

\$10.00 US

WELL-VU

DOWN HOLE VIDEO ASSISTANCE AND USAGE TIPS MANUAL



Since 1997 Nature Vision, Inc. has been the number one producer of underwater viewing systems. With over 80,000 units produced, we have amassed a wealth of knowledge in the field. With six US patents in place, and a dozen more pending, our flagship line of Aqua-Vu underwater cameras continues to dominate the market it created.

All of this experience went into the 2005 line of products, built to the specifications of demanding drillers worldwide. By leveraging our component volumes, we are able to offer you the lowest cost, high performance down hole viewing systems on the market.

Portable and easy to use, our systems save you time and make you money on the job site!

1) WELL-VU PRODUCT LINE



300, 500', 700' & 1000' Manual Wind Color and Black & White System

Well-Vu color cameras clearly show color variations caused by different contaminant's and mineral deposits. Well-Vu color systems plug into any TV, TV/VCR, or hand-held video recorder that has an RCA-style video-in jack. Ultra-high-intensity white LED lights provide clear viewing at any depth. Well-Vu black and white systems are built on our Z-Series chassis that features a waterproof monitor, removable sunshield, and battery storage.



WV-C-1000 Color System

Shipped field ready to operate without needing extra components, (other than a customer supplied monitor) ·1000' of tough KEVLAR (TM) reinforced cable by Northwire Inc. ·Complete system operates on 12 volt DC ·12 volt motorized rheostat controlled cable spool ·Rheostat controlled lights on camera ·On screen digital footage display · NEW 1 1/2" diameter camera · On screen GPS coordinates available · Reads to 1/10 of a foot · Field rugged tripod · Full one-year warranty

2) RECORDING VIDEO OR DIGITAL IMAGES

All Well-Vu color cameras terminate with a RCA video jack. Making it simple to view your Well-Vu video on most any screen or monitor.



You can record on any video recording device that accepts an NTSC signal and will record in analog, or digital. The most common is a TV, a VCR, or combination of both. A favored option is the use of a TV/VCR in 120V/12V combo that is available at most electronic outlet stores or mass merchandisers.



You can also view and record on a Digital video camera, plus record .MPEG video files to be e-mailed, or snap .JPG images to later be download to a computer and printed on an invoice or e-mail to your client.



Another option is to use a computer or lap top computer monitor, and with a video capture system, such as the Nature Vision GVVC, you can record video clips or snap and save .JPG images. This allows you to print an invoice off your computer and print the .JPG images right on the invoice to your client.

