

17

ways to determine if you may have a **drainage problem**

>before it's too late



by

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Home drainage is often misunderstood. Many times we just don't think about drainage problems until there is a crisis. That's understandable. After all, the pace is fast and we're busy doing what we do. Often it seems there's just not enough time to think about *everything*.

Unfortunately, once you're treading water and watching your furniture float by, it's too late. You're losing equity (\$\$\$) and kicking yourself. This *could* have been avoided.

From Wikipedia.org:

The Great Coastal Gale of 2007 was a series of powerful Pacific storms that affected the U.S. states of Oregon and Washington between December 1, 2007 and December 3, 2007.

Oregon Emergency Management reports that the storms caused an estimated \$180 million in total damages in that state.

Hopefully, with your participation, we can change that. The purpose of this e-book is to help you diagnose your home drainage problems *before* they occur. Think now - it'll save you big money *plus* provide peace of mind when the rains are pounding.

Homeowners around the world suffer financial and emotional distress caused by well-intentioned attempts to solve home drainage problems themselves. Once the water starts rising it's an expensive lesson. It's at that point they learn the sad, unfortunate truth that Uncle Joe's do-it-yourself method has utterly failed. Not much of a savings now.

As a professional who has been designing, teaching and implementing home drainage solutions for decades, it's my sincere hope that this e-book will get you started in determining if you have a home drainage problem.

The information on home drainage within this e-book is vital for every homeowner and vital for every prospective buyer of a home *prior* to committing to the purchase and financing of the home.

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Perhaps you might want to print this out and take a walk around your house. Examine your dwelling for each of the warning signs. If you find a problem or you're just not sure, don't worry. It's not too late if you take action before the water swells. You can give me a call. I've provided contact information in this book for consultation and advice.

If this book helps one of my readers avoid a major loss due to home drainage issues, my time in providing this checklist has been well spent indeed.

OK, ready to get started... here we go...

The 17 Ways to Determine If You May Have a Drainage Problem...

1. The topography of your land slopes to the foundation on the side of the home where groundwater is entering into the basement or crawlspace.

Perform a personal inspection of the home and look at the way the land slopes. Look at the soil grade along the foundation and what it consists of. Determine if the soil against the home has been loosened or if it is bearing soil.

If groundwater has a chance to follow the grade of the soil and load up along the foundation wall, you will most likely have a home drainage problem when it rains hard that will require raising and compacting the soil grade if possible along the foundation, and installing hand excavated french drains around the exterior of the home, about 18" from the foundation wall, after the creation of the compacted splash block.

2. The Downspouts are not vented correctly.

Roof water is collected in the gutter system. The gutter system is vented with downspouts connected to the gutters. The downspouts

connect and vent to the rain drain discharges. The downspouts are vented in a rain drain discharge pipe, usually 3" in diameter, made of abs plastic plumbed underground from the side of the foundation to the vent, which is usually a hand excavated drywell or a day lighted vent where the water spills out below the home on the ground. The rain drain discharge gravity flows the groundwater away from your home.

Look for a drip line directly under the gutter made by roof water that overflows from debris clogged gutters, or gutters with gutter helmets that overflow during hard rains. This condition will be evidenced by a parallel drip line on the ground. A rain drain discharge that is plugged, probably below grade under the soil level, will show a washed out area behind and around the rain drain discharge.

If any of these conditions exist, call a home drainage professional for advice on how to solve your home drainage problem.

3. Sump pumps not serviced or installed properly, in conjunction with no hand excavated french drains installed on the outside of the home, are a dead give away that indicates a home drainage problem exists.

Sump pumps do not prevent groundwater from entering below grade into crawlspaces or basements. Even the attempts by some contractors to install them outside the foundation wall, connected to a crude ditch in most cases, have serious damaging groundwater implications that mandate that the homeowner not pay for those types of installations. See below for more information on the subject within this e-book.

If you see evidence of a sump pump installation in a crawlspace or basement, and you have groundwater problems, most likely you do not have hand excavated french drains that are properly installed to stop the groundwater entry below grade.

Many homeowners approach home drainage from a financial perspective only. Many homeowners spend up to 3 times the amount of money that is required to solve a home drainage problem, by doing the cheap fix first and moving up in price and quality, finally realizing

that hand excavated french drains, which is not the cheapest method you will hear about, is in fact the only method that will solve their home drainage problem. Too late to cry.

The dance usually goes like this. First it is the sump pump, then the cheap machine dug ditch that is called a french drain, then the cut rate french drain guy who only really knows the words and not the engineering, and finally the home drainage professional that specializes in hand excavated french drains.

After all that money is spent, these homeowners still must pay for the hand excavation of french drains to solve the home drainage groundwater problem. Sad but true.

