

5-12: NHO NATURAL HAZARDS OVERLAY ZONE

A. DECLARATION AND LEGISLATIVE INTENT

The NHO Natural Hazards Overlay Zone (NHO Zone) includes the territory of the unincorporated area of Utah County which was identified in a scientific study as having a susceptibility for rockfall, debris flow, landslides, or surface fault rupture. The scientific study and the standards of the NHO Zone are the product of a joint program of the Utah Geologic and Mineral Survey and the US Geological Survey, which program was conducted in the five counties of the Wasatch Front including Utah County. In addition to the territory identified in the joint program, the NHO Zone includes other areas that have been identified by the

County Commission as having a significant hazard. However, not all areas susceptible to natural hazard were known or recognized at the time of adoption of the provisions of this zone, so the zone shall not be construed to be all-inclusive of such hazards.

It is hereby declared that the specific purposes and intent of the County Commission in establishing the NHO Natural Hazards Overlay Zone are:

1. To take advantage of the powers and more fully implement the basic purposes for planning and zoning set forth in Section 17-27-102 Utah Code Annotated 1953 and to implement the plans provided for in Section 17-27-301 of the said Code.
2. To implement the joint program of the Utah Geologic and Mineral Survey, the U.S. Geological Survey, and Utah County to identify geologic hazards and reduce the risk therefrom.
3. To protect human life and health.
4. To minimize damage to public and private property.
5. To minimize the need for rescue and relief efforts associated with hazards and disasters, which efforts occur at public expense.
6. To minimize the damage to essential public facilities including (but not limited to) water and gas mains; electric, telephone and sewer lines; and roads and bridges.
7. To maintain a stable tax base by providing for the sound use and development of areas affected by geologic hazards so as to minimize post-disaster blight.
8. To assure that those who occupy the areas susceptible to geologic hazards assume responsibility for their actions regarding land use, construction, and grading.
9. To notify owners and buyers of land in the NHO Zone of the potential for rockfall, debris flow, landslide, or surface fault rupture.

In order to accomplish the stated purposes and intent, the provisions of the NHO Zone:

- a. Restrict or prohibit those uses which are dangerous to health, safety, and property because of their

incompatible nature, location, design, or method of construction.

b. Require that uses and facilities vulnerable to geologic hazards be protected against collapse or severe damage at the time of construction or placement in the zone.

c. Control any fill, cut, construction or other development which may unnaturally increase the degree of hazards.

d. Require site-specific and building-specific studies by qualified engineering geologists, geological engineers, and building designers to adjust construction and land use to minimize the degree of hazard.

The following provisions shall apply.

B. SCOPE

1. Purview

The natural hazards which are the purview of the NHO Zone are limited to: rockfall, debris flow, landslide, and surface fault rupture.

2. Extent

The provisions of this section (zoning section 5-12) shall apply to all areas having a susceptibility to the above-named hazards within the unincorporated area of Utah County which are depicted on the Official Zone Map of Utah County, Utah, as lying within the NHO Zone. Such provisions shall not abrogate but shall be in addition to the requirements of the underlying zoning districts within the NHO Zone, and any easements, covenants, or deed restrictions appurtenant to the lots in the zone. Where the provisions of this section may be in conflict with the provisions of the underlying zones or lot restrictions, the more stringent restriction shall apply.

3. Interpretation

To determine which properties lie within the NHO Zone, the Zoning Administrator shall determine the boundaries of the zone by scaling the distances from the Utah County Zone Map. He may be aided by the Natural Hazards Overlay Map Series produced by the County Geologist of Utah County. Any person contesting the location of the zone boundary may appeal to the Board of Adjustment according to the zoning section 7-19 of this ordinance; the Board shall use the written technical evidence supplied by the appellant, the Natural Hazards Overlay Map Series, and expert testimony from the County Geologist or other available expert witnesses. Any costs incurred in providing technical reports or testimony by expert witnesses shall be solely the responsibility of the appellant and not Utah County.

4. Compliance

No structure or land use shall hereinafter be constructed, located, extended, converted, altered or otherwise developed without full compliance with this section (zoning section 5-12).