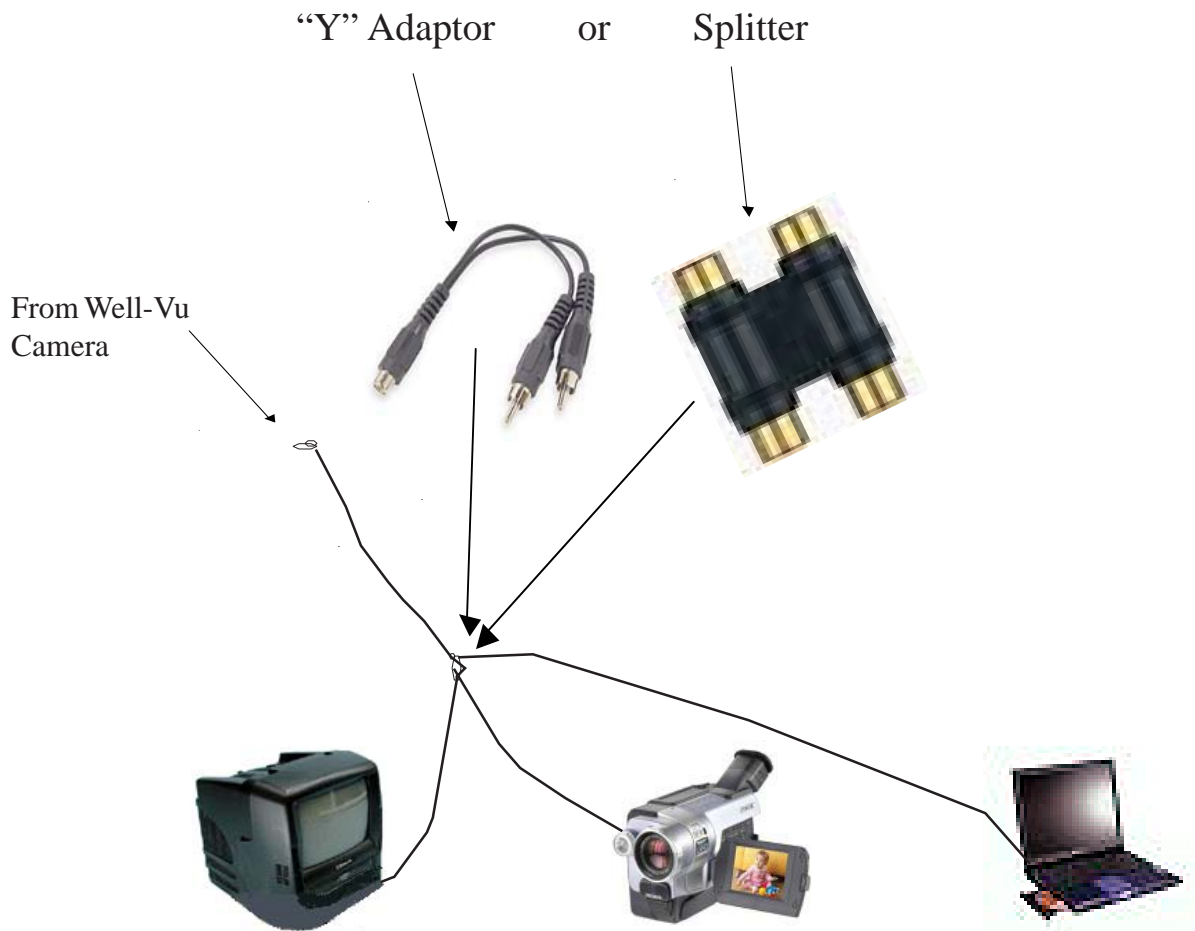


A small B&W 1" monitor with a rubber eye piece is also available through Well-Vu as an optional viewing piece. This can easily be attached to the brim of a hat to be used in fishing jobs where you need to be at the well head and working the fishing tools.



To use a computer, you will need some type of video capture kit, such as the GVVC from Nature Vision. This allows the connection from the RCA jack to the USB port on the computer. You can then use the lap top monitor as your screen and snap and save .JPG images or video clips on the hard drive and later burn to a CD or e-mail.

You can also use multiple monitors to view and record in different modes. Simply come off the RCA video jack from the camera to a “Y” adaptor or “Splitter” and you can then connect any 2 or 3 different monitors. These items are available at any electronics store or Radio Shack



3) RECORDING SOUND ON VIDEO



You can purchase a microphone to record your voice on the VCR tape. I purchased a very small and excellent microphone from Supercircuits off the internet for under \$20. It is powered by your 12 volt battery and plugs into the AUDIO IN jack on the TV. This will allow you to narrate the video and interpret what you see, also recording the footage (on the WV300 & WV500) so you have both a video and audio recording.



SUPERCIRCUITS MODEL PA-3 Super High Gain Mic

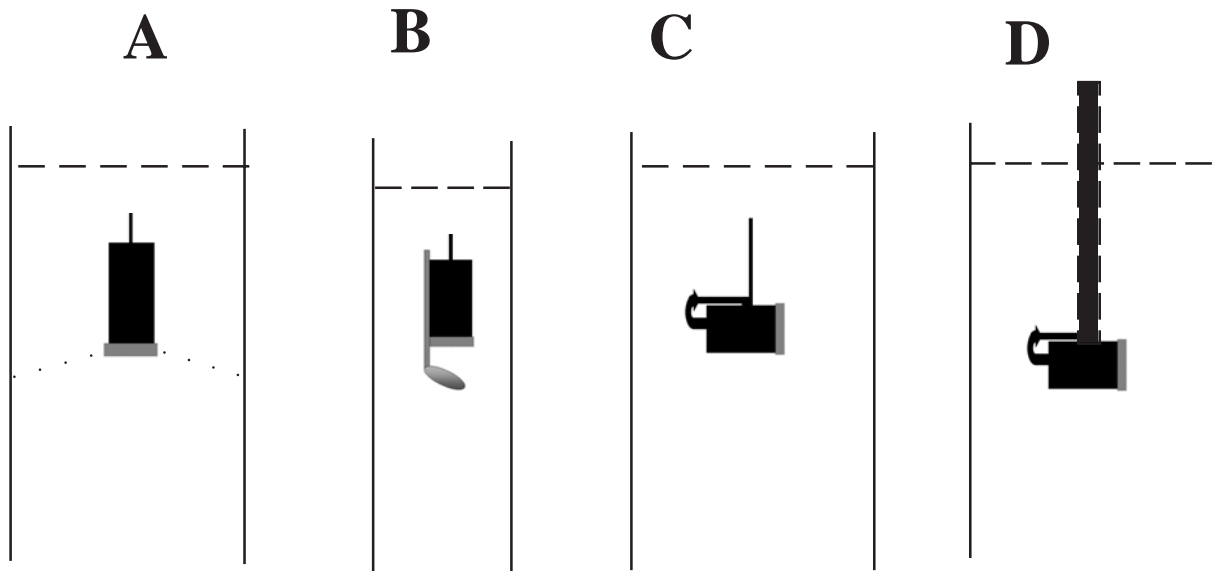
This high gain super mini preamp and microphone are the smallest and best I have found. The preamp features low noise, extremely high gain and auto level adjustment by on-board IC. The mike is super tiny— and the preamp is built right in. Weight is under 1/2 ounce for preamp and mike. Output is line level and voltage requirement is 6-15 volts DC. The PA-3 is a fully configured system with a six foot mike lead and plug and play cable terminations with RCA connector.

