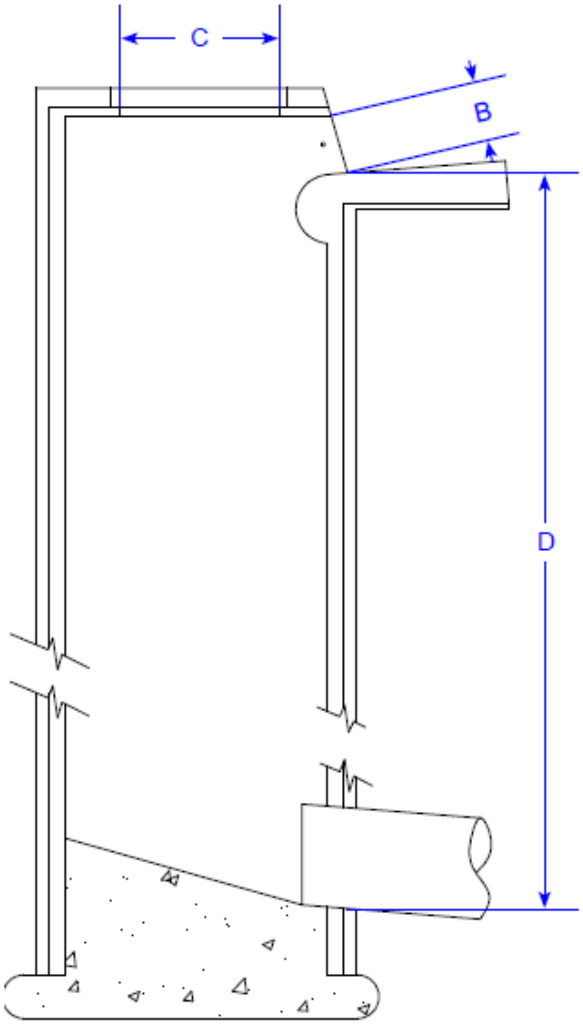


The following information is required for proper installation of the Water Decontaminator catch basin insert. Please measure all required dimensions of grate and catch basin.



Company: _____

Name: _____

Phone: _____

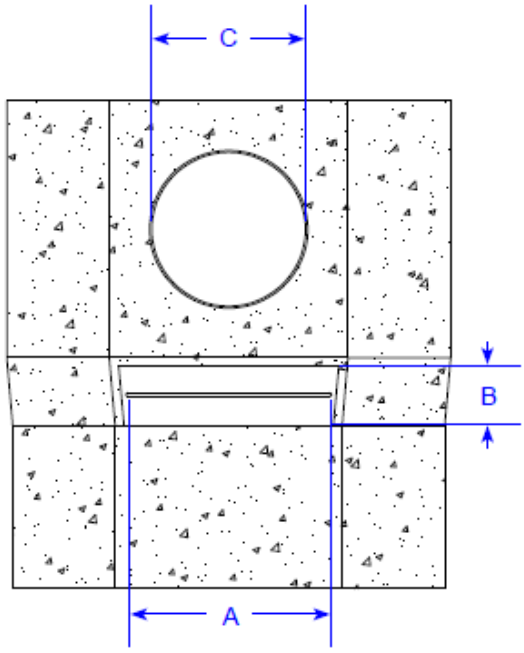
Email: _____

A: Width of curb inlet _____

B: Height of curb inlet _____

C: Inside width of cover _____

D: Depth of catch basin _____



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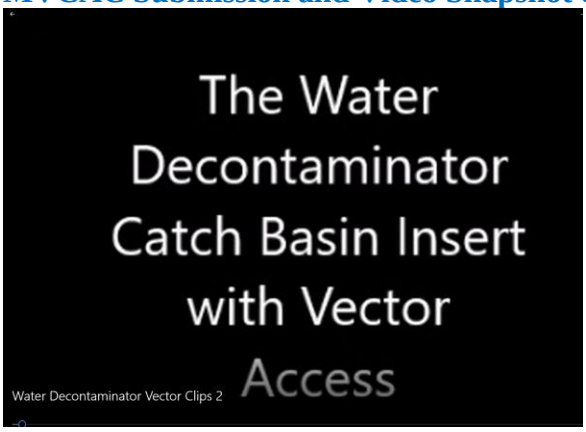
APPENDIX C
MVCAC Submission and Video Snapshot of Vector Control Accessibility



Water Decontaminator Trash Capture Device -Mosquito Vector Control Review

From: Evangelina (evangelina@iriproducts.com)

To: trashtreatment@mvcac.org

Cc: bachermann@amgroup.us

Bcc: john@iriproducts.com; evangelina@iriproducts.com

Date: Thursday, March 5, 2020, 7:58 PM PST

Review team,

The patented Water Decontaminator was certified by the CA Water Board on March 15, 2018 as a full trash capture device. It was brought to our attention that it would still need to seek MVCAC approval.

We have been in recent communication with your group regarding the StormExx Clean trash capture device, approved by MVCAC on December 6, 2019. StormExx was originally sold as the Water Decontaminator. In order to continue to market the Water Decontaminator as a certified device we would still need to follow protocol with your association regarding MVCAC acceptance. You will notice that both the StormExx Clean and Water Decontaminator are very much alike with some minor aesthetic branding differences.

We are seeking verification/approval by MVCAC that the Water Decontaminator trash capture device meets accessibility requirements for mosquito and vector control personnel to readily access the bottom of the device or storm water vault for visual observation and mosquito treatment.

Attached is our package including a video to better illustrate access from a curbside and standard inlet configuration.

Kind Regards,

Evangelina

Evangelina Paoluccio, P.E, QSD/P | **Engineering** | **Inventive Resources, Inc.**
5038 Salida Boulevard | PO Box 1316 | Salida, CA 95368| General: (209) 545-1663 | Fax: (209) 545-3533 | www.iriproducts.com

Water Decontaminator Vector Clips 2.mp4
12.4MB

20200305 MVCAC Ltr.pdf
1.6MB

Inventive Resources, Inc. (IRI)

P.O. Box 1316, 5038 Salida Blvd., Salida, CA 95368
Ph: 209-545-1663 Fax: 209-545-3533 www.IRIproducts.com

March 5, 2020

Mosquito and Vector Control Association of California (MVCAC)
One Capitol Mall, Suite 800
Sacramento, CA 95814
Attention: Bob Achermann

SUBJECT: WATER DECONTAMINATOR TRASH CAPTURE SUBMISSION

Dear Bob Achermann,

The patented Water Decontaminator was certified by the State Water Board on March 15, 2018 (See Attachment 1- Relevant Documents) as a Full trash capture device under the Trash Implementation Program. We have been in communication with your group regarding the StormExx Clean trash capture device, approved by MVCAC on December 6, 2019. StormExx was originally sold as the Water Decontaminator. In order to continue to market the Water Decontaminator and the StormExx Clean as certified devices we would still need to follow protocol with your association regarding MVCAC acceptance. You will notice that both the StormExx Clean and Water Decontaminator are very much alike with some minor aesthetic branding differences.