C. PERMITTED USES

1. Uses

All structures and uses of land which are listed as permitted uses and permitted conditional uses in the underlying zoning districts shall also be permitted in the territory covered by the NHO Zone if they meet the standards of both this section and the underlying zone.

2. Clearance

Before any building permit is issued within the NHO Zone, the Zoning Administrator must first find that the land use, grading, construction, or other such development to be permitted therein complies with both the requirements of the NHO Zone and the underlying zone and issue a written clearance attesting to such finding. No land use, grading, construction or other development shall be commenced or altered within the territory of the NHO Zone until the clearance and the building permit based on such clearance are granted.

3. Natural Hazards Assessment

a. Every application to use land, grade, construct, or otherwise develop in the NHO Zone shall be accompanied by a plot plan and construction plans required by Section 7-6 of this ordinance plus a Natural Hazards Assessment which complies with the standards of this chapter, unless exempted by the terms of the following chart:

CHART SHOWING WHEN A NATURAL HAZARDS ASSESSMENT IS NOT REQUIRED

Hazard Type on Overlay Map Items Exempt from Filing a Natural Hazards Assessment

ROCKFALL All structures not occupied by humans (except critical facilities, which must have an assessment)

DEBRIS FLOW All structures not occupied by humans (except critical facilities, water tanks, reservoirs, and canals which must have an assessment)

LANDSLIDE All structures not occupied by humans (except critical facilities, water tanks, reservoirs, canals, gas lines, electric lines, telephone lines, water lines, railroad tracks, and water lines, railroad tracks, and roads, which must have an assessment) roads, which must have an assessment)

SURFACE FAULT RUPTURE None (all uses and structures must have an assessment) In the column to the left in the above chart are the four categories of natural hazards which have been mapped in the County Geologist's Natural Hazard Overlay Map Series; at the right are various categories of buildings and land uses. Any use or structure listed as "exempt" shall not be required to submit a Natural hazards Assessment in order to obtain a building permit or zoning compliance permit. Otherwise such assessment shall be required.

b. The Natural Hazards Assessment shall be prepared by an engineering geologist retained by the applicant, and reviewed for Utah County by the County Geologist. The Natural Hazards Assessment shall consist of an engineering geology study of the hazards on the site, findings of the degree of hazard present, and a statement of any mitigation measures needed to meet the standards of this ordinance. If the engineering geologist finds that special structural design measures are needed in order to meet the standards of this ordinance, the Natural Hazards Assessment shall not be accepted unless it includes

engineered plans prepared by a professional engineer who is licensed to practice in the State of Utah and who is qualified to develop such structural plans. To determine the sufficiency of any such engineering the Zoning Administrator may obtain a review by the County Surveyor or other experts.

c. Upon the determination that the Natural Hazards Assessment correctly identifies which hazards impact the subject property, the degree of hazard that is posed, and the mitigation measures necessary to meet the standards of this section, the Zoning Administrator shall issue a clearance which incorporates the uses, structures, and conditions of mitigation which comply with this ordinance.

d. When making any determinations or approvals required by this section (zoning section 5-12), or any of its divisions, the Zoning Administrator may seek the review and advice of competent experts in geology, engineering or other relevant fields.

D. STANDARDS

1. General

a. Covering up.

No use, construction, or grading shall be permitted or performed in the NHO Zone which would conceal, misrepresent, aggravate, or cause to be unrecognized the presence of any natural hazard which is within the purview of the NHO Zone.

b. Toxic, caustic, flammable, or explosive materials.

Any storage facility for toxic, caustic, flammable, or explosive materials shall be deemed a critical facility when determining whether a Natural Hazard Assessment is required or what mitigation measures are needed.

2. Rockfall

Critical facilities and structures to be occupied by humans shall not be placed in a site subject to rockfall unless the site is investigated in a site-specific engineering geology study that determines the degree of hazard, and all of the following are accomplished:

a. The potentially unstable rock is removed.

b. The rock is stabilized by engineered cages, bolts, or other methods sufficient to prevent fall.

c. The building is protected by engineered deflection or catchment berms sufficient to stop entry by falling rock.

d. The structure is protected by some other engineering method sufficient to prevent the hazard, as determined by the Zoning Administrator.