Also, you can simply take your TV/VCR to any electronics store, such as Radio Shack, Team Electronics, etc., and purchase a microphone that will work. I have found that you normally need a “mixer” mic of some type, but there are several good ones on the market that will do that for you.



If you are going to view and record on a Digital or Analog camcorder, they have a built in microphone so you can narrate and record at the same time with no extra equipment

4) DOWN HOLE VIDEO OPTIONS



A) In an 8" well casing, the camera is viewing the sides of the well 1 1/2" in front of the lens. In most circumstances this is adequate to visually inspect the casing for any problems.

B) In a situation when you want to look both down and horizontally, you can simply attach a automotive inspection mirror (available at any auto parts store) or order the Mirror Kit from Nature Vision. Your monitor will then show a down view on the outside of your monitor, and a 90 degree side view in the center of your monitor. This is helpful if you want to look directly into a pitless adaptor or inspect a screen to see both the inside of the well and the gravel pack to see if it is encrusted.



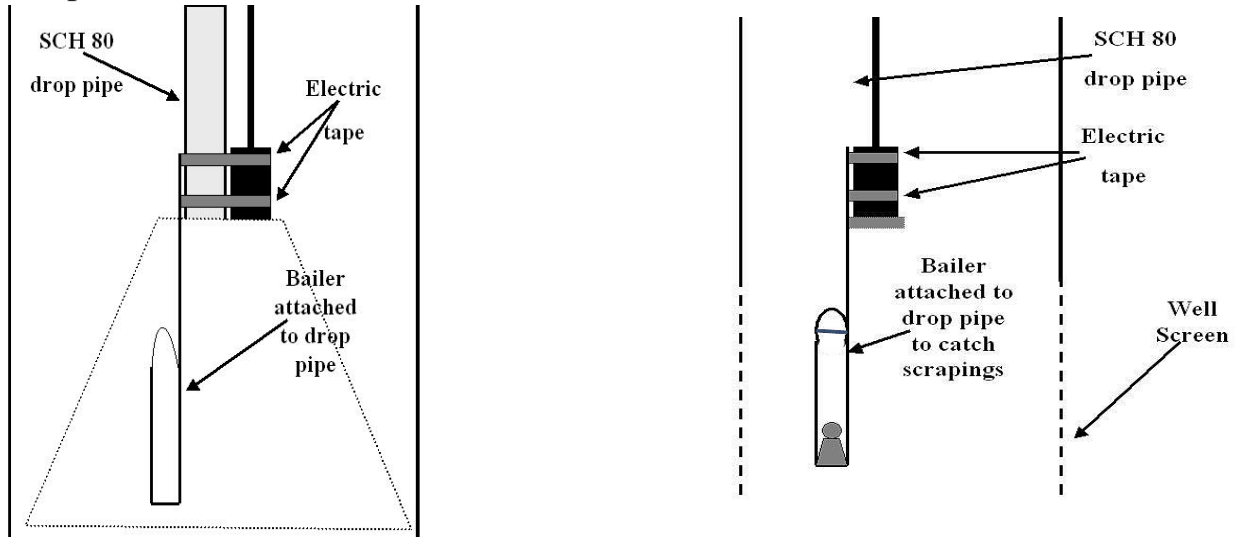
C) In 12" and larger wells, you may want to video the well completely once in the down viewing position, and then come up and tape the camera cable to the side of the camera and lower it back down to get a horizontal picture of the casing and screen/slots

D) To obtain full rotation in deeper wells where rotating the camera cable on the surface does not allow you to rotate the camera, you can attach the camera to 1" schedule 80 drop pipe, and then rotate the drop pipe to get a full 360 degree inspection of the casing or screen/slots.

5) DOWN HOLE ACCESSORIES /SAMPLING OPTIONS

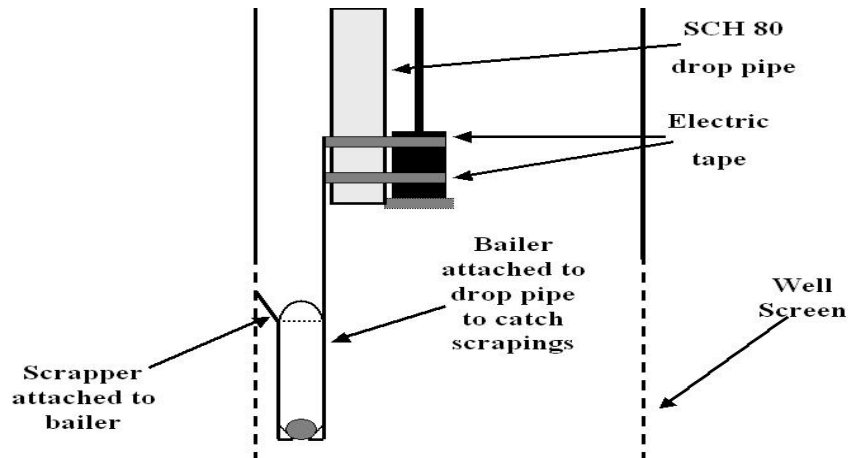
USING THE CAMERA TO OBSERVE BAILING SAND SAMPLES FROM BOTTOM

You can simply tape, with a good electrical tape, the bailer to the camera housing to get sediment and/or sand samples off the bottom of the well and observe the entire operation on your monitor. For a little more control of the bailer, attach the camera to PVC pipe, and the bailer to the pipe, and lower this into the well to take your samples.