4. Drainage attempts that look like they should work perhaps, but done by owners or poorly motivated or educated contractors that made the groundwater problem worse.

Rock placed right on the foundation wall falls into this category. Rock on the foundation wall makes groundwater run down the foundation wall instead of it being held inside the walls of the hand excavated french drain and gravity flowed on the bottom of the french drain away from the foundation.

It is possible that for all the well intended homeowner motivations, a home drainage system was installed by someone in the correct area, in the wrong way. This can lead to a condition that is hard to change for the positive due to the fact that the ground has been loosened.

A hand excavated french drain is best installed on bearing soil that has never been dug up, gardened, or excavated previously. The intention while creating a hand excavated french drain is to hand excavate an aquaduct with straight sides and a flat hard bottom, absolutely clean of all debris with a grade of at least 2" per 10 lineal feet, sloping away from the home to a vent such as a drywell or a daylighted vent.

Once the area has been machine excavated for example, the future results of even a properly engineered and installed hand excavated french drain are diminished compared to the system that is installed on bearing un-excavated soil in the proper manner by a home drainage professional.

5. Concrete that has been poured flat or slopes to the foundation wall will produce groundwater in the crawlspace or basement.

This condition will produce groundwater accumulation next to the foundation, and as the saturation and hydrostatic pressure builds up, the crawlspace or basement will eventually leak groundwater below grade.

This situation usually requires cutting and removing all, or at least a section of the concrete about 2.5 feet from the foundation wall to facilitate the installation of a hand excavated french drain to solve this groundwater problem.

While this is not exactly the most favored homeowner solution from an emotional perspective, it is the only home drainage solution that will reliably solve the groundwater problem described above when that condition exists.

You can put in a sump pump in the basement or crawlspace, but that will not stop the groundwater from entering below grade, and the absence of hand excavated french drains will eventually lead to a nasty home air environment, dryrot, foundation settling and damage, and a range of other damage from door and window problems to floors going out of grade and stability problems because of the foundation footings or basement walls sinking, staining, and crumbling.

6. Sump pumps that are installed too close to the foundation where left over groundwater is held too long.

A sump pump never pumps out the entire amount of groundwater that it collects. Therefore, the remaining groundwater not pumped out soaks next to the foundation and down the basement wall, or into the crawlspace as it saturates the foundation footing area. Sump pumps installed in crawlspaces and basements produce moisture below grade all the time to some degree.

The placement of a sump pump on the outside of the foundation wall, within 10 feet from the foundation is not recommended. When you see this kind of installation, you can rest assured that a groundwater problem still exists, as this is not state of the art groundwater removal.

This type of poor home drainage attempt usually attaches to a shallow ditch next to the foundation that contains rock, gravel or sand, and has no significant clean grade to run the groundwater to the sump pump enclosure.

In crawlspaces where the depth of the sump pump installation is less by design, a grade is usually not excavated correctly within the interior crawlspace french drain, as the installers attempt to travel too many lineal feet without enough grade to collect the groundwater into the sump well holding the sump pump.

Go to aaahomedrainage.com and learn appropriate ways of elevating and compacting your foundation grade, in conjunction with the installation of hand excavated french drains with exposed river rock and a grade of 2" per 10 lineal feet, sloping the groundwater away from the foundation.

7. Foundation vents poured below grade, or window wells filled with rock.

This home drainage condition is a very easy one to understand. Window wells filled with rock just allow the rainwater to run down deeper along the foundation wall and have no dirt to soak up groundwater.

A foundation vent is a rectangular hole that is poured in the foundation approximately 12-15 feet apart in the foundation. The foundation vent usually has a plastic door and a screen on it that is

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opened in the summer for air flow through the crawlspace, and closed in the winter to prevent moisture from fouling the crawlspace environment, and subsequently your interior home environment.

Many home contractors pour these foundation vents too low in the foundation wall during the original construction of the home, and after backfilling the foundation, additions of soil and bark dust against the foundation, result in a hole in your foundation that is lower than the ground level at the side of the foundation, where groundwater can run right into your crawlspace, producing groundwater in the crawlspace, and a huge home drainage problem for the homeowner.

Groundwater in the crawlspace, or even evidence of past groundwater in the crawlspace, evidenced by mud trails and efflorescence on the 6 mil plastic moisture barrier, will prevent the home inspector from giving your home a clean bill of health when the home is being sold.

The lender will require a professional home drainage contractor to review the condition and offer a solution to the problem. While in the case of low foundation vents, it is not possible to raise and compact the soil grade along the foundation for better run off without installing window wells around the foundation vent first. The installation of hand excavated french drains with exposed rock is always advised to collect groundwater that runs toward the foundation.

Siding too low on the foundation wall will also prevent the ability to raise the grade and compact it for better rain run off away from the foundation wall.

