

# Clearview System™ II Component Descriptions

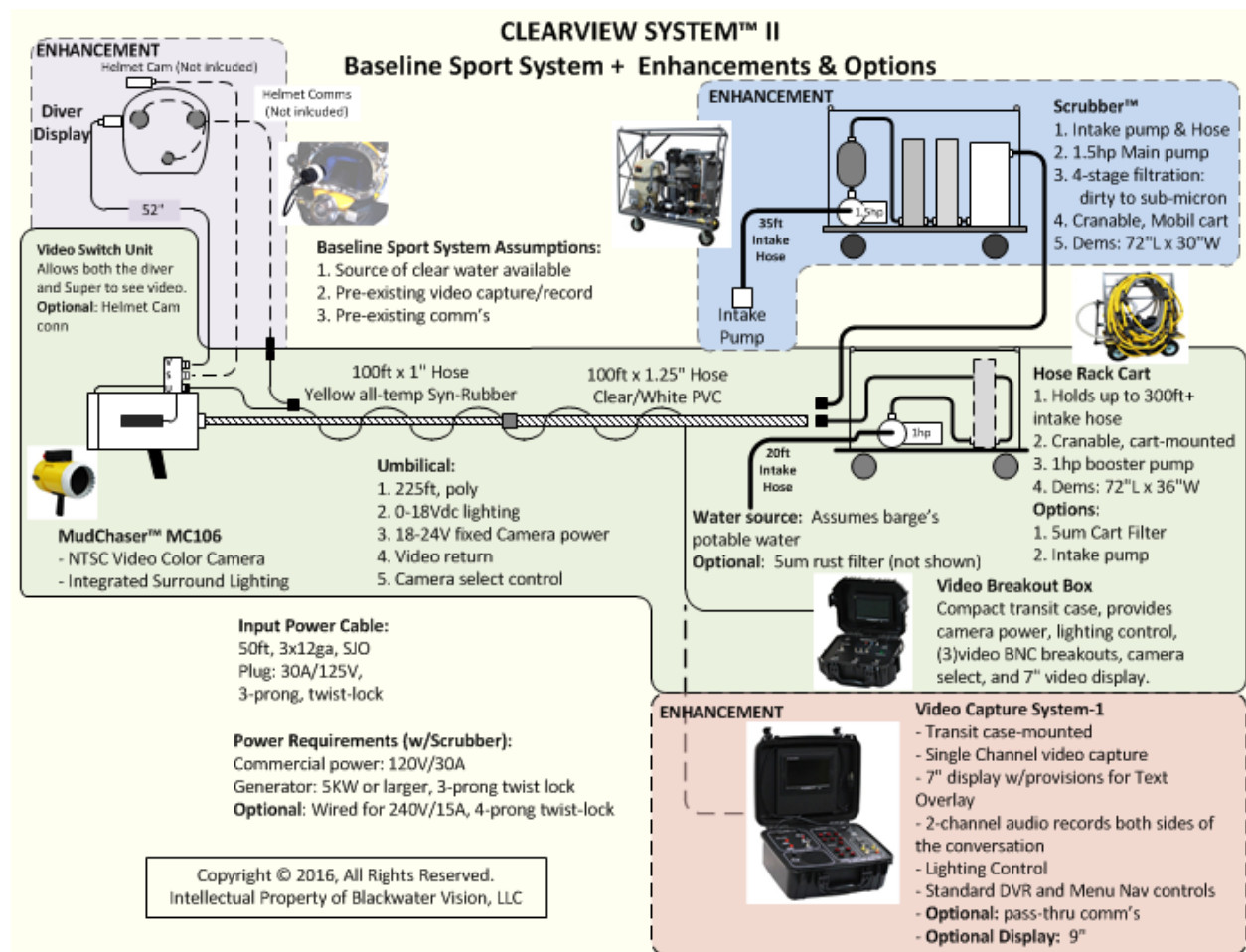
## Clearview System II – Baseline Sport System

### Overview

Continuing the tradition and superior zero visibility performance of the original Clearview System™ I, the newly redesigned Clearview System™ II addresses the industry needs for a modular, lower-cost, simpler, and safer-for-the-diver system.

The digital, turnkey Clearview System™ I demonstrated that the diver and Supervisor could both see, and inspect, and communicate in real-time regardless of the turbid, silty, muddy, and hazardous working conditions.

The Clearview System™ II allows the customer to integrate just that portion of the system he/she need, adding capability only where needed beginning with the basic baseline system with enhancements that can be added to make a truly extraordinary system.



## Clearview System™ II Component Descriptions

The Scrubber™ and hose racks mounted on carts is called the Sport version. While the Pro version has the Scrubber™ and hose rack mounted on skids.