USING THE CAMERA TO REMOVE ENCRUSTATION SAMPLES FROM SCREEN

Attach the scale and sediment scraper to the bailer, and tape the bailer to the camera housing, and attach the camera to PVC pipe. This will allow you to get sediment, scale and/or encrustation samples off the side of the well screen. You can observe the entire operation on your monitor, and pick the encrustation areas you want to sample for analysis.



5) DOWN HOLE ACCESSORIES /SAMPLING OPTIONS
CONTINUED...WHAT TO DO WITH THE SAMPLE
AND WHAT TO SAMPLE

A) For sludge, soft debris, or slime. Place this debris that you took off of a “union joint” or inside water line or off the drop pipe as you pulled the pump to video, into a baggie and double bag for shipping. (Note: Add a few drops of water to keep it moist)

For scale, mineral deposits and hard debris. Place this into a baggie or container.

B) If you are not familiar with what to “treat” with, or how to cure the problem, you can send your samples and a check for \$40 to:

Design Water Technologies Phone 1-888-437-6426
5920 Covington Rd.
Shorewood, MN

C) Its important that the more information you can provide, and the faster you can get the samples in, the better the results will be. If you have any questions, call Dave Hanson at Design Water, and ask his advise, the number is above.

D) The best part of the camera is that you can make a “before” and “after” video of the well and its problems, and give this to the customer. A home owner will feel better paying a bill when they can see what the problem was, what you did, and how it looks now.

It is also a good sales tool to make a duplicate set of videos to use as a sales tool to show prospective customers the problems with low yeilding wells and what can be done to fix the problem.

6) DOWN HOLE VIEWING PROBLEMS

USING THE CAMERA FOR A WATER LEVEL INDICATOR

A camera is a far more precise method to determine the SWL or “Pumping level” of a well instead of a standard “water level indicator”. When using a water level indicator, you get many erroneous and false readings from such things as cascading water, or in a test pump situation, water running down the side of the casing as the SWL drops during the test pump. With a WELL-VU camera, you can literally see the water level and water cascading or running down the casing.

In some situations when you have cascading water, it falls down over the camera housing, and runs over the lens, and you are unable to get a good view of the SWL. You then simply take a piece of 2” PVC and make a short piece to slip over the camera and extend down past the lens about 3/4-1”. This will allow the cascading water to run past the camera on the 2” PVC and you can clearly see the SWL again.



WATER LEVEL INDICATOR/FOOTAGE COUNTER



A very precise footage count can be obtained by using this mechanical counter from Well-Vu. It comes complete with a rim clamp which attaches firmly to the side of the casing, 2 adjustable arms, and a pulley. This design allows centering over the well, and the counter on the side of pulley counts off the footage to 1/10 of a foot and is accurate to .01%. The pulley is designed to grasp the cable tightly on 3 sides to minimize cable slippage to provide precise measurement.

PRECAUTIONS TO PREVENT CLOUDY LOOKING WATER

After pulling the pump, you will need to let the well set for 24 to 48 hours to allow the solids in the water to settle down, even though the water was clear and clean when you pulled the pump. You need to show extreme care in pulling the pump from the well as to not agitate the water in the well any more than necessary. Such as, putting a “splash ring” under the drop pipe coupling before unscrewing, to prevent the water in the drop pipe from cascading back into the well. A splash ring can easily be made from an old inner tube. Simply cut out a 24” piece, cut the tube open and unfold, wrap around drop pipe and hold in place with tape or a chain vise grips.

CAN'T SEE -APPEARS FUZZY OR BLURRY - CASING LARGER THAN 6”

A) Possibly excessive amounts of solids in the water (TDS), or large amounts of iron, magnesium or tannis to name a few. By attaching auxiliary lights to the camera on the side, and pointing them in a 45 degree angle, reflecting the lights off of the sides of the casing, in some cases will provide excellent viewing.

B) A second option is to attach an auxiliary light 6-10” in front of the camera by attaching it to a brazing rod or side looking mirror and the rod to the camera housing, or using both lighting methods A& B at the same time

Remember like all wells, every well you video will be different.

INFORMATION ON LIGHTING IS AVAILABLE FROM OUR SALES OFFICE



CAN'T SEE -APPEARS FUZZY OR BLURRY -AUXILIARY LIGHT DOESN'T HELP

A) Possibly “dirty water” containing clays, from the outside formation leaking into the casing from a hole, or drilling muds coming in through the screen. Bentonite companies that supply the drilling muds, have a “solids settling” compound that can be agitated in the well to get the solids to solidify or “coagulate” and settle to the bottom of the well.