We are seeking verification/approval by MVCAC that the Water Decontaminator trash capture device meets accessibility requirements for mosquito and vector control personnel to readily access the bottom of the device or storm water vault for visual observation and mosquito treatment.

We have included two of the most common configurations (curb and grate/standard) to illustrate the accessibility of each (see Attachment 2 and 3). Should standing water be present at the bottom of the catch basin, a Mosquito and Vector Control technician can perform an inspection without lifting the grate/lid by utilizing the clear view port or through the storm manhole access or by simply looking around the circumference of the device as it is attached by chains to the catch basin. Filtration capabilities are the same for both configurations. We have also attached a short video to demonstrate accessibility.

<u>Curbside Inlet Configuration</u>
To confirm stormwater is present at the bottom of the catch basin a technician can open the solid storm manhole cover and see directly to the bottom of the catch basin. Approximately 2-ft of clearance to inspect, sample and treat the catch basin is available as illustrated in the images on

attachment 2 and 3. Any treatment briquettes or ingots can be dropped directly to the bottom of the catch basin.

Standard Inlet Configuration

A technician can do a roadside visual inspection by simply looking through the polycarbonate window to see if stormwater is present at the bottom of the catch basin. The 6" viewport can be viewed without lifting, removing the grate or entering the catch basin.

If standing water is present in the catch basin and sampling is required, the technician will need to remove the grate. We tested the Water Decontaminator device using a Clarke Larvae Dipper. The viewport is large enough to comfortably maneuver sampling activities when opened (see Attachment 3). All the Water Decontaminator configurations provided sufficient access for sampling. If the catch basin needs larvicide treatment, in most cases a larvicide ingot or briquette can be administered through the grate and dropped through the retractable viewport (see Attachment 3).

The Water Decontaminator is not permanently attached to the rim to the catch basin, if more rigorous service is needed to be performed inside the basin a technician can simply lift and remove the unit.

Not all catch basins are created equal; there are differences in age, configurations and existing rungs that require housing offsets. Space permitting, the Water Decontaminator device can be offset to one side to provide a larger service window, whenever feasible. The design of the device has not changed relative to its filtration capabilities.

We are including additional cut sheets from the Water Board application and video to illustrate the viewport and space in more detail.

Thank you for your time in reviewing and considering this application. If you need additional information Evangelina Paoluccio can be contacted at the contact information below.

Respectfully submitted,

Inventive Resources Inc.

Evangelina Paoluccio, P.E., QSD/P
Engineering Manager
Inventive Resources Inc.
(209) 545-1663
evangelina@IRIproducts.com

Attachment 1

Water Board Application (relevant documents from the Water Board Application)

There are several models/configurations of the WD. The Water Decontaminator typically includes a support frame to suit the catch basin frame and grate; Funnels are either high density polyethylene (HDPE) material or stainless steel upon request. The funnel is used to deflect runoff into housing and filtration; Housings are nominal 15 gallons and can hold up to 70-100 pounds of sediment and 10-15 gallons of trash/sediment. Images 1 through 3 illustrate a sample of the variations; these images do not picture the support frame or deflector, just the housing and filter for demonstration/visual purposes. Appendix B has additional schematic information. The model variations incorporate trash capture screen in the upper portion of the housing extending above the rim to accommodate larger design flow rates and two different types of secondary self-closing access ports for Mosquito Abatement and Vector Control agents.

These models include the Prefix "TCU" (Trash Capture unit) and can be installed in both the curbside and standard configuration. Standard inlet configuration are typically fastened by chain by the support bars and a Curbside inlet configuration is attached to the side nearest to the inlet. Below are the Water Decontaminator models with the trash Capture features:

- Model TCU-2 includes housing with a 15" diameter top and a 3/16" (4.83 mm) perforated strainer (See Image 1). This provides 0.65 sq ft. of 3/16" (4.83 mm) perforate strainer material to prevent particles 5 mm or greater to pass through. The screen helps retain collected debris should the flow rate exceed the rated 260 gpm or 0.58 cfs design flow rate. (See Image 3). *Viewport opening is approximately 6" and allows Mosquito and Vector Control agents access to the catch basin without removal of device to view conditions and deposit larvicide. When size and space availability permits, device will be offset, and a larger viewport will be installed.* Viewport has a self-closing flap door that can be opened with a wand dispenser or prop easily. Flap door sits flush and automatically retracts when not in use. This model can be installed chained or as a drop-in unit.

- Model TCU-4 includes housing with a 15" diameter top and a 3/16" (4.83 mm) perforated strainer. This provides 1.3 square feet of 3/16" (4.83 mm) perforate strainer material to prevent particles 5 mm or greater to pass through. The screen helps retain collected debris should the flow rate exceed the rated 584 gpm or 1.3 cfs design flow rate. *Viewport opening is approximately 6" and allows Mosquito and Vector Control agents access to the catch basin without removal of device to view conditions and deposit larvicide. When size and space availability permits, device will be offset, and a larger viewport will be installed.* Viewport has a self-closing flap door that can be opened with a wand dispenser or prop easily. Flap door sits flush and automatically retracts when not in use. This model can be installed chained or as a drop-in unit.
- Model TCU-6 includes housing with a 15" diameter top and a 3/16" (4.83 mm) perforated. This provides 1.96 square feet of 3/16" (4.83mm) perforate strainer material

to prevent particles 5 mm or greater to pass through. The strainer helps retain collected debris should the flow rate exceed the rated 784 gpm or 1.7 cfs design flow rate. *Viewport opening is approximately 6" and allows Mosquito and Vector Control agents access to the catch basin without removal of device to view conditions and deposit larvicide. When size and space availability permits, device will be offset, and a larger viewport will be installed.* Viewport has a self-closing flap door that can be opened with a wand dispenser or prop easily. Flap door sits flush and automatically retracts when not in use. This model can be installed chained or as a drop-in unit.

- Model TCU-6V is an adjustable version that ranges from a rated 260 gpm (0.58 cfs) to 784 gpm (1.7 cfs) trash capture design flow rate depending on screen height of nominal 2" to 6". (See Image 2). *Viewport opening is approximately 6" and allows Mosquito and Vector Control agents access to the catch basin without removal of device to view conditions and deposit larvicide. When size and space availability permits, device will be offset, and a larger viewport will be installed.* Viewport has a self-closing flap door that can be opened with a wand dispenser or prop easily. Flap door sits flush and automatically retracts when not in use. This model can be installed chained or as a drop-in unit.

- Model TCU-P can be sized as requested, typically 18" in height with a 4"- 6" perforated screen. The trash capture screen (3/16" (4.83mm) perforated strainer is used in lieu of the filter / absorber filter (no filter cartridge in this unit). This may be used during periods of construction. After construction, a filter cartridge can be easily installed if requested. *Viewport opening is approximately 6" and allows Mosquito and Vector Control agents access to the catch basin without removal of device to view conditions and deposit larvicide. When size and space availability permits, device will be offset, and a larger viewport will be installed.* Viewport has a self-closing flap door that can be opened with a wand dispenser or prop easily. Flap door sits flush and automatically retracts when not in use. Model can be installed chained or as a drop-in unit. This still has all the trash capture capabilities without the added enhancement of a filter cartridge to polish runoff before release.

