

Title 16C NFIP Compliance Amendments

List of Title 16C amendments and a brief analysis of their potential impacts to development within Yakima County

Summary/Background:

As a condition of Yakima County's continued eligibility in the National Flood Insurance Program (NFIP), these amendments are required to be adopted or show evidence of adoption to ensure Yakima County's floodplain management regulations are compliant with the standards of Paragraph 60.3(d) of the NFIP. Furthermore, the adoption of these amendments coincides with the October 21, 2021 effectiveness date of updated flood insurance rate maps (FIRMs) for portions of Cowiche Creek and Upper Naches River, in conformance with specific sections of the National Flood Insurance Act (Section 1361).

Sandra Floyd, Floodplain Management Specialist, Ecology (Certified Floodplain Manager) provided an extensive review of the special flood hazard area provisions within Title 16C (CAO) in 2020. She highlighted required amendments AND recommended changes to these applicable sections. The amendments recommended for approval are the **required minimum** standards that must be adopted prior to the effectiveness of the pending Cowiche Creek and Upper Naches flood insurance rate maps, to remain eligible for FEMA's NFIP program.

It is important to note that nearly ALL of the amendments proposed are currently reviewed through the Flood Review process carried out by the Building Division. The amendments provide more clarity and understanding of standards required for development within Special Flood Hazard Areas (SFHAs).

NOTE: This is NOT a complete list of the proposed amendments to Title 16C. The amendments below are those that were identified as having the potential to impact development within SFHAs in Yakima County. Amendments not listed below were identified as language pertaining to administrative and severability/liability requirements.

Links to pertinent legislation and guidance referenced in this document (it may be beneficial to have these open while reviewing this document):

[Appendix G, 2018 International Building Code](#)

[ASCE 24](#) – I do not have access to this specific document; must pay for it. Building does not have a digital copy.

[YCC Title 13](#)

[YCC Title 16C](#)

[YCC Title 19](#)

[FEMA Floodplain Management Requirements for Agricultural Structures and Accessory Structures guidance document](#)

16C.02 Definitions

[Summary]

- 27 amendments related to SFHA definitions...
 - 14 new definitions
 - 13 revised definitions
- Example(s):

NEW Definition

[Highest adjacent grade.](#)

“Highest adjacent grade” means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

REVISED Definition

16C.02.220 Floodway.

“Floodway” means the regular channel of a river, stream, or other watercourse, plus the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than ~~one foot~~ [a designated height. Also referred to as “Regulatory Floodway.”](#)

Development Impact: *NONE. Definition amendments provide clarification to variety of technical flood terms not already identified, but currently used throughout 16C.02 or expand/simplify existing 16C.02 definitions.*

16C.05.20.010 Flood Hazard Areas Established

16C.05.20.010 Flood Hazard Areas Established.

The special flood hazard areas identified by the Federal Emergency Management Agency (FEMA), in a scientific and engineering report entitled “The Flood Insurance Study for Yakima County, Washington and Incorporated Areas” dated November 18, 2009 October 21, 2021, and any revisions thereto, with an accompanying Flood Insurance Rate Map (FIRM), and any revisions thereto, are hereby adopted by reference and declared to be part of Chapters 16C.05.20 through 16C.05.72 and are established as flood hazard areas.

The Flood Insurance Study and ~~maps~~ [FIRMs](#) are on file at the Yakima County Courthouse Building, 128 N. 2nd St., Yakima, Washington, 98901. State defined frequently flooded areas are included within the flood hazard areas. The best available information for flood hazard area identification as outlined in 16C.05.44.060 shall be the basis for regulation until a new FIRM is issued that incorporates data utilized under 16C.05.44.060.

Development Impact: *Any development proposed after October 21, 2021 within SFHAs will be required to adhere to these amendments, per Section 1361 of the National Flood Insurance Act. Amendments to code are required to meet these minimum standards to remain compliant with NFIP and ensure County's eligibility for federal flood insurance.*

16C.05.28.010(1) General Standards

16C.05.28.010 General Standards.

The following regulations shall apply in all special flood hazard areas:

(1) Anchoring and Construction Techniques.

(a) All new construction and substantial improvements, including those related to manufactured homes, shall be:

(i) Anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads including the effects of buoyancy; and

(ii) Constructed using materials and utility equipment resistant to flood damage; and

(iii) Constructed using methods and practices that minimize flood damage; and

(iv) Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(b) All manufactured homes must likewise be anchored to prevent flotation, collapse or lateral movement, and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (Reference FEMA's Manufactured Home Installation in Flood Hazard Areas guidebook for additional techniques). Anchoring shall meet the specifications set forth below for structures located within one hundred feet of a floodway or the ordinary high water mark if no floodway has been established.

