

Site-Specific Hazard Assessment



Hazards Addressed



How it Works

When hazards are potentially present on a site or are known through previous mapping efforts, the community should require a **site-specific hazard assessment**. This type of assessment requires a qualified professional with specialized knowledge of the particular hazard of which they are assessing. The appropriate professional (e.g., geotechnical specialist, civil engineer, wildfire mitigation specialist, certified forester, and certified floodplain manager) will consider existing state and/or local hazard maps; prior evidence of hazard history; and on-site features such as topography, soils, forests, water channels, and other structures to determine risk level of or to the proposed development. When applicable, communities may have a specific assessment form that is used to rate the hazard. This information will typically be compiled into a site-specific hazard mitigation plan that will require specific mitigation actions to be performed prior to or as a condition of approving the application or issuing a development permit, building permit, or a certificate of occupancy. This may include recommendations or requirements to adjust the land use, alter construction and building design, or utilize (or protect) surrounding environmental features to minimize the degree of hazard. This information will be provided to the developer, contractors, and/or property owner, and may be included in the planner's staff report for the planning commission or governing body.

Ultimately, the purpose of a site-specific hazard assessment is to identify hazards, determine a path for hazard mitigation, increase public safety, and reduce the threat of future property damage or loss of life.

Implementation

Requirements for when to require site-specific hazard assessments vary by jurisdiction and hazard. In some cases, the state may provide additional agency oversight, resources, or guidance as to when further site investigation is required for hazard mitigation, such as the oil and gas requirements for soils information and potential geological hazards. Local regulatory requirements are usually stated in the zoning code, subdivision code, building code, or a separate code (e.g., wildland-urban interface code).

Jurisdictions typically have flexibility in deciding when a site-specific hazard assessment is required. For example, a jurisdiction may choose to adopt a mapped hazard overlay zone that requires all new construction or retrofits within that zone to undergo a site-specific hazard assessment prior to granting development permit approval. Conversely, jurisdictions may find it more appropriate to require a site-specific hazard assessment for any permit, regardless of the location.

In any case, the applicability standards that trigger an assessment as well as the criteria for when and what type of mitigation is required should be clear. Planning staff should discuss this requirement with an applicant early in the development review process, such as at the pre-application meeting or when a sketch plan is first submitted.

Where It's Been Done

In 2003, **Eagle County** adopted wildfire regulations that require new development (special use permit, planned unit development (PUD), and subdivision) and new building construction or exterior remodels to comply with wildfire regulations. Development involving subdivision or PUD must include a vegetation management plan submitted with the sketch plan that provides an initial site-specific evaluation prepared by a natural resource professional with expertise in the field of vegetation management and wildfire mitigation. The vegetation management plan submitted with the preliminary plan is required to contain a more detailed site-specific analysis as indicated by the regulations.

Wildfire hazard assessments are required based on criteria stated above. Other interested property owners may also request a wildfire hazard assessment from Eagle County to reduce their property's risk. Assessments are either initiated via an online request form or by calling the wildfire mitigation staff coordinator. The county's qualified mitigation staff will conduct an on-site hazard assessment utilizing a customized assessment form (based on a national model assessment standard). The on-site field observations and assessment criteria are considered in conjunction with the county's wildfire hazard map to determine a site's specific rating. Based on the rating, the applicant will then be given a set of mitigation requirements prior to the county issuing a building permit. Mitigation requirements may include fuel management (e.g., removal of trees and/or other vegetation) and the use of fire-resistant construction materials, such as a Class A roof assembly, Class A rated decking materials, and non-combustible siding. The assessments are free, but building permits that require additional review and on-site follow up will be charged fees. Requirements are identified

early on in the process and publicly available on the county’s wildfire mitigation website (*Wildfire Regulations*, 2003; *Overview*, 2015). **Boulder County** uses a similar approach to addressing their community’s wildfire hazard (see Building Codes tool for more details).

The **Cordillera Community** in Eagle County takes their wildfire mitigation process one step further. They have their own local fire department that performs home assessments; every house is on a five-year rotation for re-assessment to ensure that vegetation is properly maintained.

The **Town of Vail** has adopted a requirement for a site-specific assessment for new construction and substantial remodels within avalanche hazard zones.

Advantages and Key Talking Points

- Site-specific hazard assessments are the best (and in some cases the only) way to identify hazards on a site and determine the most effective methods for mitigation.
- Assessments can highlight potentially hazardous conditions prior to any development occurring.
- Assessment approaches that facilitate staff and applicant interaction regarding appropriate hazard mitigation requirements provide an important educational component for discussing solutions to addressing known hazards.
- Results in reduced risk to property and life.