3. Debris Flow

Water tanks, reservoirs, canal facilities, and structures to be occupied by humans shall not be placed in an area subject to flows unless it is protected by a deflection berm or catchment basin which does not

discharge onto a neighboring lot and which is engineered to prevent the entry of a flow having a one percent chance of occurrence in any calendar year as determined by the Natural Hazards Assessment; or the structure is engineered to resist entry at any point in the path of the flow up to an equivalent fluid pressure load of 19,640 N/m . 3

4. Landslide

Roads, railroad tracks, gas lines, electric lines, telephone lines, water lines, water tanks, reservoirs, canals, critical facilities, and structures to be occupied by humans shall not be placed in a location subject to landslide unless the hazard is removed by one of the following engineering methods:

- a. Reduction of the steepness of the slope.
- b. Buttrressing.
- c. The placement of internal and external drainage facilities within the land mass.
- d. Bridging the slide.
- e. Removal of the slide material.
- f. Isolation of the structure through piers.
- g. Any other engineering technique identified in the Natural Hazards Assessment which is approved by the Zoning Administrator.

The Natural Hazard Assessment shall identify the size and nature of the landslide and shall contain the engineering design of the method it recommends to avoid the landslide hazard.

5. Surface Fault Rupture

- a. Trenching.

Trenching to locate exact fault positions shall be required as a part of any Natural Hazards Assessment work program if each of the following three factors exist:

- i. The site lies in a designated Special Study Area for Surface Fault Rupture on the County Geologist's Natural Hazards Overlay Map Series.
- ii. The subject use or building will involve human occupancy or the storage of toxic, caustic, flammable, or explosive materials.
- iii. The property has either:

(A) A lineation, escarpment, or other visual evidence of a possible fault lying within 50 feet of the proposed building site;

(B) Land within a radius of 50 feet of the proposed site that has been disturbed so as to conceal any fault displacement;

(C) No surface evidence of faulting exists where a fault is inferred to exist by off-site evidence;

(D) A location in a graben which is adjacent to an active fault; or

(E) A covering of surface material that is younger than 10,000 years of age.

If trenching is not mandatory within an area delineated as subject to surface fault rupture on the County Geologist's Natural Hazards Overlay Map Series, the Natural Hazard Assessment shall determine the nature of the fault hazard by profiling and mapping.

b. Location and extent of trenching.

Where trench studies are required, the trenches shall be dug at least 20 feet beyond the exterior of the proposed structure or use; or, if the fault is found, to the fault itself, whichever is closer. Approval by the County Geologist of the location and depth of any such trench is required before digging is commenced, and trenches, when completed and logged, shall be reviewed by the County Geologist before backfilling.

c. Building along faults.

Structures and uses placed in the vicinity of an active fault where no trenching is required shall be set back at least 50 feet from the midpoint of the fault scarp, except in the following cases where a greater setback is required:

i. Where the scarp slope angle is over 30 percent, the setback shall be 50 feet or more from the slope break at the top and bottom of the scarp; or

ii. Where scarp profiles indicate the presence of back tilting, secondary faulting, or graben-bounding antithetic faults, the setback shall be 50 feet or more from the outermost fault or, in areas of flexure and back tilting exceeding the 1.5 degrees, it shall be at least 50 feet from the point where the slope of the pre-fault surface is regained, whichever is greater. Where no trenching is required but is completed at the desire of the permit applicant, a closer setback may be approved by the Zoning Administrator in accord with the findings of the Natural Hazards Assessment and trench study.

E. VARIANCES

1. Ability to Grant

The Board of Adjustment, when deciding appeals for variances of distance or area within the NHO Zone shall follow both the standards of zoning section 7-20 and the standards stated below.

2. Items to Consider

In deciding whether to grant a variance and what conditions to attach to its approval, the Board of Adjustment shall consider each of the following:

a. The likelihood during a significant seismic or other geologic event that materials may be moved onto adjacent land areas causing property damage or injury to others.