In some cases, you may need to circulate the water with a submersible, or by simply dumping the chemical in the well and allowing sufficient time for it to settle through the solids. Most, such as Baroid, are very helpful in this area for suggestions. Use the manufactures recommendations for any of these application.

B) Obtain a clear plastic or glass container (pickle jars seem to work very well, and don't scratch as easily as plastic)) 1/2-1” smaller than the inside diameter of the casing (i.e.: 7” OD for a 8” ID well), and cut a slot in the cap of the bottle for the cable to slide into, insert the camera into the bottle and fill the bottle with fresh clean bottled or tap water, and simply tape the top shut.

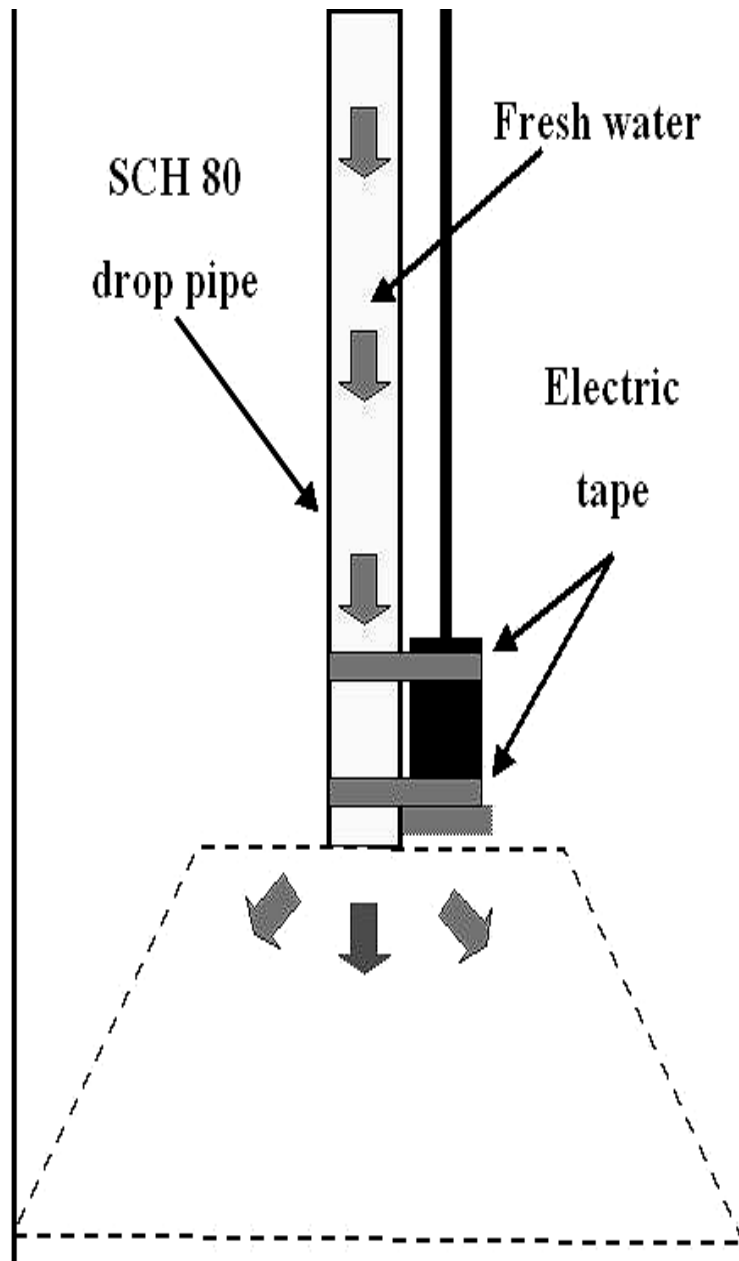
If you chose to use a 2 liter clear plastic water bottle with a small top, simply cut a slot in the top of the bottle to insert the camera and cable through, fill with clean water and tape the neck shut.

In either case, when lowering this into the water, the jar will displace the dirty well water except for a 1/2” or so on the side of your bottle, allowing the camera to see through the clean water in the jar and it will only need to look through 1/2” or so of dirty well water.



CAN'T SEE - LOTS OF "FLOATING" SOLIDS IN THE WATER

A) Attach the camera head to 1" Schedule 80 drop pipe. (Some prefer to use 3/4" CPVC) and lower the camera into the SWL of the well. When you get to a area you want to see better, attach a hose to the top end of the pipe and siphon fresh clean water (not chlorinated) into the well. This influx of fresh water will push the existing water away and allow for clear viewing of the casing area in question.



B) A simple way to attach the camera head to 1" Schedule 80 drop pipe is to make a holder out of a Sch 80 PVC coupling and attaching a "MAG" light spring clip holder that is available from most hardware and discount stores.