### Clearview System™ Baseline Assumptions

1. A source of clear is available and provided by the contractor. The booster pump on the hose cart will pump this clear water down to the MudChaser™. If clear water is not available, then the Scrubber™ can be attached as a system enhancement.
2. The contractor already has comm's to the diver. However, this umbilical also includes 4 comm wires, should the customer decide to integrate the two cables. Ask about the optional pass-thru capability.
3. The contractor already has a pre-existing video record system. If not, the Video Capture System-1 is available.

### Key Baseline Features

- The basic baseline Sport Clearview System includes the MC106 MudChaser™, 225ft of electrical umbilical cable, 200ft of hose and a cranable hose rack, and the Video Breakout Box.
- The simple Video Breakout Box provides power to the MudChaser™ camera and electronics, provides lighting power, receives and distributes video to three BNC connectors
- The hose cart will hold up to 300ft of hose and the cart-mounted 1hp booster pump will handle up to 300ft of hose
- The Video Switch Unit, mounted on the MudChaser™ includes the connector for the optional Diver Display.

### System Enhancements Available

**The Scrubber™** - Takes in dirty, turbid water (preferably non-biohazard) and removes 99.99% of the particulate matter to make clear water at up to 30gpm thru a 4-stage process

**Diver Display** – Allows the diver to see the same video stream that the Supervisor sees and both can see, analyze, and inspect far more efficiently.

**Video Capture System-1** – A single channel video capture/record and playback system that also includes both audio and video connectors can be used for general purpose use. The built-in 120GB SSD will record over 50hrs of .mp4 video.

## Clearview System™ II Component Descriptions

### MudChaser™ MC106

Creates a tunnel and punches a hole through the turbid water through which the camera can see.

#### Features

- Handheld 6" diameter MudChaser™ with comfortable pistol grip allows the Diver and Tender/Supervisor to see, inspect, and work clearly in the most turbid water conditions.
- Using a low-tech, highly reliable technique, the muddy, turbid water is displaced, allowing for easy single-handed operation.
- Integrated composite video, color camera
- Integrated surround Hi-Intensity 20-LED light ring.
- Neutrally buoyant in water adds no additional work fatigue on the diver.
- Standard unit includes a connector port to connect the optional Diver Display
- Integrated Video Switch Unit (VSU) supports Diver Display and optional helmet-mounted camera connection. VSU allows the diver and supervisor to see and inspect the same image and provides for surface-switching between the helmet and the MudChaser™ cameras.



#### Weight:

Dry: 11.5lbs

Wet (without floatation jacket): 2lbs

Wet (with floatation jacket): 0lbs(neutral buoyant)

#### VSU - Main Dive Cable Electrical Input / Output

- 10-pin male connector w/locking ring. Secures the MC106 to the dive cable.
- Camera and VSU power : 18-24Vdc @250mA
- LED power: 0-18Vdc @ 1A (Can be adjusted to 24V, if needed)
- Video Out: NTSC Composite video output
- Video Gain: 0-10dB gain (contact BWV to set)

#### VSU - Diver Display Connection

- 6-pin, male w/o locking ring. Allows quick disconnect with easy tug.
- Electrical: 5Vdc, gnd/shield, and composite video out to the display.

## Clearview System™ II Component Descriptions

### VSU Options:

- Helmet mic pre-amp for stronger, clearer diver voice sound and better signal-to-noise ratio (clearer signal at the surface).
- Helmet camera connection. Allows the helmet cam to plug into the VSU and allow surface switching between cameras

### Dive Cable

C1100 - 225ft Umbilical Dive Cable (video, camera/VSU power, lighting). Baseline length.

### Features:

- Outer jacket - Neutrally buoyant, bright green
- Multi conductor cable for all power and video functions
- Integrated 4-wire comm's conductor for Customer's use.

### Mechanical:

- Braided Kevlar strength member (1200 lbs.)
- Standard length 200-500 ft
- Material: Neon Green, Foam Polyurethane jacket
- Diameter .55"
- 50 lbs.(22.7Kg) per 500 ft

### Electrical:

- Conductors: 75 ohm coax, 1 #24 awg tsp, 1 #24awg tp, 3 #18 awg, 2 #22awg
- 300 volt rated conductors

### Option:

- Extended lengths available in 100ft lengths to meet customer's needs.

## Clearview System™ II Component Descriptions

### Video Breakout Box

Provides for a simple low-cost means to provide power and lighting control to the MudChaser™ while receive and distributing video.

#### Features:

- Makes video available for recording and other purposes and provides power to the camera, VSU, and lighting, camera video switching.
- Video/Camera Select switch allows selection between video sources – MudChaser™ or helmet cam.
- BWV dive cable connection (23-pin mil spec connector)
- (1) general purpose video input (BNC)
- (3) video outputs: (2) non-isolated, (1) isolated
- Variable lighting control
- 7" display
- Dims: 13-3/4"W (350cm) x 10-1/2"D (267cm) x 6-3/8"H (162cm)
- Weight: 10.5lbs/4.75kg
- Power cord – attached.
- Lockable transit case



### Hose Rack Cart & Booster Pump(Baseline Config)

- Rack and Pump to be mounted on a 36"x72" cart w/10" wheels (min). All hose will be kept within the footprint of the cart to ensure protection of the hose.
- Crane liftable using standard lift points
- Discharge hose: 100ft x 1" hi-flex, synthetic, wide temp range
- Discharge hose: 100ft x 1.25" PVC
- Intake hose: 30ft x 1.5" PVC
- Std Hose Rack capable of supporting 300ft of hose
- 1hp booster pump. Big enough to handle up to 300ft of hose
- Hose is made neutrally buoyant using flotation sleeves.