5.C Maintenance frequency and effects of delayed maintenance on device

Every location has different environmental conditions. Areas with heavier tree canopies such as residential areas tend to have far more leaf drops. Maintenance is a key to have optimal performance in our devices. If maintenance is delayed or ignored sediment will accumulate.

5.D Device maintenance and Vector Control Accessibility

As mentioned at the beginning of this section, periodic inspections are important in ensuring optimum performance of this device. The housing should be inspected and cleaned out whenever four (inches) of sediment is accumulated. In normal scenarios, inspections should be conducted twice annually, and housing should be cleaned out at least once per year. If slow flow is observed, replace filter cartridge.

5.D.1 Structural Integrity

A device is designed to hold up to 100 lbs of sediment and debris. If excessive weight is encountered in the unit, this can compromise the support frame and risk deforming support frame. In addition, it is more difficult to retrieve an excessively heavy device for cleaning and may require a lifting mechanism for retrieval.

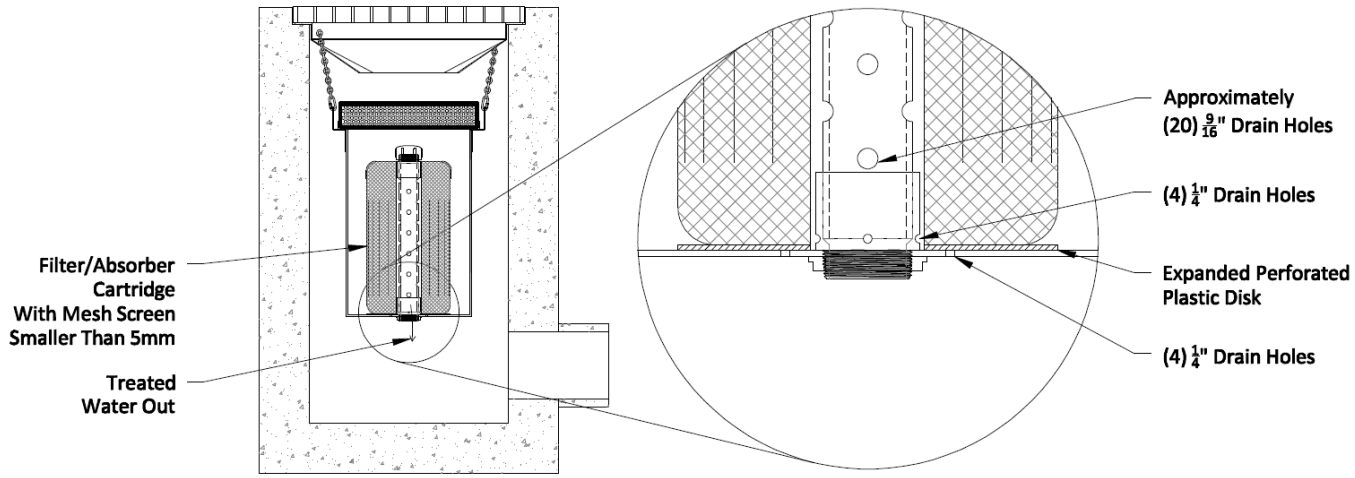
5.D.2 Performance

If excessive sediment is encountered, it can greatly decrease flow through system therefore impacting performance of unit. Areas with heavy construction activities are encouraged to abide by clean practices included increased street sweeping practices as heavy sediment greater than 15 gallons/100 lbs can potentially blind a unit. No flooding issues have been noted. No filter blinding issues have been noted. Locations such as Mountain House CSD inspect and maintain their current WD devices semiannually and collect and dispose any debris present.

5.D.3 Vector Breeding

Weep and Drain holes in the bottom of the housing help prevent standing water in the housing should the filter cartridge become plugged. This prevents unwanted mosquito and vector issues associated with standing water in the housing. If accumulation of trash and debris, particularly caked sediment is not seasonally cleaned, this can cause reduced flows. Weep and drain holes are designed into the housing to minimize standing water and breeding grounds for mosquito and other vector issues. Redundant drainage holes are placed on the standpipe of the housing unit as shown in Figure 2 to minimize stagnant water and continual drainage no matter the height of trash accumulation. Figure 2 does not show access viewport flap opening on deflector. Drainage holes within standpipe are approximately four (4) 1/4 inch and twenty (20) 9/16 inch, all at varying heights. Additional screened drainage holes at the bottom of the housing, below the filter cartridge also ensure complete evacuation of runoff water. It is very important to follow a periodic inspection of devices to ensure no stagnant water. To date, no Vector issues have been noted by any of our installations or during service maintenance. Our trash capture devices are designed to drain completely following a storm event and not hold stagnant water. In most cases, housings have drained completely within minutes after a rain event.

Figure 2- Mosquito Abatement and Vector Control Accessibility- Drain Holes
Water Decontaminator Trash Capture Device Application Submission



Note: This figure omitted access viewport to focus on drain holes.

5.D.4 Odors

To date, no odor issues have been noted by any of our installations or during service maintenance.

5.D.5 Vector Control Accessibility

Public health and safety are a major component of storm water management. Flooding, Design integrity and mosquito management is essential for public safety and prevention of disease transmission. To date, no vector issues have been noted. However, that does not mean that periodic maintenance should be overlooked. Authorized maintenance workers can easily remove the WD device to provide service to a catch basin, no special tools are required, simply lift grate to access device and remove 20-lb filter cartridge or clean the housing. Access viewport allows Mosquito and Vector Control agents access to storm drain without removal of device to view conditions and deposit larvicide. Viewport has a self-closing flap door that can be opened easily. Flap door sits flush and automatically retracts when not in use. Access viewport on the funnel deflector provides access to viewing conditions under the catch basin and/or to drop bacterial larvicide tablets or liquid mosquito control treatment without impeding normal mosquito abatement procedures inside the catch basin or the trash capture device, sees Figure 3A and 3B. The trash capture device will not hold water if proper maintenance conditions are followed. Figures 3A and 3B illustrate the different models available that offer the access viewport with automatic retractable flap door. Appendix B illustrates these figures in 3D schematics for ease of viewing the device in-situ.