Challenges

- Site-specific hazard assessments require additional upfront time and resources for both the local government and the applicant. The process requires additional time to perform the assessment, create a mitigation plan, review the results with an applicant, and do a follow up site visit when necessary.
- A site-specific hazard assessment will also require specialized technical expertise that may result in additional costs borne by the applicant and/or local jurisdiction. If the local jurisdiction does not have qualified staff to perform the site-specific hazard assessment, consider maintaining a list of independent qualified contractors for referral.

Key Facts

Administrative capacity	High, requires technical expert
Mapping	Yes
Regulatory requirements	Yes, but varies by jurisdiction
Maintenance	N/A
Adoption required	Yes

Statutory reference	C.R.S. references relate primarily to general land use authority and administration and requirements for when site-specific assessments may apply, including but not limited to C.R.S. §§ 30-28-106, 30-28-133, 30-28-136, and 31-23-206.
Associated costs	Variable. Sometimes recovered by fees charged to applicant. Some fire districts may do these assessments for free

Examples

Boulder County <https://www.bouldercounty.org/disasters/wildfires/mitigation/>
Wildfire Mitigation

Eagle County eaglecounty.us/Building/Documents/Wildfire_Regs and
Wildfire Regulations eaglecounty.us/Building/Wildfire/Overview

Town of Vail sterlingcodifiers.com/codebook/index.php?book_id=560 Chapter
Municipal Code 21: Hazard Regulations

For More Information

American Planning Association

Zoning Practice, February 2005 Issue Number Two: *Practice Better Site Visits*. Stuart Meck.

American Planning Association Report Number 560

Hazard Mitigation: Integrating Best Practices into Planning. Provides additional examples of state legislation and local codes for site-specific assessments.

Model Code and Commentary

Site-specific hazard assessments are conducted by local governments and trained hazard mitigation experts on individual parcels on a case-by-case basis. They may be used to help inform various types of development applications, such as site plan review, conditional or special use review, or proposed subdivisions. Depending on the scope and scale of a proposed project, the recommendations stemming from such an assessment can vary widely. The recommendations depend largely on site-specific conditions and/or mitigation objectives that the community has defined relative to one or more hazards.

Because each assessment is unique, the principal drafting task involves preparing enabling language that provides the authority to conduct such assessments. The following elements should be considered when drafting ordinance language to authorize site-specific assessments:

- Purpose and Intent – Describes the purpose of the site-specific assessment, tailored to the hazards present in a community.
- Applicability and Exemptions – Establishes the types of development applications that are subject to a site-specific assessment. This section identifies the areas within which site-specific assessments will be required and the types of projects for which they are required (e.g., new construction, building expansion, and alterations).
- Procedures – This section establishes procedures for how site-specific assessments are conducted and the application submittal requirements. Some of the specifics related to administration of this procedure will likely be located outside of the land use regulations. See commentary at right.
- Definitions – This section defines key terms necessary to fully implement and administer a site-specific assessment procedure.

Commentary:

Administration of this Procedure: A site-specific hazard assessment procedure is not entirely administered through the land use code or zoning ordinance. Some communities have a separate set of checklists, criteria, and standards that live outside the ordinance in a handbook, developer's guide, or administrative manual that is used as a reference and is either distributed to the applicant or is available on the local government website.

A developer's guide or administrative manual allows the local government to make modifications to submittal requirements, fees, and in this case the hazard assessment protocols without amending the code.

In Eagle County, Colorado, the wildfire mitigation specialist uses a handbook to determine the overall hazard rating of a parcel. The handbook includes an assessment of various conditions such as access, roofing material, defensible space, electrical service lines, and water supply. From that assessment, the County determines what types of mitigation must be met prior to issuing a Certificate of Occupancy (CO).

Each of these elements may be drafted as individual sections or subsections of an article or chapter within a development code.

The remainder of this model describes each element and provides standard language regarding hazard mitigation that may be considered by Colorado local governments. Model language is in blue shading. Commentary is located in *italics* in the column at the right. The model language used in this document is based on existing ordinances and/or resolutions from several communities around the state, including municipalities and counties. The language is illustrative only; consult local counsel to tailor language for your jurisdiction.

Purpose

Establishing a clear purpose statement is essential to any development standard or procedure.