200ft of hose mounted on a 2ft x 4ft under-sized cart

## Clearview System™ II Component Descriptions

### Options:

- Intake pump
- 5um x 100sf cartridge filter for large particle filtering
- Longer lengths in 100ft sections.
- Bigger booster pump for total length longer than 300ft.

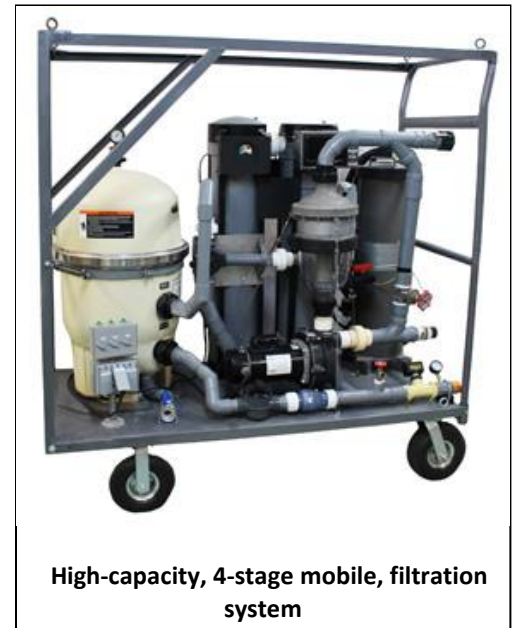
### Scrubber™

For customers who do not have a ready supply of clear water to pump to the MudChaser™ or do not want to sacrifice their potable water.

- High capacity, 4-stage, mobile filtration system removing particles from silt down to submicron at up to 30gpm.
- Mobile 30"x72" cart w/protection frame and crane lift provisions. All plumbing will be kept within the footprint of the cart.
- 1/3hp (120Vac) Intake + 1.5hp(120Vac) main pumps (Adjustment made if Intake pump ordered as part of the Hose Cart. Only need one)
- Stage 1: Continuous purge, particle separator (sludge filter)
- Stage 2: 5um, 150sf washable cartridge media filter
- Stage 3: 80sf DE high capacity, long-use 2um media filter.
- Stage 4: Chemical injection bonding agent to make submicron particles catchable
- Electrical switch box and 50ft power cord
- Four pressure gauges and an output flow gauge to monitor performance of the system.
- Will take +500NTU water and filter it to <1NTU at flow rates up to 30gpm.
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### Starter kit Consumables

- (2) 5um, 150sf washable Cartridge filters
- (2) 5gal of bonding agent chem
- (2) 25lb boxes of DE material



## Clearview System™ II Component Descriptions

### Diver Display

Allows the diver to see what is being video captured by the MudChaser™ in zero visibility water conditions. Both the surface Supervisor and the diver can/will see the same thing with the same clarity.

### Features

- Monochrome, militarized solder system display modified to Blackwater Vision's spec
- Currently tested to 50ft. Greater depths should be no problem.
- Multi-position bracket allows for infinite adjustment
- Can be mounted for left or right eye operation.



### Video Capture System – 1

- Single-channel, video capture system for either the BWV dive cable or general purpose audio/video capture.
- Single channel video and audio capture in .mp4 compressed format
- Standard 120GB Solid State drive holds more than 50hrs of video in the .mp4 format. Upgrades available to 500GB and 1TB.
- Typical DVR controls: Record, play, pause, stop, fast forward, rewind. See images for more detail.
- 2-channel audio, captured along with the video. Records both sides of the dive conversation. Also supports general purpose commercial dive communications via standard banana jacks and aux video input (BNC)
- 7" in-lid mounted, NTSC display, Optional: 9". 10" available as special order.
- Lighting control for the MudChaser™. Additional connector can be added for general purpose lighting at no charge.



## Clearview System™ II Component Description

- Video playback thru panel speaker and volume control
  - Provisions for integrated text overlay (future software release)
  - Power: 120Vac/60Hz input, 240Vac/50Hz European power available at no additional cost.
  - The standard BWV dive cable connection allows for drop-in replacement/Upgrade for the Video Breakout Box.
  - Outputs: (2) USB2.0 ports, (1) video out, L&R audio lineout USB ports used for file management and external keyboard.
  - Free software updates
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- Dims: 15"W x 12-1/2"D x 6-3/4"H
  - Weight: 11.5lbs