Figure 3A- Water Decontaminator Schematic
Trash Capture Device Application Submission

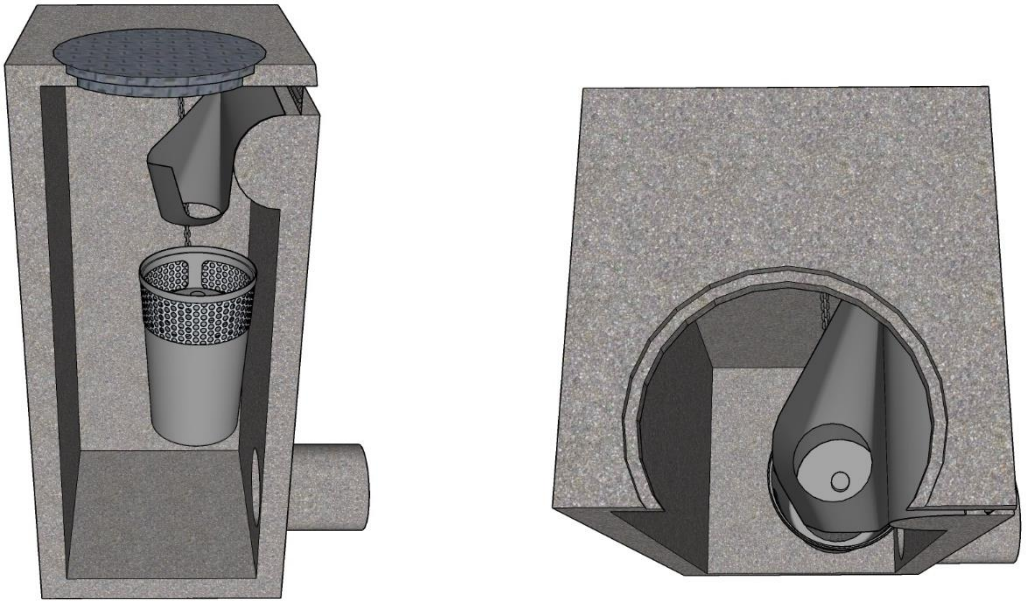


Image 1: Curbside Inlet Configuration

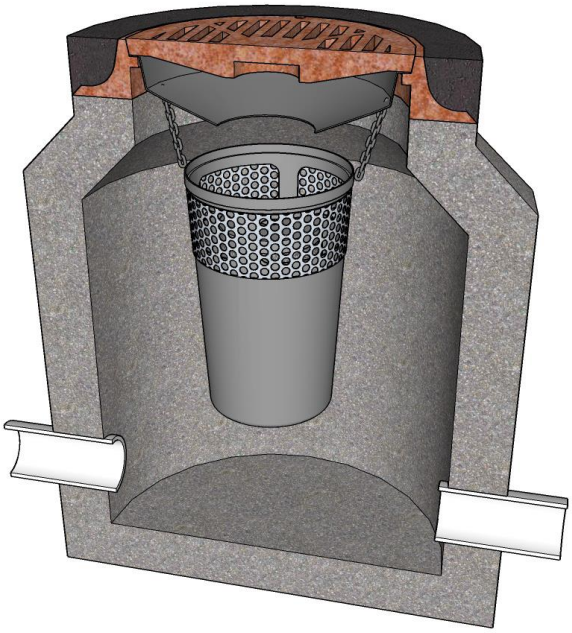


Image 2: Standard Inlet Configuration

Figure 3B1- Water Decontaminator Installation Schematic of a Curbside Inlet
Trash Capture Device Application Submission

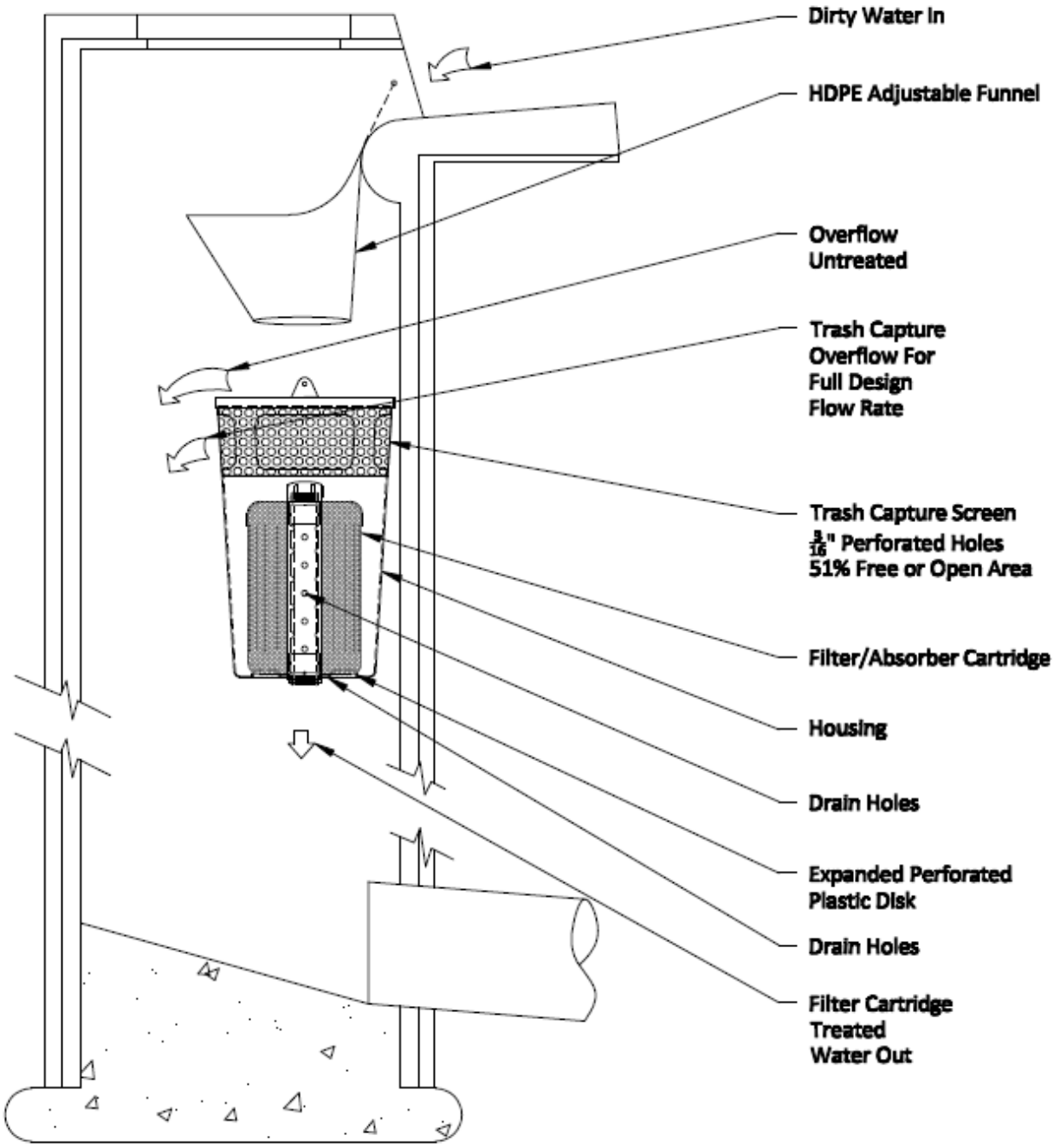
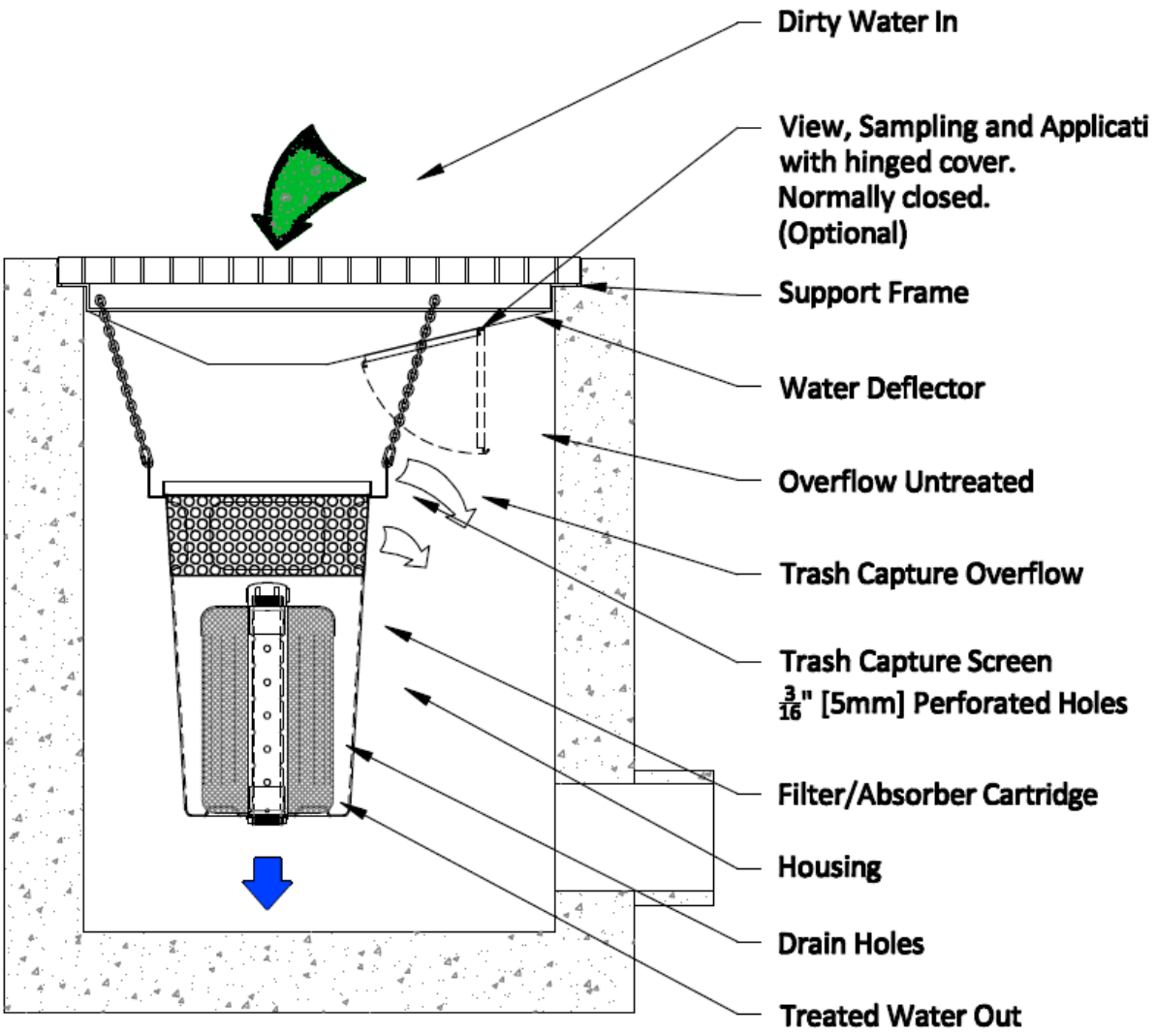


