

## Part Two – Critical Areas

# Coal Mine Hazard Areas

Coal mine hazards in King County are related to past mining activities in some areas, for example areas like Ravensdale, along Black Nugget Road, near Black Diamond and in the Coal Creek area (place names often reflect geologic setting). Coal miners were active in King County in the late 19th and early 20th centuries, and they exploited both surface exposures in open pit mines and deeper coal beds with underground mines. For the most part, the coal seams are thin and discontinuous compared to others exploited elsewhere, which means that they are uneconomical today.

The hazards that are present from past mining activities are several (including dangers of open underground workings and discharges of acid-rich mine waters) but the King County Zoning Code only addresses one category, which is the nature of the foundation materials beneath proposed structures and the likelihood of the collapse of underground workings. If there are no underground workings, the only “hazard” is the potential presence of uncontrolled fill (mine waste) that might not provide suitable foundation support. If underground workings are present, then geologic and engineering studies are sometimes required to both quantify the nature of the hazard (basically, the potential for surface subsidence) and to recommend measures to deal with the hazard. The potential for catastrophic mine collapse can make a lot unbuildable. Because accurate mine maps are not always available, some mining sites are isolated with a recommended “buffer” that separates the area of potential collapse from any future development.

The first step when reviewing for potential coal mine hazards is to examine the nature of mining at the site and classify the hazard level. This is typically done through a critical area report prepared by a consulting geologist or geotechnical engineer. The type of developments that are allowed depends upon the classification of the hazard.

## Classifications

For the purposes of regulation, coal mine hazards are classified into three types of hazard:

1. "Declassified" coal mine hazard areas are those areas where the risk of catastrophic collapse is not significant and that the hazard assessment report has determined do not require any special engineering or hazard mitigation. These areas typically include sites not underlain by underground workings

and sites underlain by underground workings that are in excess of 300 feet below the surface.

2. "Moderate" coal mine hazard areas are those areas that pose significant risk of property damage because of coal mine subsidence, but that can be mitigated through special engineering or architectural recommendations. These areas often include areas underlain or directly affected by abandoned underground workings that are less than 300 feet deep or with overburden cover-to-seam thickness ratios of less than 10 to one, depending on the inclination of the seam.
3. "Significant" coal mine hazard areas include those sites that pose a significant risk of catastrophic surface collapse, such as unmitigated openings (portals, adits, mine shafts, sinkholes, improperly filled mine openings) and other areas of past or probable surface collapse, including shallow subsurface workings extending to a depth of 100 feet.

## **Development standards**

Within declassified coal mine hazard areas, all alterations are allowed without mitigation because it has been determined that there is no effective hazard. Within moderate and severe hazard areas, the code requires that:

1. Within moderate coal mine hazard areas, the risk of structural damage be minimized (through effective mitigation); and
2. Within severe coal mine hazard areas, the risk of personal injury be minimized or eliminated (again through mitigation).

## **Allowed alterations**

All alterations are allowed in declassified hazard areas. Within moderate coal mine hazard areas and coal mine byproduct stockpiles (areas of uncontrolled fill), all alterations are allowed provided the risk of structural damage is minimized. Within severe hazard areas, the following alterations are allowed:

1. All grading, filling, stockpile removal and reclamation activities in accordance with a hazard assessment report for the purposes of mitigating threats to human health, public safety, environmental restoration, and property protection, if accompanied by plans and as-built drawings prepared by a professional engineer and submitted to the department for review;
2. Private road construction when significant risk of personal injury is eliminated or minimized;
3. Building of less than 4,000 square feet of floor space that contains no living quarters or places of employment or public assembly when significant risk of personal injury is eliminated or minimized; and
4. Additional land activities if consistent with recommendations within any mitigation plan required by a hazard assessment report.