Make one with the spring clip on the side (See Figure #1) for down viewing and flushing clean water. Also make one with the spring clip attached to a 1" PVC plug and screwed into the bottom. Next drill a 1/2" hole through the side of the coupling, just above the plug. This will allow you to attach the camera to the clip in a horizontal position, and flush fresh clear water down the drop pipe and out the 1/2" hole in front of the camera lens. (See Figure 2)

Figure 1



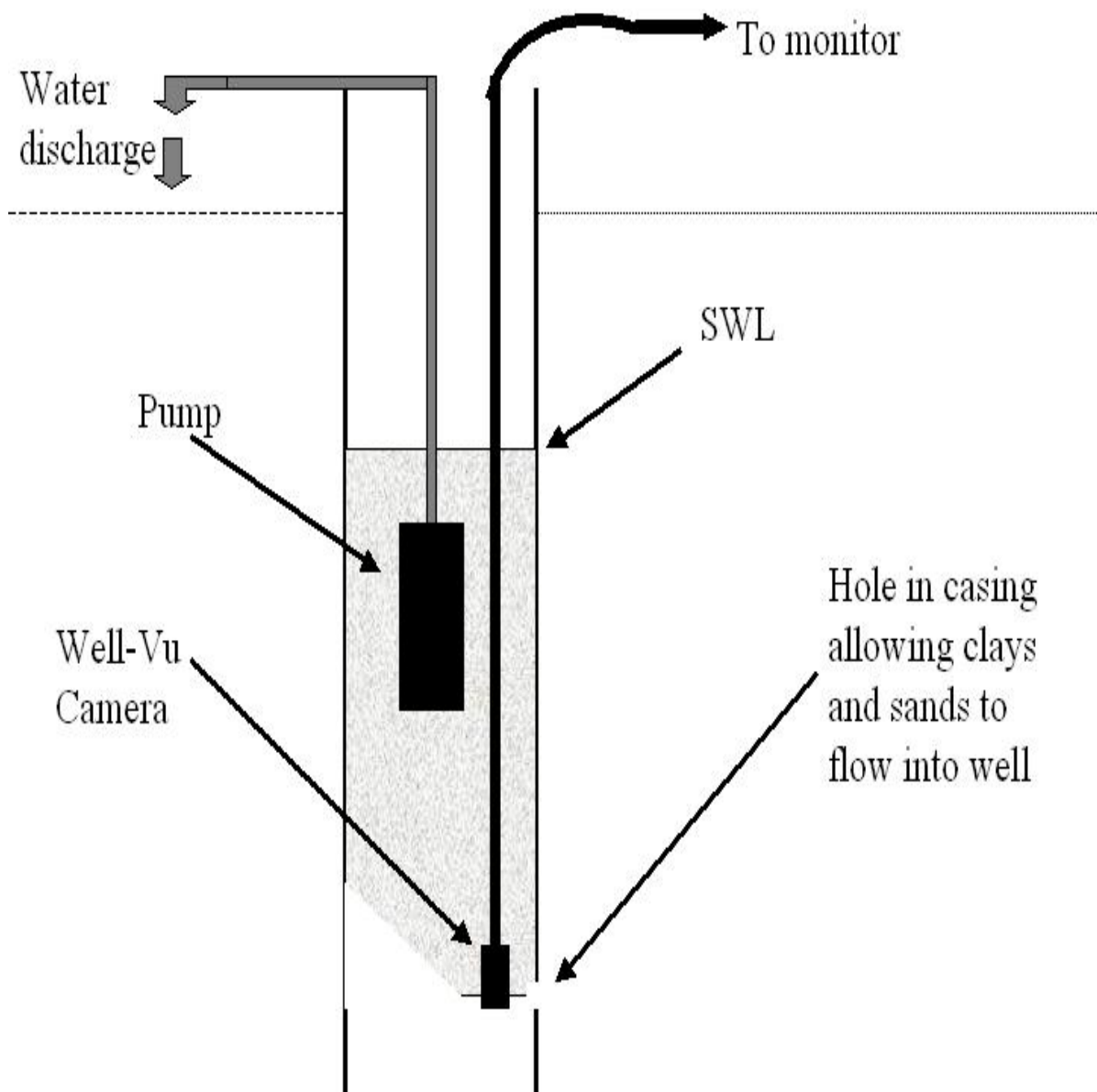
Figure 2



Note: Figure one can also be used to attach a bailer/sampler to take samples of encrustation from screens. Just attach the scrapper/bailer to the opposite side of the coupling and attach the camera so you can see the samples you are gathering.

CAN'T SEE - TRIED EVERYTHING AND STILL TOO CLOUDY TO SEE

A) Possibly a hole in the casing allowing dirt from the outside formation to enter the well. Lower the camera into the well and reinstall the pump into the water a few feet below the SWL. With the camera in the well below the pump, turn the pump on and pump water to discharge and observe the monitor as you lower the camera. You will see the dirty water going up and past the camera. Keep lowering the camera till you see a horizontal influx of dirty water coming in and/or the water clearing up so you can get a good look at the hole and video of it.



CAN'T SEE - EVERYTHING IS TOO BRIGHT

A) When trying to make a video in the middle of the day, the direct sunlight shining down into the well will sometimes give a very “bright” glare to the video. Try placing a dark towel or jacket over the well casing and see if your video gets sharper and clearer.