Figure 3B2- Water Decontaminator Installation Schematic of a Standard Inlet Trash Capture Device Application Submission



Attachment 2

Images of Vector Control/Sampling Accessibility - Curbside Inlet Configuration

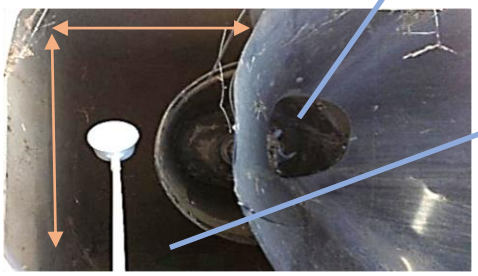
Image 1: Curbside Inlet Water Decontaminator have ample clearance for inspections, sampling and treatment activities.

Solid storm catch basin cover.

Typical Curbside inlet with a 6”x 48” opening.

Approximately 2-ft of clearance to inspect, sample and treat catch basin. Full view of catch basin floor.

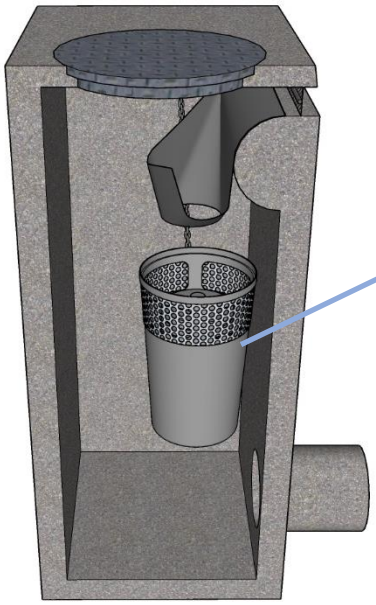
Deflector is along the opening of the inlet; when cover is open, access to bottom of catch basin makes for easy sampling and treatment.



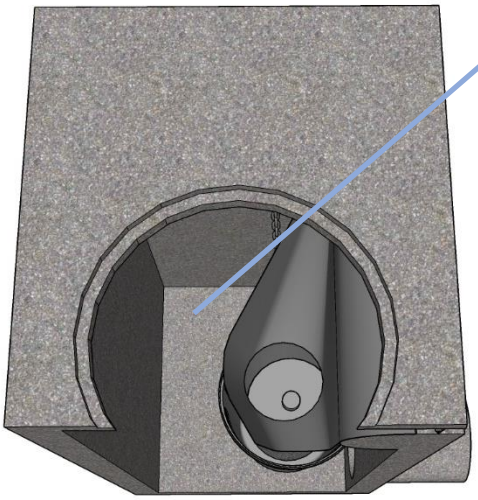
View of catch basin. Approximately 2-ft of clearance available for inspection and sampling. Filter and housing hangs by chain. Ample room for larvae cup to navigate around.

Images of Vector Control/Sampling Accessibility - Curbside Inlet Configuration

Image 2: Curbside Inlet Water Decontaminator schematic drawings



Water Decontaminator device is attached to one side of basin hanging by chains.



Visual of bottom of catch basin

Attachment 3

Image 3: Curbside Inlet Water Decontaminator schematic drawings

Water Decontaminator standard configuration. A Mosquito and Vector Control technician can easily have a visual inspection without the need to remove the grate by seeing through the clear window or using a wand/stick to open retractable door down. In most cases a ingot or briquette larvicide can be administered through the grate and dropped through the retractable viewport.