The installation of window wells creates another problem in that you have enlarged a hole in the foundation that extends away from the foundation wall allowing rainwater to fall directly into the window well soaking below grade into the crawlspace.

8. Holes near the foundation where groundwater can collect. Dog holes under porches are common examples of this condition.

This condition would seem to be minor, but may be major depending on the location of the hole and the size of the area

that is running groundwater toward this area. It is better to provide a shady place for the pooch that does not encourage hole excavation next to the foundation wall.

Contractors installing new sewer lines and water lines roto-hammer holes in the foundation at the ground level to push pipes through and just walk away from the job after installation, leaving a hole in the foundation surrounding the new pipe installation with no masonry work completed.

A call to your home drainage contractor-mason is advised in this case, as he will be able to patch and seal the area with an expandable patching cement to prevent leaking of groundwater below grade.

9. Foundations built on slopes that run significant groundwater to the side of the home may cause undermining of the foundation wall in time.

Groundwater runs under the footing and sometimes even breaks up the foundation footing itself.

When a home is built on a hillside location, at times the groundwater runs down the hill on the high side of the homes foundation and can wash out areas under the foundation wall and footing. These areas need to be excavated, filled, and repaired by your home drainage contractor-mason along with the installation of hand excavated french drains to prevent this from happening again.

10. Foundation plantings and trees sometimes are planted too close to, or on the foundation wall area.

Tree roots create pathways along the roots for groundwater to soak below grade. Tree roots actually will crack a foundation and cause drainage and structural damage as well.

Never plant bamboo anywhere near your foundation, as the roots will travel up to 30 feet right under the surface of the

ground towards the foundation wall, sprouting new bamboo all the way.

Cracks, foundation damage and groundwater entry, as well as structural damage are sure to follow in time. You will need to spray numerous times after cutting the bamboo down to kill the roots as well to prevent them from coming back.

11. Masonry cracks in the foundation below grade.

Groundwater damage, poor concrete, and soil movement can cause your foundation to crack. This condition may not mean that the home has serious structural damage, although a professional home drainage contractor-mason should be contacted for an evaluation.

The cracks need to be chiseled out to the point in the foundation thickness that the cracks stop, and these cracks should be filled with an expandable concrete mix made for that purpose.

In a less common case, an injection epoxy may be required to strengthen the foundation and prevent future damage and separation of the foundation wall.

If foundation cracks are below grade, or on the surface of the ground, groundwater may run directly through them into your basement or crawlspace. These types of cracks should be repaired from a structural, as well as a home drainage groundwater perspective.

12. Deep bark dust applied on ground next to the foundation creates a spongy surface that does not drain groundwater away from the foundation.

Heavy additions of bark dust on the foundation may look nice, but they are no friend to your foundation.

When the winter rains or snows accumulate next to the foundation, these areas soak up like a sponge and never dry out. When more rain comes, this produces hydrostatic pressure and leaking below grade.

Dig the bark dust out and raise/compact a soil grade that will run groundwater, caused by rain, away from the foundation at a grade of at least 6 inches per 10 lineal feet. Cover the soil grade with a thin layer of bark dust to achieve the same curb appeal effect that was desired in the first place.

If the deep bark dust that previously existed is needed for a mulch to hold water in for plants, subordinate this form for the function of a foundation area that dries out in between watering, and either reduce the sprinkler water in this area per watering, or just water by hand a little more often. Dry out the foundation area for a healthy crawlspace or basement, and subsequently a healthy home air environment.

13. Drainage rock, gravel or sand placed on the foundation wall without being required as part of a properly constructed footing drain system.

Most city or county planners want any standing water or drywell placement to be set back from the foundation wall approximately 10 feet or greater for this reason.

Groundwater running in a hand excavated french drain does not count as standing water, as it is moving quicker than it can saturate. When this condition is present, the rainwater runs right down the foundation wall and under the footing or along the basement wall.

The presence of rock or sand directly on your foundation wall should be a red flag to look for signs of groundwater entry below grade in the crawlspace or basement.

14. When foundation footing drains are laid flat on the outside of the footing (with or without a filter sock), you will direct the groundwater into the crawlspace or basement because it has no grade to vent it away from the area and is trapped there.

When this home drainage condition exists, it is unlikely that the average homeowner will be able to ascertain what is happening due to the fact that nothing is in plain sight. Call a home drainage professional for an assessment.

Groundwater saturation should not occur if a properly installed hand excavated french drain exists on the exterior foundation wall area that also contains a compacted soil grade along the foundation wall.

If the hand excavated french drain is installed on the outside of the foundation wall, the groundwater will be removed from the foundation area faster than it can soak in, preventing the saturation of groundwater that causes hydrostatic pressure and the need for the foundation footing drain.

