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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  Turbidity Turbidity is a unit of measurement quantifying the degree to which light traveling through a water column is scattered by the suspended organic (including [microscopic phytoplankton and zooplankton](http://docs.google.com/plankton_net.html)) and inorganic particles (sediments). High turbidity decreases light penetration in the water which will affect abundance and type of bottom dwelling plants and animals. If light penetration is very low for an extended period of time then bottom dwelling producers are unable to survive and maintain a more desirable and stable microhabitat and directly impact acceptable ranges of water quality.  [Rate of flow](http://docs.google.com/flow_rate.html) can impact the the composition of the suspended particles in the water. Suspended materials will be present in both calm as well as fast moving areas. Suspended particles in the calm areas usually consist of the smallest inorganic particle (such as silt and clay) and phytoplankton. Larger particles of sediment will settle to the bottom in these calmer areas. The calmer pools that tend to fill up with sediments and the organic matter from dead algae tend to get scoured out during a normal rainy season. Having several years of subnormal rainfall can lead to an accumulation of sediments and increase the likelihood of flooding when normal or above normal rainfall occurs. The picture at the right was taken shortly after very heavy rainfall. Water levels approached flood level. A significant amount of sediment (evident by the color of the water) caused the turbidity level to exceed 200 NTU.  Color of the water can offer evidence regarding the cause of the turbidity. Brown being an indication of a high concentration of sediments and green a high concentration of phytoplankton. The unit of measure used to describe the amount of turbidity is in Nephelometric Turbidity Units or NTUs. The table below reveals ideal NTU levels for different circumstances.The turbidity jars shown above ([source=NCSU Water Shedds Web Site](http://www.water.ncsu.edu/watershedss/info/turbid.html)) offers an excellent example of how variation in turbidity levels can be indicated by NTU measurements.     |  |  | | --- | --- | | **Designated Use** | **Acceptable Range** | | Aquatic Life | an average of less than 25 NTU | | Trout Waters | less than 10 NTU | | Calm Pools | less than 50 NTU | | Human Consumption (assuming it has been properly disinfected to remove of potential parasites) | 1 to 5 NTU |   Use of the secchi disk and pocket turbidimeter combined with water samples examined under the microscope were used to evaluate turbidity levels and assess the makeup of the suspended particles. In the Fall of 2007 we started using [Vernier LabPro](http://www.vernier.com/) equipped with a [turbidity sensor](http://www2.vernier.com/booklets/trb-bta.pdf) (below) which is connected to a laptop running [Logger Pro Software](http://www.vernier.com/soft/). Both methods of collection are very easy to use and provide accurate enough readings for establishing a baseline needed for comparison purposes. Generally in the summer and early fall when temperatures are high, rapid algae growth is common. Microscopic phytoplankton are rather abundant at this time and turbidity tends to be high (green color - NTU 50+. In areas of the creek where flow rate is high or during the winter when significant runoff is occuring, colorimeter readings show water color to be in the brown or gray range indicating suspended sediments are the cause of the increase in turbidity. Depending upon the [rate of flow](http://docs.google.com/flow_rate.html) the NTU levels have ranged from 50 - 230.     |  | | --- | | Copyright © 2008 Amador Valley High. All Rights Reserved. Reproduction in whole or in part in any form or medium without express written permission of Amador Valley is prohibited. | |