CAN'T SEE - PICTURE IS BLURRY ENTERING THE WATER-OIL ON SURFACE

A) If there ever was a old pump that had an oil lubed motor in the well and the motor leaked, you have an “oil film” on the surface. This oil film can also be in irrigation wells that have an oil lubed line shaft. Still, some of the oil could be from the oil injection system when drilling open hole with a down hole hammer.

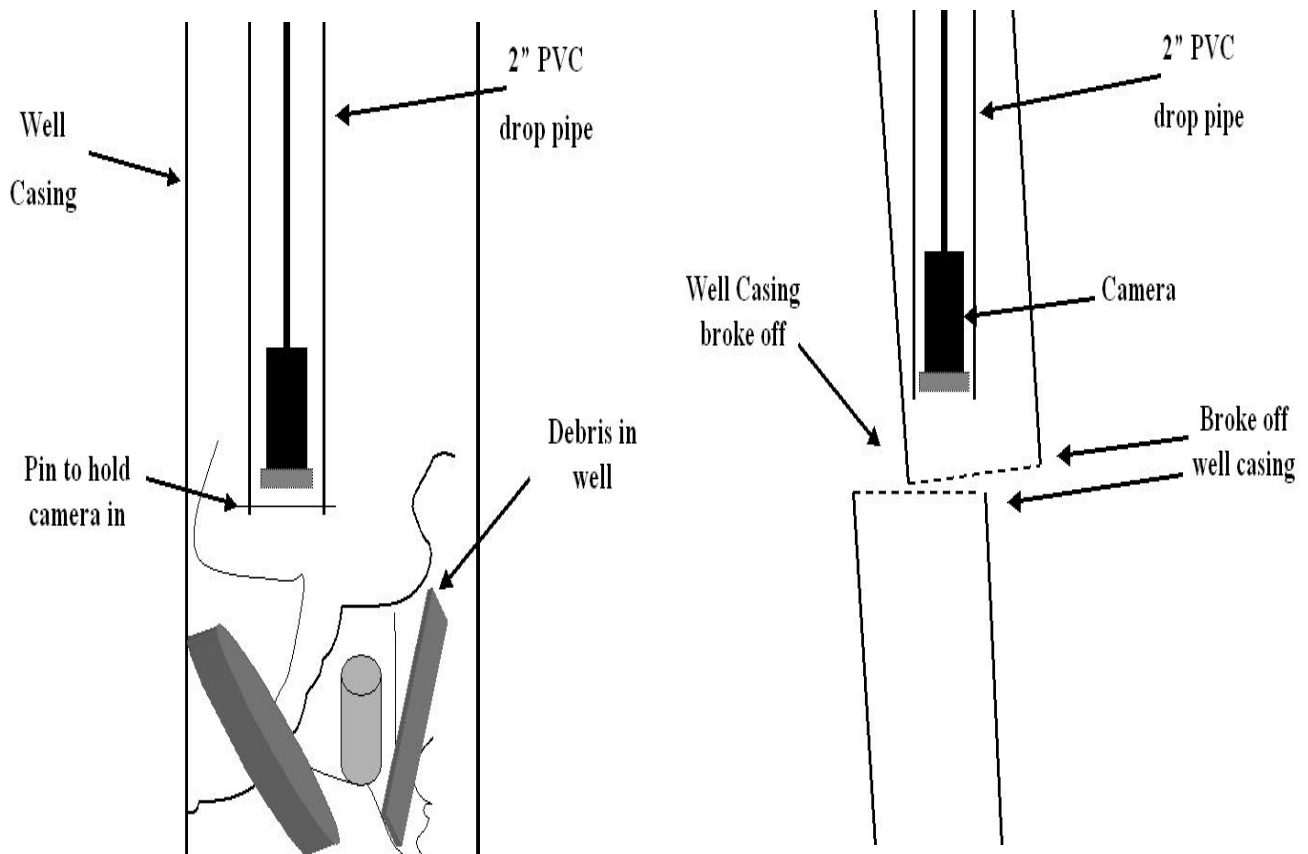
B) The Well-Vu camera is designed with a “concave” or recessed lens. When entering the water, an “air” bubble is trapped in this pocket. After you are into the water 2-3 feet, lift the camera cable up and drop it rapidly 2-3 times. This will dislodge the air bubble, which acts as a “cone” to divert the oil away from the lens when entering the water.

C) If this does not keep the oil off the lens, you can take a mild dish soap, and with a small amount on your finger tip, mix with water and put a small “coating” on the camera lens. This will prevent the oil from sticking to the lens, and you can “bounce the camera lens up and down several times to wash this soap film off.

7) USING THE CAMERA IN AN OLD OR ABANDON WELL TO PREVENT LOSS OF CAMERA DUE TO BROKEN CASING OR “TRASH” IN WELL

A) A major problem with lowering a camera into an abandon well or casing is the possibility of getting the camera hung up on obstacles or “trash” that has been thrown into the well. You will run across rocks, steel, pumps, wire, tape measures, cables and many more unknown obstacles. Quite frequently the camera will get “wrapped” into the debris in the well and could result in the loss of the camera head.

