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| **Environmental Enlightenment #176**By Ami Adini - Reissued October 7, 2014

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| This is a SHORT, LIGHT and SIMPLE newsletter. Its purpose is to rekindle in the initiated terminology they have once learned, and enlighten the uninitiated on terms they may have heard but never known the meaning of. |
| **Hydrogeologic Cycle**While humidity, temperature, and wind speeds can affect evaporation rates, most precipitation evaporates shortly after it has settled to the ground.http://amiadini.com/NewsletterArchive/141007-NL176/envEnl-176_clip_image002.jpgHowever, much of the remaining water percolates through soil and into vegetation roots. It is then absorbed into the plants by means of osmosis and released as water vapor through the leaves. This process is called “consumptive use” because the transpired water is returned directly to the atmosphere without the ability for further use near the Earth’s surface.http://amiadini.com/NewsletterArchive/141007-NL176/envEnl-176_clip_image004.jpgVery little water percolates beyond this stage of consumptive use (up to 20% in the coarsest sediments and nearly none in dense clayey soils). The remaining percolated water is drawn by gravity into and through the vadose zone. Throughout the vadose zone, interstitial pores are only partially filled with water, which is bound to soil grains by intermolecular forces (known as Matric potential) and cohesion.http://amiadini.com/NewsletterArchive/141007-NL176/envEnl-176_clip_image006.jpgExcess water continues to be drawn down past the vadose zone and into the “capillary fringe,” where pore spaces are nearly completely filled with water.http://amiadini.com/NewsletterArchive/141007-NL176/envEnl-176_clip_image008.jpgCapillary fringes vary in thickness depending on the type and nature of the soils. Thicknesses can range from only a few inches to dozens of feet. Course sands and soils have little or no capillary fringes due to their low surface area to volume ratio, while finer deposits increase this surface area to volume ratio and as such may have capillary fringes exceeding 50 feet.In both the vadose zone and capillary fringes, water molecules are adsorbed to soil particles through surface retention. In this region, known as the “tension saturated zone,” water between pore spaces is held in place under tension. Much of this water is not drained or drawn down by gravity, placing it in what is called “dead storage.”Water that is not trapped in dead storage will percolate down into the saturated zone. This water is known as ground water recharge. This recharge replaces ground water removed by natural discharges such as springs or artificial pumping.http://amiadini.com/NewsletterArchive/141007-NL176/envEnl-176_clip_image010.jpg<http://water.usgs.gov/edu/graphics/watercyclesummary.jpg>Acknowledgement: United States Geological Survey (USGS) |
| You can find past issues of our "Environmental Enlightenment" at [amiadini.com](http://www.amiadini.com/) Wealth of information about environmental site assessments in the real estate transactions and issues concerning assessment and cleanup of contamination in the subsurface soil and groundwater. |

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| Call me if you have any questions. There are **no obligations.**Ami Adini Environmental Services, Inc.Environmental Consultants & General Engineering ContractorsCalifornia Lic. #1009513 A B HAZ ASB**818-824-8102**; **mail@amiadini.com**[www.amiadini.com](http://amiadini.com/)Ami Adini is a veteran environmental practitioner with over 40 years of experience. He carries a Bachelor of Science degree (B.Sc.) in Mechanical Engineering including academic credits in Nuclear and Chemical Engineering and postgraduate education in these fields. His career includes design and construction of nuclear plant facilities, chemical processing plants and hazardous wastewater treatment systems. He is a former California Registered Environmental Assessor Levels I & II in the 1988-2012 registry that certified environmental professionals in the assessment and remediation of environmentally impacted land, and a Registered Environmental Professional (REP) since 1989 with the National Registry of Environmental Professionals (NREP). He is a California Business & Professions Code Qualifying Responsible Managing Officer (RMO) in the General Engineering Contractor classification with Hazardous Substance Removal and Asbestos certifications, and president of AMI ADINI ENVIRONMENTAL SERVICES, INC. (AAES), a general engineering contractor and consulting firm specializing in environmental site assessments, rehabilitation of contaminated sites and removal of environmental risks from real-estate transactions. (Contact Ami for a complete resume.) **AAES provides practical solutions to environmental concerns using the highest standards of ethics and integrity while providing its clients with maximum return on their investments.** |

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