The purpose of this section is to:

1. Provide staff and the [*insert approval authority, e.g., Planning Commission, City Council, Board of County Commissioners*] with an understanding of a development site's specific constraints and distinguishing characteristics, especially as they relate to potential hazards;
2. Identify areas subject to site-specific hazards such as avalanches, landslides, rockfalls, mudflows, unstable slopes, floodplains, wildfire risk areas, or other environmental development constraints;
3. Avoid development in [*insert level of risk as it pertains to mapped hazard areas or other policies – e.g., high-risk or moderate risk*] areas;
4. Ensure that hazard risk is reduced or that development in hazard areas is appropriately mitigated;
5. Minimize impacts to environmentally sensitive areas; and
6. Protect the public health, safety, and welfare.

Purpose and Intent: This section should list hazards and constraints that are commonly present in the community. Communities can also consider stronger language relating to avoiding development altogether in hazardous areas. Some communities choose to list individual purpose and intent elements (as in this example) instead of a single paragraph to improve user-friendliness.

When stating any purpose related to risk reduction and hazard avoidance, it is important to consider adopted policies from the Comprehensive Plan or the Hazard Mitigation Plan and use similar terminology in the code.

Mapping: Ideally communities will have accurate hazard maps available as the primary reference tool for determining when site-specific assessments are required. For more on mapping, see the sidebar on page 16 of the *Planning for Hazards* guide and a summary of data sources beginning on page 20 of the *Planning for Hazards* guide.

Applicability and Exemptions

The applicability subsection should indicate which types of development applications (and in some cases, which specific geographic areas) are subject to site-specific hazard assessments. Communities with comprehensive mapping of hazard areas may opt to apply the procedure to multiple hazards, whereas other communities may only apply this procedure to flood or wildfire areas, for example.

A site-specific hazard assessment shall be required for proposed applications for [insert or list application types where site-specific assessments are required - e.g., rezoning, subdivision, conditional use permit, variance, minor or major site plan, master plan, PUD] within the following areas:

- A. Steep land with [30 percent or greater] slopes or unstable ground;
- B. Land subject to geologic hazards such as landslide or rockfall;
- C. Land within designated flood hazard areas pursuant to [Section x.x (cross-reference floodplain regulations)];
- D. Land within wildfire hazard areas; and
- E. Land with other environmental development constraints as identified by the [Director, Zoning Administrator, or other authority].

Exemptions

Site-specific hazard assessments shall not be required for the following activities:

- A. Maintenance and repair of existing public roads and utilities within easements or public rights-of-way; and
- B. The expansion, remodeling, or reconstruction of an existing development so long as such expansion, remodeling, or reconstruction does not add more than [e.g., 10 or 25 percent, or other desired percentage] improved square footage and does not increase the amount of square footage within a hazard area.

***Applicability:** Generally, the site-specific assessment should apply to any type of development that has the potential to further aggravate an existing hazard or place additional density in harm's way. Site-specific assessments should be applied to the extent possible given a community's capacity to administer and enforce the program.*

***Exemptions:** Expansions and alterations are often allowed through streamlined procedures in modern codes. This encourages infill and redevelopment to occur without adding unnecessary process or expenses. However, at some point an alteration becomes big enough that exemptions may not be appropriate. Communities should select a standard definition of "major redevelopment" and apply that consistently throughout the code to the extent possible. For example, many communities identify a threshold for when new parking requirements apply to redevelopment projects; that same threshold should be considered for when a site-specific assessment is required. An exemption in this part of the code does not mean that some hazard concerns will not be addressed through other processes. For example, the building code will likely require certain improvements for fire protection, wind, and snow load regardless of whether a site-specific assessment is required.*

Procedures

A site-specific hazard assessment is not a stand-alone type of development application; rather, it is a tool that provides information to inform another type of application. For example, an applicant for a subdivision plat may be required to conduct an assessment of potential hazards on his or her property to help ensure that new lots are not created in hazard areas. Similarly, a site-specific hazard assessment may be required as part of a site plan review to help ensure that development is not located on a portion of a lot that is potentially subject to flooding or another hazard-related threat.

Because site-specific assessments may apply to multiple application types, the language describing them should be drafted as a common review procedure (see additional commentary at right), and then also cross-referenced in other sections of the ordinance that describe specific application types. For example, if site-specific assessments are required for both site plans and preliminary plats, the ordinance sections describing both of those procedures should include a cross-reference back to the site-specific hazard assessment procedure. Depending on local capacity, field visits and assessments may be conducted in-house, or otherwise delegated to external contractors at the expense of the landowner. See additional commentary in the margin.