15. The home has gutter helmets installed on the gutters, or too many shingle layers, and the roof water runs off the roof in heavy rains.

When gutter helmets are used, they reduce the amount of gutter collection width in the gutter itself, and this allows rain water to run right over the edge of the gutter onto the ground around the foundation in hard rains.

The big sell in benefits to the homeowner is that these gutter helmet systems offer the homeowner less gutter cleaning, but this comes with a heavy price during hard rains.

If a compacted splash block of dirt installed against the foundation is not present, and if no hand excavated french drains are installed around 18" from the foundation wall, a groundwater saturation condition may become a groundwater problem.

Use a wide mesh plastic covering over the gutters instead of reducing the collection area of the gutter with a metal or plastic gutter helmet, as gutter helmets wick the roof water around a curve in the helmet into the gutter when it rains softly, but in heavy rains the volume of roof water overflows them and runs over the gutters, off the roof, in a straight line directly on the ground as though there was no gutter system at all.

Look for a drip line on the ground under the gutter where they overflow as evidence of this condition. Too many roof shingle or tile layers installed in conjunction with these gutter helmet systems make the drainage problem even worse.

16. Time has ruined a previously constructed french drain due to wrong materials, bad engineering and construction, silt, lack of slope created, or other factors.

Just because someone says that there is a french drain installed does not mean that it was installed correctly or that it is still functioning, if it ever did at all.

A hand excavated french drain should last for decades if it is not dug up, covered up with dirt, plugged with debris or compromised in some other manner.

If the existing french drain was installed using a ditch witch or some other type of machine, the french drain will likely work poorly, or not at all. This type of french drain is not really a french drain, it is a ditch with a perforated pipe and rock. The definition and engineering of a true hand excavated french drain is much more complicated than most contractors understand.

17. Groundwater accumulates next to your foundation as a result of the neighbor's downspouts, gutters and/or topography, gravity flowing groundwater to your home site from the neighbors property.

Neighbors are responsible legally for the groundwater or roofwater that they deposit onto a contiguous property owners land. These violating neighbors can be held responsible in a court of law for the groundwater damage that is done to the victim landowners property or dwelling.

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Not only is this a legal fact, in addition the quality of your friendship with this neighbor will likely be reduced to rubble if you are the violating homeowner and this condition exists.

When you look for evidence of this home drainage problem, look at the neighbors gutter system if they are above grade to your home, and look to see if their downspouts go into rain drain discharges at the side of the home, or whether they simply spill off a splash block of concrete onto the ground, eventually running groundwater towards your home causing additional groundwater against your foundation.

Even the fact that their site is above grade to your site, and the fact that they have not installed hand excavated french drains to prevent their groundwater from running on your land may obligate them to solve this problem to prevent damage to your property.

Well, that's it, my friends. I hope the information has helped you to spotlight what needs to be done to accurately safeguard your home.

Remember, if you spotted a problem or have any questions, please feel free to give me a call. The important thing is to fix the problems now... *before* the water arrives and damage occurs.

AAA Home Drainage offers onsite worldwide consultation services available to homeowners with home drainage problems.

Design, engineering, and installation of hand excavated french drain groundwater removal systems. Bonded, licensed, and fully insured for your peace of mind.

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Mr. Lundeen concluded his career as a commercial-investment and residential real estate broker over a 25-year period while marketing and developing commercial-investment land and structures, residential land and homes, subdivisions and multi-family properties, as well as a golf course. Mr. Lundeen has been a member of the National Association of Realtors, The Oregon Association of Realtors, a CCIM commercial real estate appraisal candidate, and an active member of the Oregon real estate community structuring IRC 1031 Tax Deferred Exchanges for Oregon clients.

His specialty was selling land to developers in the Portland metro area, which he concluded in the late 1990's, because of a desire to serve the home drainage needs of many customers requesting referrals to competent parties. Mr. Lundeen has a foundation for his expertise in the drainage field of over 35 years involved with various aspects of real estate, both commercial and residential, water mitigation for residential and commercial development, and home drainage techniques specific to the use of hand excavated french drain groundwater removal systems.

He served the U.S. Air Force during 1967-1971 in the capacity of munitions supervisor, handling and loading explosives for inspection, storage, disposition, and repair; while holding a secret clearance, stationed various places around the United States and southeast Asia.

Mr. Lundeen has represented a wide range of apartment and condominium associations, businesses, residential and commercial developers, governmental agencies, an Oregon governor, as well as homeowners with groundwater removal construction projects, specializing in the installation of

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hand excavated french drains. Mr. Lundeen continues to be a consulted and respected expert witness by the legal community in Oregon pertaining to home drainage issues.

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If you would like professional assistance, AAA Home Drainage is a fully licensed and bonded company and can assist you in safeguarding your home against drainage problems.

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