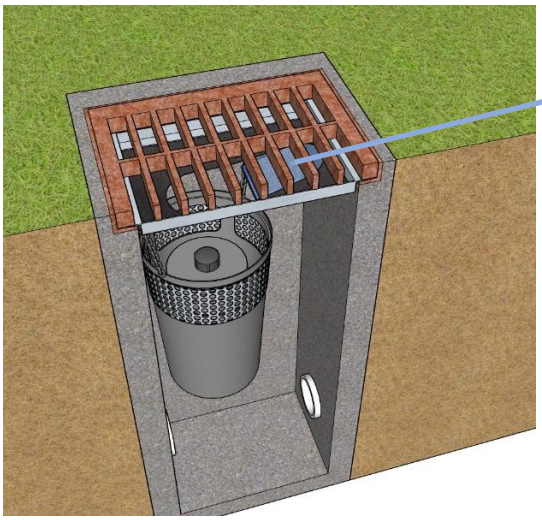
If sampling is needed, you simply remove the grate and push the clear polycarbonate retractable window, allowing for access inside the catch basin without removing device.

Larvae sample dipper can easily be accessed through retractable window. Ample room for maneuvering larvae dipper to catch basin water level. Retractable window has a minimum 6" opening. In special cases and space permitting, the Water Decontaminator can be offset to one side to provide adequate access.

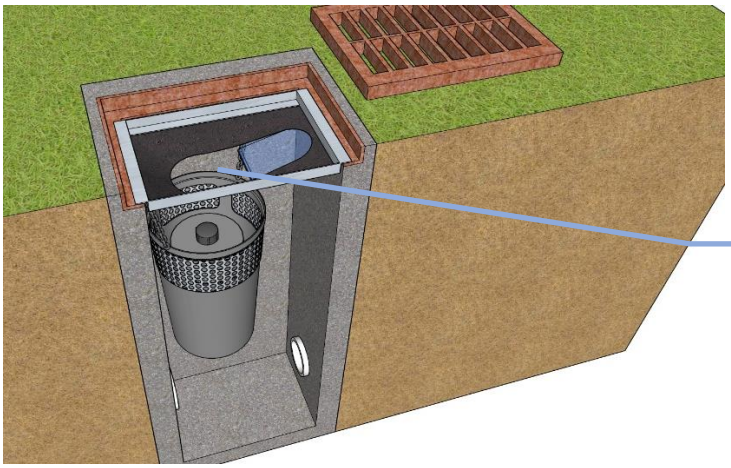
Inspector can see bottom of catch basin and/or water level through the retractable window. Retractable door will close automatically.

Images of Vector Control/Sampling Accessibility - Standard Configuration

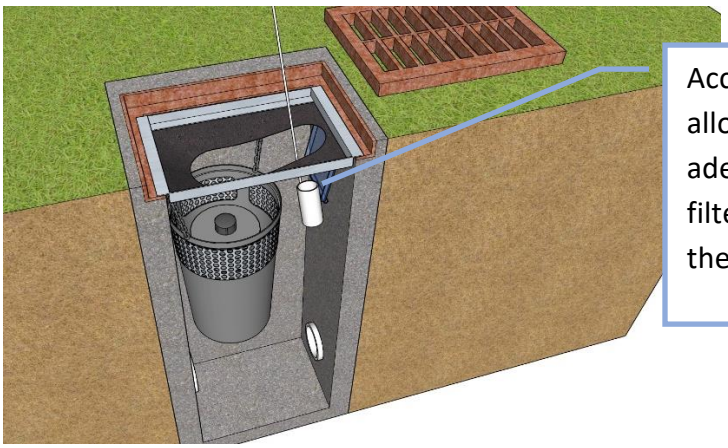
Image 4: Standard configuration of a Water Decontaminator has ample clearance for inspections, sampling and treatment activities. Water Decontaminator device installed with grate on and grate removed in images.



Water Decontaminator standard configuration hangs from the catch basin by chains and can easily have a large opening (overflow) of 12” to 3 feet depending on the depth of the catch basin. Clear polycarbonate retractable window allows for view inside the catch basin without lifting the grate.



Water Decontaminator standard configuration, housing can be offset to provide a larger service window.



Access with a retractable door easily allows a 6” diameter sampling dipper to adequately fit and maneuver around the filter housing without the need to remove the Water Decontaminator.

APPENDIX D
MVCAC Approval Letter

MVCAC
Mosquito and Vector Control Association of California
One Capitol Mall, Suite 800 • Sacramento, CA 95814 • p: (916) 440-0826 • f: (916) 444-7462 • e: mvcac@mvcac.org

Evangelina Paoluccio P.E., QSD/P

Inventive Resources, Inc.

P.O. Box 1316

5038 Salida Blvd.

Salida, CA 95368

evangelina@IRIproducts.com – *sent via email*

April 27, 2020

Dear Ms. Paoluccio,

Thank you for the submission of the Inventive Resources, Water Decontaminator for review by the Mosquito and Vector Control Association of California pursuant to the SWRCB Trash Treatment Control Device Application Requirements. The Association has reviewed the conceptual drawings for the Water Decontaminator and verifies that provisions have been included in the design that allow for full visual access to all areas for presence of standing water, and when necessary, allows for treatments of mosquitoes.

While this verification letter confirms that inspection and treatment for the purpose of minimizing mosquito production should be possible with the Inventive Resources, Water Decontaminator as presented, it does not affect the local mosquito control agency's rights and remedies under the State Mosquito Abatement

and Vector Control District Law. For example, if the installed device or the associated stormwater system infrastructure becomes a mosquito breeding source, it may be determined by a local mosquito control agency to be a public nuisance in accordance with California Health and Safety Code sections 2060-2067.

"Public nuisance" means any of the following:

1. Any property, excluding water, that has been artificially altered from its natural condition so that it now supports the development, attraction, or harborage of vectors. The presence of vectors in their developmental stages on a property is prima facie evidence that the property is a public nuisance.
2. Any water that is a breeding place for vectors. The presence of vectors in their developmental stages in the water is prima facie evidence that the water is a public nuisance.
3. Any activity that supports the development, attraction, or harborage of vectors, or that facilitates the introduction or spread of vectors. (Heal. & Saf. Code § 2002 (j).)

Declaration of a facility or property as a public nuisance may result in penalties as provided under the Health and Safety Code. Municipalities and the vendors they work with are encouraged to discuss the design, installation, and maintenance of stormwater trash capture devices with their local mosquito control agency to reduce the potential for disease transmission and public nuisance associated with mosquito production.