The solution is simple! Lower your camera inside a 2” PVC pipe string, keeping the camera 1/2” inside the pipe. Or, you can simply drill a hole through the pipe, 1/4”-1/2” from the bottom of the pipe and insert a piece of wire or cotter key, preventing the camera from going below the bottom



8) POWER FOR CAMERA

Power can be supplied from the 12 volt rechargeable battery that is included with the camera.



Power can also be provided from any 12 volt power source such as the auxiliary power battery packs available from any automotive parts department. They usually come with a 12 volt cigarette adaptor that you can plug in your TV/VCR unit and also have power to run your camera.



Another option is to make a set of jumper cables by taking a # 12 wire or extension cord, and cutting off both ends and attaching alligator clips to them.. You than simply attach one end to the vehicle battery and the other end to your WellVu and TV/VCR.



9) STORAGE AND TRANSPORTING OF YOUR WELL-VU

Your WellVu camera is a very high quality piece of electronic equipment. Therefore it requires some care and precautions. Though these camera's are waterproof, it is not advisable to leave them in the back of the service truck or on the rig when not stored in a proper case.

A simple type of storage case is a Rubber Maid style case that is available from any large retailer in your area.



Nature Vision has a very nice custom made case that is foam rubber on the inside, plywood center and steel on the outside. There is room in the case on both models (the case for the 300/500' and the 700/1000'), for a camera and for a 9" TV/VCR.



A more professional system is to mount your WellVu camera in a trailer, along with a desk, lights, heater, AC, computer, generator, and you can carry 200-300 gallons of water to flush the well with clean water for inspection



10) MARKETING YOUR COMPANY & CAMERA

A) First and foremost, TELL EVERYONE!!!!

B) Start by changing your ad in the yellow pages, that is, if you advertise there. If you don't, you might want to consider stating. Besides your name and phone number, add something like:

DOWN HOLE VIDEO CAMERA AVAILABLE

or

WE PROVIDE A VIDEO INSPECTION OF EACH WELL WE SERVICE

C) If you advertise in the local newspaper, you might want to run the same "TAG" on the bottom of your ad in the paper. Or you might simply put an ad in the paper that tells your customers what you can do for them, such as::

"A B C WELL SERVICE" is pleased to announce the acquisition of a new "Down Hole Video Camera". We added this to our services so that we can offer a complete inspection of your water system to include a video inspection of your casing, and also to inspect the water inlet to determine if the production is dropping due to encrustation (plugging) of the screen. Upon completion of our inspection, we will leave you with a video history of your well and water system.

D) Let your friends in the industry know you have a video system, and that they can rent it from you.

E) Make a video of a well you found that is bad or the screen was encrusted, and you cleaned the well, and then make another video, simply, a "before and after". There are many people around who can edit and make copies rather inexpensively. Have a dozen or so of this "before and after" video made to give to prospective customers to help sell the job. This way they can see what you are talking about when you explain the production could be down because the screen is plugged, and how the chemical treatment cleans it up.

F) Use your computer or go to a professional sign maker and get a small (8" X 10" or 10" X 12") sign made with your company name and phone number.



Next, build a small stand that you can rest the camera in a horizontal position and it will stay there while you get the well ready for video inspection.



Keep this sign in your video camera case at all times. When you get to the job site to video a well, take the camera stand you made, and **FIRST** thing, set the stand up, and put the camera in the stand. Next, rest the sign against the rig or camera stand, and turn on your monitor/recording device. Let the camera run with just the sign on the monitor for at least 3-4 minutes, before you video and record the well.

When you finished recording, and remove the camera out of the well, set the camera back into the stand, and let it run while you clean up and put the well back together and into service, even if its 30 minutes.

Now, when you give the video to your customer, he has your name and phone number in the front and the back of the video inspection and some great advertising when he shows this to his neighbors, friends, and relatives. Though you will see a lot of these, your customer more than likely has never seen what the inside of his well looks like and will more than likely show the video more than once.

Remember, put a sticker with your company name and phone number on the outside of the tape before you leave it with the customer.

11) CONTACT FOR MORE INFORMATION

The corporate office for the manufacture of WELL-VU is:

NATURE VISION, INC.
213 NW 4th Street
Brainerd, MN. 56401

Nature Vision's web site is: www.NatureVisionInc.com
Phone number is: 1-218-825-0733

Well-Vu sales office is:

Well-Vu
Box 12
Broadus, MT. 59317

WellVu's web site is: www.WellVu.com

WellVu's phone numbers are:

Main: 1-406-436-2087
Office: 1-888-786-7975
Direct: 1-800-WELLVU #1
Cell: 1-406-853-7867
E-Mail: WellVu@Netscape.net

If you have a down hole video tip, write, e-mail, or send a video of it to the Well-Vu sales office and we will include it in our booklet and then send you a copy of the new book.