***Common Review Procedures:** Many modern land development codes include a separate section for common review procedures, rather than repeating similar requirements for each type of development application. Common review procedures make future updates a more streamlined and consistent process by limiting edits to one location within the document rather than having to edit multiple application procedures.*

***Subject Matter Experts:** Similar to a pre-application meeting, for a site-specific hazard assessment it is imperative that the local government and partnering agency representatives attending the field visit are well-trained at assessing property for various hazard conditions. For example, in many communities the local fire district(s) conduct the site-specific hazard assessments for wildfire mitigation.*

Site-Specific Hazard Assessment Procedure

A. Pre-Application Determination (if required)

During a pre-application meeting, the [insert responsible party or agency, e.g., staff, Planning Director, Town Administrator] shall notify the applicant that a site-specific hazard assessment is required for any development listed in Section x.x. [insert cross-reference to applicability section earlier in ordinance].

B. Field Visit Scheduling and Attendance (in-house)

1. The applicant shall work with [staff/jurisdiction] to schedule a field visit prior to submitting an application.

2. The site being considered for development shall be visited in the field by the [*insert Planning Director and trained hazard expert(s)*] and other individuals or agencies deemed appropriate by the [*Planning Director, Town Administrator, etc.*].
3. The applicant shall attend the scheduled field visit.
4. At the [*Planning Director's, or other authority*] discretion, should inclement weather conditions limit the ability to adequately evaluate the site, the site visit may be rescheduled to a more favorable time and date.

C. Checklists and Criteria

Checklists for the types of conditions and mitigation requirements that are used to conduct a site-specific hazard assessment field visit shall be available at the [*Planning Department/City or County Website*] and shall be distributed to the applicant prior to the field visit. This section should mention the community's administrative manual or guidebook, if such document exists, as mentioned in the commentary on page 1.

D. Site-Specific Hazard Assessment

1. Prior to the field visit the applicant shall clearly mark the approximate location of proposed building envelopes and any other proposed structures such as [*decks, sheds, or outbuildings – tailor this list to match community requirements for building permits*].
2. During the field visit, officials shall communicate specific concerns related to hazards and other environmental development constraints to be addressed in a subsequent application submittal.
3. Field observations shall be documented and distributed to the applicant within [*five days, or more or less depending on capacity*].

E. Applicant Response to Assessment

1. The applicant shall address and respond to field observations in their application submittal to the maximum extent practicable and in compliance with this [*ordinance, code, etc.*].

In-House Assessment: Depending on the types of hazards present on a site, the planning department (or whoever organizes the field visit) should assemble the appropriate team. If the property is in a flood hazard and a wildfire hazard area, then you may have the local floodplain administrator and the fire department present for the field visit.

Externally Prepared Assessment: Many communities do not have properly trained geologists, professional engineers, wildfire mitigation specialists, or other trained hazard experts on staff. For these communities, the assessment procedure should be tailored to require a field visit and an assessment report prepared by qualified contractors to be submitted to the local government as part of the development review process.

Checklists and Criteria: [The Boulder County Wildfire Partners program offers a checklist for landowners to create and maintain effective wildfire mitigation.](#)

[Sample assessment reports from that program are available here:](#)

As another example, [Eagle County outlines construction guidelines for development in wildfire areas as part of their wildfire mitigation assessments](#)

2. The applicant shall make reasonable efforts to mitigate impacts of identified hazards and other environmental development constraints.
3. Results from the field visit may indicate that the hazard rating or environmental development constraints are minimal to the effect of not requiring additional mitigation beyond compliance with this [*ordinance, code, etc.*].

Key Definitions

In this model for a site-specific hazard assessment procedure, the following terms should be defined (if used in the local ordinance):

Development (option 1): Any man-made change to improved or unimproved real estate, including but not limited to the construction, reconstruction, conversion, or expansion of any structure; any change in use of a property, building, or structure; and any mining, dredging, filling, grading, paving excavation or drilling operation. The term "development" shall also include the act of subdivision.

Development (option 2): The construction of a building or structure, any clearing, grading, excavation or other movement of land, or the division of a parcel of land into two or more parcels.

Environmental development constraint: A natural environmental feature that typically precludes development, including but not limited to wetlands, steep slopes [*insert what defines a steep slope in the community, e.g., 20-30 percent*] or greater, floodplains, and areas subject to geological hazards (rockfall, mudslide, avalanche, etc.).

Maximum extent practicable (option 1): Under the circumstances, reasonable efforts have been made to comply with the regulation or requirement, that the costs of compliance clearly outweigh the potential benefits to the public or would unreasonably burden the proposed project, and reasonable steps have been undertaken to minimize any potential harm or adverse impacts resulting from noncompliance.

Maximum extent practicable/feasible (option 2): That no feasible and prudent alternative exists, and all possible efforts have been made to comply with the regulation or minimize potential harm or adverse impacts.