Sincerely,

Bob Achermann,

MVCAC Executive Director

APPENDIX E
MHCSD Cleaning, Maintenance, Filter Replacement Log (Sample)

Neighborhood Tract	CB ID	Install Date	Installation Notes	2017 Service 1, Date	2017 Service 2, Date	2017 Filter Change, Date	Service Notes	Filter Change Notes

Neighborhood Category	Tract	CB_ID	CB_ID2	Install Date	NOTES	2017 Filter Change	2017 Service 1	2017 Service 2
F	OS	CB-38	FOSCB-38	1/1/2009 0:00	Should be in Tract OS / Tract map needs to be moved		3/24/2017 0:00	
F	OS	CB-40	FOSCB-40	1/1/2009 0:00	Should be in Tract OS / Tract map needs to be moved		3/24/2017 0:00	
F	OS	CB-5	FOSCB-5	1/1/2009 0:00	Should be in Tract OS / Tract map needs to be moved		11/29/2016 0:00	
F	OS	CB-4	FOSCB-4	1/1/2009 0:00	Should be in Tract OS		11/29/2016 0:00	
F	OS	CB-6	FOSCB-6	1/1/2009 0:00	Should be in Tract OS		11/29/2016 0:00	
F	OS	CB-7	FOSCB-7	1/1/2009 0:00	Should be in Tract OS		11/29/2016 0:00	
F	OS	CB-10	FOSCB-10	1/1/2009 0:00	Should be in Tract OS		11/29/2016 0:00	
F	OS	CB-11	FOSCB-11	1/1/2009 0:00	Should be in Tract OS			
F	OS	CB-12	FOSCB-12		Should be in Tract OS			
F	OS	CB-15	FOSCB-15	1/1/2009 0:00	Should be in Tract OS / Tract map needs to be moved	2/23/2017 0:00		
F	OS	CB-34	FOSCB-34	1/1/2009 0:00				

APPENDIX F
Terms of Use and Warranty

INVENTIVE RESOURCES, INC. (IRI)
P.O. Box 1316, 5038 Salida Blvd., Salida, CA 95368
Ph 209.545.1663 Fax 209.545.3533 www.iriproducts.com

Bulletin No. WD 2015-A

Water Decontaminator (WD) Catch Basin Inserts, Filter/Absorber Cartridges and IRI Filter Products for Bins and vaults.

TERMS OF USE - Filter Product and Information

Inventive Resources, Inc. makes no representations or warranties as to the completeness or accuracy of information provided on filtration and water treatment products, brochures, and proposals. Water Decontaminator (WD) and related products including above ground bins with filter cartridges and vaults with filters hereinafter referred to as PRODUCTS help to reduce sediment and other contaminants during low run-off flow rates for parking lots and residential roadways and certain other locations.

Buyers and or Users of the PRODUCTS shall make their own determination as to its suitability for use for their purposes prior to use. In no event will Inventive Resources, Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information or the PRODUCTS to which information refers.

Nothing contained herein is to be construed as a recommendation to use any product, process, equipment or formulation in conflict with any patent. IRI makes no representation or warranty, express or implied that the PRODUCT use will not infringe any patent.

NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

General Notice: Customer (includes purchaser or user) is responsible for determining whether PRODUCTS are appropriate for Customer's use and for ensuring that Customer's property, site, location, and workplace and disposal practices are in compliance with applicable codes, laws and other government regulations.

Codes, regulations and applicable requirements vary in different locations regarding the use of PRODUCTS and Inventive Resources, Inc. makes no claim of approval or use to any specific areas. IRI assumes no obligation or liability for the information in this document. References to "Inventive Resources, Inc.", “IRI” or the "Company" mean the Inventive Resources, Inc. Legal entity selling the products to Customer unless otherwise expressly noted.

NO EXPRESS WARRANTIES ARE GIVEN EXCEPT FOR ANY APPLICABLE WRITTEN WARRANTIES SPECIFICALLY PROVIDED BY INVENTIVE RESOURCES, INC. ALL IMPLIED WARRANTIES INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

Refer to: Product Warranty & Maintenance Bulletin No. **WD 2015-B**

INVENTIVE RESOURCES, INC. (IRI)
P.O. Box 1316, 5038 Salida Blvd., Salida, CA 95368
Ph 209.545.1663 Fax 209.545.3533 www.iriproducts.com

Bulletin No. WD 2015-B

Water Decontaminator (WD) Catch Basin Inserts Filter/Absorber Cartridges and IRI Filter Products for Bins and vaults.

Product Warranty & Maintenance - Filter Product and Information

MAINTENANCE: Unless otherwise specified, IRI recommends that the PRODUCTS including above ground bins with filter/absorber cartridges and vaults with filter/absorber cartridges. Cartridges should be replaced when the housing has standing water that is slow to drain or when the housing contains sediment to 1/3 the height of the cartridge and/or the housing should be emptied of sediment when it reaches no more than 4 inches of sediment depth. The trash capture screens shall be cleaned with each service. Areas with high concentrations of sand and silt may require more frequent cleaning cycles due to the filters' ability to catch such debris. Areas that accumulate heavy concentration of pollutants may also require frequent filter/absorber cartridge changes. Due to the many different conditions at each location, such as the weather, type of facility, landscaping, foliage, potential for handling hazardous waste, etc., IRI recommends having a qualified service company perform the replacement and disposal of the filter medium and the general cleaning of the filters. The used filter/absorber cartridges must be disposed of in accordance with applicable Federal, State and Local laws and regulations. Generally, petroleum hydrocarbon waste is captured in parking lots and residential roadways while industrial sites may have chemical or other contaminant waste that require site specific absorbents and special disposal requirements. PRODUCT filter cartridges are designed to treat low flow conditions only and the flow rate decreases with use. Trash capture screen shall be sized to capture particles 5 mm and greater to the design flow rate. Overflow opening allows excess flow to by-pass filter. Maintenance includes cleaning Products and areas near the water inlet grate to prevent blockage and flooding. See Terms of Use - Bulletin No. **WD 2015-A**

WARRANTY: EXCEPT AS SPECIFICALLY SET FORTH IN THIS PARAGRAPH, THERE ARE NO WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY OR THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ALL PRODUCTS FURNISHED ARE WARRANTED AGAINST ANY DEFECT IN MATERIALS OR WORKMANSHIP, PROVIDING A CLAIM IS MADE IN WRITING WITHIN ONE (1) YEAR FROM THE DATE OF DELIVERY OF THE PRODUCT TO THE PURCHASER. OBLIGATION ON ANY CLAIM IS LIMITED TO REPLACEMENT OR REPAIR OF THE DEFECTIVE PRODUCTS FOB AT INVENTIVE RESOURCES, INC. PREMISES. EXCEPT AS STATED ABOVE, INVENTIVE RESOURCES, INC. WILL NOT BE LIABLE FOR ANY LOSS, INJURY OR DAMAGE TO PERSONS OR PROPERTY RESULTING FROM FAILURE, MISUSE OR DEFECTIVE OPERATION OF ANY PRODUCTS FURNISHED HEREUNDER. NOR WILL INVENTIVE RESOURCES, INC. BE LIABLE FOR DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND SUSTAINED BY PURCHASER FROM ANY CAUSE. INVENTIVE RESOURCES, INC. PRODUCTS ARE DESIGNED TO BE USED IN CONJUNCTION WITH STRINGENT MAINTENANCE PLANS AND POLLUTION PREVENTION PLANS AND ARE NOT INTENDED FOR USE AS THE EXCLUSIVE MEANS OF REDUCING THE AMOUNT OF POLLUTANTS ENTERING THE ENVIRONMENT. PURCHASERS AND USERS OF INVENTIVE RESOURCES, INC. PRODUCTS ARE SOLELY RESPONSIBLE FOR COMPLIANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS GOVERNING THE DISCHARGE AND DISPERSAL OF FILTERED WATER, TREATED WATER, SPENT FILTER MEDIA, FILTER/ ABSORBER CARTRIDGES, DEBRIS, SEDIMENT AND SLUDGE.