- b. The degree of susceptibility to damage by seismic or other geologic activity for the building design or use proposed.
- c. The importance of the services of the proposed facility to the community and the need for the facility to be functional following a significant event of geologic activity.
- d. The necessity of the facility to be in the proposed location or proposed design, considering alternate locations and designs available.
- e. The ability of the community to provide emergency services to the facility in the event of a catastrophe.
- f. The degree of benefit received from the variance relative to the hazards posed to the facility's neighbors, visitors, and owners.

3. Presumption Relative to Approval

- a. Generally, the standards of this section shall not be varied unless an equally safe method of use and construction can be approved.
- b. The amount of variance approved shall be only the minimum amount required to provide relief.
- c. A variance shall be granted only if it will not result in a threat to public safety, cause extraordinary public expense, or create a nuisance.
- d. In a continuum beginning with hay barns and agricultural structures and going to high rise apartment buildings and auditoriums, the difficulty in obtaining a variance shall be greater for structures having a higher percentage of time when the structure has human utilization, and greater for structures which are occupied by a larger number of people.

F. SPECIAL REQUIREMENTS

1. Certification by Engineer

Where Chart 1 of part C of this section (eg. zoning section 5-12-C) requires a structure, fill, cut, or other facility to be designed by an engineer, such engineer shall be a professional engineer who is licensed to practice in the State of Utah and who is qualified to make such design through experience and training. The plan of the facility shall bear on it a certification by the engineer that the standards and requirements of the NHO Zone have been met. Notwithstanding such certification, the plans and certification shall be reviewed by the Zoning Administrator, who may obtain the recommendations of the County Geologist and County Surveyor, to determine whether the provisions of this ordinance have been met before issuing any clearance to commence construction.

2. Certification by Geologist

Where Chart 1 of part C of this section (eg. zoning section 5-12-C) requires a geologist to do a field study and prepare a natural hazards report of the site of the proposed facility, such geologist shall be an engineering geologist as defined by this ordinance who is qualified to make an assessment of the

natural hazards regulated by this zone (eg. rockfall, debris flow, landslides, and surface fault rupture). The report of the hazards assessment shall bear the signed certification of the geologist that the study was sufficient to meet the standards of this ordinance and accurately depicts the hazards to be encountered.

Notwithstanding such certification, the report shall be reviewed by the Zoning Administrator, who may obtain the recommendations of the County Geologist and County Surveyor, to determine whether the provisions of this ordinance have been met before issuing any clearance to commence construction.

3. Records

The Zoning Administrator shall retain any natural hazards reports and plans of engineered facilities submitted with applications for permits issued under authority of this section (zoning section 5-12), plus an office copy of the map series assembled by the County Geologist for rockfall, debris flow, landslides, and surface fault rupture hazards within the NHO Zone.

4. Maps Adopted by Reference

The map series assembled by the Utah County Geologist "Utah County Geologist's Map of Rockfall, Debris Flow, Landslide, and Surface Fault Rupture Hazards identified within the NHO Zone of Utah County, Utah," dated June 1, 1988, is hereby adopted by reference in book form. Three (3) copies of the complete map series are hereby ordered to be placed in the office of the Utah County Clerk, as required by law. This map series shall be used in the administration of the NHO Zone as required therein.

G. WARNING AND DISCLAIMER

The degree of protection from geologic hazards intended to be provided by this section (zoning section 5-12) is considered reasonable for regulatory purposes and is based on accepted geologic and scientific methods of study. This section is intended to minimize the danger, cost and impact from geologic hazards. Therefore, unforeseen or unknown geologic conditions, or natural or man-made changes in conditions, may contribute to future damages even though properly permitted within the NHO Zone. Furthermore, the provisions of this section shall not imply that areas outside the NHO Zone will always be totally free from the impact of geologic hazards. This section shall not create a liability on the part of or be a cause of action against the county or any officer or employee thereof for any personal or property damage that may result from reliance on the regulations of the NHO Zone, or from damages occurring in areas which for any reason have not been designated in the NHO Zone.