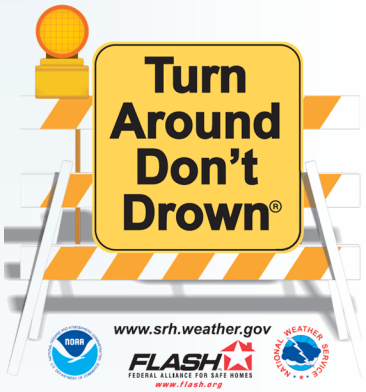
Debris Flow Hazards

- Debris flows occur when debris such as trees, soil, and rocks is caught up in a flash flood. Debris flows can move at over 60 miles per hour on steep slopes.
- In an unburned watershed, vegetation anchors soil in place. After fires burn away the vegetation, nothing is left to hold the soil in place during heavy rain.
- Rapid erosion during intense rain increases the chances for debris flows
- People can become trapped in vehicles or caught up in the debris flows
- Debris flows carrying branches, trees and boulders can be very damaging to homes and other structures

Vehicle trapped in a debris flow



National Weather Service

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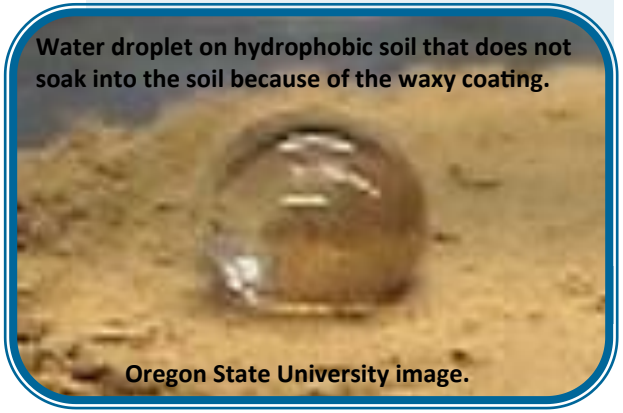
Flash Floods After the Fires

Wildfires can wreak havoc on communities and forests, but many people are unaware of the dangerous flash flood hazard they leave behind. This pamphlet examines how flash flooding risks may be heightened in and near burned areas for many years after a fire and what actions you can take to be better informed and prepared.

National Weather Service Billings, MT

How the Soils Change

- Burned soils develop a waxy characteristic near the surface which repels water
- Severely burned soils that obtain this characteristic are called *hydrophobic*
- Rain that falls onto hydrophobic soil runs off more quickly because it cannot soak in
- The volume of runoff from rainfall is much greater from hydrophobic soils
- The combination of these two properties of burned soil (more runoff and faster runoff) leads to increased risk of flash flooding
- This trait of hydrophobic (burned and waxy) soils can remain for many years leading to flooding issues well into the future



Water droplet on hydrophobic soil that does not soak into the soil because of the waxy coating.

Oregon State University image.

Increased Flash Flooding Risk & What You Can Do

- Flash flooding is much more likely after a wildfire due to loss of vegetation and changes in the physical properties of the soil
- Steeper slopes and severely burned landscapes are at the greatest risk, but every area is unique
- Contact your local National Weather Service office or Emergency Management officials to learn about the risk in your area
- Explore flood insurance options at www.floodsmart.gov
- Be prepared www.Ready.gov
- Monitor your local weather forecasts in advance to be ready for the possibility of intense rainfall and flash flooding
- During times of high intensity rainfall, stay informed of the weather and the latest watches and warnings by monitoring:
    1. NOAA Weather Radio
    2. Your surroundings
    3. www.weather.gov/billings
    4. Local News Media

Flash Flooding Impacts

- Flash flooding after fires can occur in areas that may not typically flood, or where one wouldn't expect to see flooding
- Flash flooding is a hazard that affects motorists, pedestrians, and structures. Appropriate measures should be taken by all to avoid flood dangers.
- Just a reminder as you approach flooded roads and streams *"Turn Around, Don't Drown."*