APPENDIX G
Filter Cartridge Pollutant Removal and Laboratory Data

Appendix E
Water Decontaminator Trash Capture Device Application Submission
Water Decontaminator Filter Cartridge Pollutant Parameter Removal

	Influent	Effluent	Reduction Percentage
TSS, mg/L	27	1.2	96%
	24	11	54%
	15	12	20%
	16	10	38%
	59	36	39%
	39	8	79%
	42	32	24%
	708	29	96%
	52	26	50%
	52	13	75%
	90	64	29%
	90	45	50%
	84.0	42.0	50%
	31.0	29.0	6%
	Influent	Effluent	
Aluminum, mg/L	1.9	0.4	79%
	1.03	0.509	51%
	4	2.2	45%
	4	1.3	68%
	3.2	1.8	44%
	1.4	1.2	14%
	3	0.75	Note: influent and benchmark values
	Influent	Effluent	
Copper, mg/L	1	0.5	50%
	1	0.19	81%
	0.93	0.85	9%
	1	0.83	17%
	0.02	0.01	50%
	0.25	0.0636	
	Influent	Effluent	
Iron, mg/L	1.7	0.47	72%

	0.507	0.288	43%
	5.6	3.1	45%
	5.6	2	64%
	5.3	2.8	47%
	2.4	2	17%
	4.49	1	
	Influent	Effluent	
Zinc, mg/L	0.28	0.15	46%
	0.561	0.292	48%
	0.562	0.185	67%
	0.562	0.256	54%
	0.28	0.14	50%
	0.28	0.056	80%
	0.35	0.24	31%
	0.27	0.22	19%
	0.13	0.087	33%
	1.19	0.117	
	Influent	Effluent	
Oil and Grease, mg/L	16	9.2	43%
	22	12	45%
	8.7	3.7	57%
	30	15	

PRECISION
ENVIRO-TECH
Analytical Laboratory

CERTIFICATE OF ANALYSIS

Friday, March 13, 2009

Attention: John Paolullio
Inventive Resources, Inc
5038 Salida Blvd
Salida, CA 95368

Conventional Chemistry Parameters by APHA/EPA Methods

Sample Information

Sample ID: # 4 Inffluent
Laboratory ID: 9031208-01
Date/Time Sampled: 02-Mar-09 14:00 by John Paolullio
Sample Type: Grab
Project Name: 3/2/09 TEST
Sample Matrix: Surface Water

Test Parameter	*Result*	*DLR*	*Unit*	*Dilution*	*Batch*	*Prepared*	*Analysis Date*	*Method*	*Notes*
Total Suspended Solids	110	1.0	mg/L	1	AC91202	12-Mar-09	12-Mar-09	SM2540D	

mg/L = milligrams per Liter = ppm
ug/L = micrograms per Liter = ppb

DLR = Detection Limit for Purpose of Reporting.
Exceptional sample matrices or interferences may result in higher detection limits.

RESPECTFULLY SUBMITTED,

Jonathan Le, Laboratory Director

3935 N. Coronado Ave Stockton CA. 95204 phone: (209) 477-8105 Fax: (209) 546-7497

PRECISION
ENVIRO-TECH
Analytical Laboratory

CERTIFICATE OF ANALYSIS

Friday, March 13, 2009

Attention: John Paolullio
Inventive Resources, Inc
5038 Salida Blvd
Salida, CA 95368

Conventional Chemistry Parameters by APHA/EPA Methods

Sample Information

Sample ID: # 4 Effluent
Laboratory ID: 9031208-02
Date/Time Sampled: 02-Mar-09 14:00 by John Paolullio
Sample Type: Grab
Project Name: 3/2/09 TEST
Sample Matrix: Surface Water

Test Parameter	*Result*	*DLR*	*Unit*	*Dilution*	*Batch*	*Prepared*	*Analysis Date*	*Method*	*Notes*
Total Suspended Solids	32	1.0	mg/L	1	AC91202	12-Mar-09	12-Mar-09	SM2540D	

mg/L = milligrams per Liter = ppm
ug/L = micrograms per Liter = ppb

DLR = Detection Limit for Purpose of Reporting.
Exceptional sample matrices or interferences may result in higher detection limits.

RESPECTFULLY SUBMITTED,

Jonathan Le, Laboratory Director

PRECISION
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Conventional Chemistry Parameters by APHA/EPA Methods

Sample Information

Sample ID: # 2 Inffluent
Laboratory ID: 9031208-03
Date/Time Sampled: 02-Mar-09 14:15 by John Paolullio
Sample Type: Grab
Project Name: 3/2/09 TEST
Sample Matrix: Surface Water

Test Parameter	*Result*	*DLR*	*Unit*	*Dilution*	*Batch*	*Prepared*	*Analysis Date*	*Method*	*Notes*
Total Suspended Solids	460	1.0	mg/L	1	AC91202	12-Mar-09	12-Mar-09	SM2540D	

mg/L = milligrams per Liter = ppm
ug/L = micrograms per Liter = ppb

DLR = Detection Limit for Purpose of Reporting.
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RESPECTFULLY SUBMITTED,

Jonathan Le, Laboratory Director

3935 N. Coronado Ave Stockton CA. 95204 phone: (209) 477-8105 Fax: (209) 546-7497

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Conventional Chemistry Parameters by APHA/EPA Methods

Sample Information

Sample ID: # 2 Effluent
Laboratory ID: 9031208-04
Date/Time Sampled: 02-Mar-09 14:15 by John Paolullio
Sample Type: Grab
Project Name: 3/2/09 TEST
Sample Matrix: Surface Water

Test Parameter	*Result*	*DLR*	*Unit*	*Dilution*	*Batch*	*Prepared*	*Analysis Date*	*Method*	*Notes*
Total Suspended Solids	190	1.0	mg/L	1	AC91202	12-Mar-09	12-Mar-09	SM2540D	

mg/L = milligrams per Liter = ppm
ug/L = micrograms per Liter = ppb

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Jonathan Le, Laboratory Director

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Precision Enviro-Tech

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch AC91202 - General Preparation										
Blank (AC91202-BLK1)				Prepared & Analyzed: 12-Mar-09						
Total Suspended Solids	ND	1.0	mg/L							
LCS (AC91202-BS1)				Prepared & Analyzed: 12-Mar-09						
Total Suspended Solids	990	1.0	mg/L	1000		99	80-120			
Duplicate (AC91202-DUP1)	**Source: 9031206-01**			Prepared & Analyzed: 12-Mar-09						
Total Suspended Solids	14	1.0	mg/L		12			15	20	

mg/L = milligrams per Liter = ppm
ug/L = micrograms per Liter = ppb

DLR = Detection Limit for Purpose of Reporting.
Exceptional sample matrices or interferences may result in higher detection limits.

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Jonathan Le, Laboratory Director

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Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

mg/L = milligrams per Liter = ppm
ug/L = micrograms per Liter = ppb

DLR = Detection Limit for Purpose of Reporting.
Exceptional sample matrices or interferences may result in higher detection limits.

RESPECTFULLY SUBMITTED,

Jonathan Le, Laboratory Director