(c) All new construction and any improvements or additions to existing floodproofed structures that would extend beyond the existing floodproofing located within one hundred feet of the floodway or one hundred feet of the ordinary high water mark if no floodway has been established shall be elevated to a height equal to one foot or greater than the base flood, using zero-rise methods such as piers, posts, columns, or other methodology, unless it can be demonstrated that non-zero-rise construction methods will not impede the movement of floodwater or displace a significant volume of water. The size and spacing of any support devices used to achieve elevation shall be designed to penetrate bearing soil, and be sufficiently anchored, as specified above in subsection (1)(a) of this section, provided therefrom, if the original building required a floodproofing certificate, then the floodproofing certificate must be updated. Also provided therefrom, if any part of the project is in a floodway, the floodway standards in this code still apply.

(d) Except where otherwise authorized, all new construction and substantial improvements to existing structures shall require certification by a registered

professional engineer, architect or surveyor that the design and construction standards are in accordance with adopted floodproofing techniques.

Development Impact: *Already a requirement per Section G103.4, 2018 IBC – adopted by reference per YCC 13.05.010. Amendment now clearly identifies manufactured homes as being required to comply with anchoring and other flood-resistant construction techniques; indicates that existing floodproofing certificates for existing structures must be updated upon new construction or substantial improvements for any portion within the SFHA. Also requires that new construction/substantial improvements to existing buildings within the floodway are required to adhere to floodway development standards (no “exemption” from floodway standards for new construction/improvements).*

16C.05.28.010(2) General Standards

16C.05.28.010 General Standards.

The following regulations shall apply in all special flood hazard areas:

(2) Utilities.

(a) All new and replacement water supply systems and sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters; and on-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding. Water wells shall be located on high ground that is not in the floodway.

Development Impact: *Already a standard required by WAC 173-160-171. Amendment adds language that clearly identifies the prohibition of wells within the floodway.*

16C.05.28.010(3) General Standards

16C.05.28.010 General Standards.

The following regulations shall apply in all special flood hazard areas:

(3) Subdivision Proposals and Development. Subdivision proposals, as well as new development shall:

- (a) Be consistent with the need to minimize flood damage;
- (b) Have roadways, public utilities and other facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage;
- (c) Have adequate drainage provided to reduce exposure to flood damage; and
- (d) Where subdivision proposals and other proposed developments contain greater than 50 lots or 5 acres (whichever is lesser) base flood elevation data shall be included as part of the application.

Development Impact: *NONE. Already a requirement per Section G104.2(4), 2018 IBC – adopted by reference per YCC 13.05.010. Amendment adds language that identifies requirement that applications*

for subdivision proposals and other developments involving 50 lots or lots 5 acres or more must include BFE data. NOTE: Also similar standards in 19.34.070 for subdivisions in SFHAs.

16C.05.28.010(4) General Standards

16C.05.28.010 General Standards.

The following regulations shall apply in all special flood hazard areas:

(4) Watercourse Alterations. Whenever a watercourse is to be altered or relocated: 1) Assure that the flood-carrying capacity within altered or relocated portions of any watercourse shall be maintained. 2) Prior to the approval of any alteration or relocation of a watercourse in riverine situations, the department shall notify adjacent communities the Department of Ecology and FEMA of the proposed development and submit evidence of such notification to the Federal Insurance Administrator through appropriate notification means.

Development Impact: *NONE. Already a requirement per Section G103.6, 2018 IBC – adopted by reference per YCC 13.05.010. Amendment includes additional language to clarify standards for watercourse alterations within SFHAs and identifies FEMA notification requirement when altering or relocating a watercourse within a SFHA.*

16C.05.28.020(1) Specific Standards

16C.05.28.020 Specific Standards.

In all special flood hazard areas where base elevation data has been provided as set forth in Section 16C.05.20.010 or Section 16C.05.44.060, the following regulations shall apply, in addition to the general regulations of Section 16C.05.28.010:

(1) Residential Construction. (Ref. IRC 323.2.)

(a) In AE and A1-30 zones or other A zoned areas where the BFE has been determined or can be reasonably obtained, new construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated one foot or more above the base flood elevation. Mechanical equipment and utilities shall be waterproofed or elevated at least one foot above the BFE.

(b) Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or if used solely for parking, access or storage shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

(i) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.

(ii) The bottom of all openings shall be no higher than one foot above grade.

(iii) Openings may be equipped with screens, louvers, or other coverings or devices, provided that they permit the automatic entry and exit of floodwaters.

(iv) A garage attached to a residential structure, constructed with the garage floor slab below the BFE, must be designed to allow for the automatic entry and exit of floodwaters.

Alternatively, a registered engineer or architect may design and certify engineered openings.

(c) Residential construction within one hundred feet of a floodway or the ordinary high water mark, if no floodway has been established, shall also meet the requirements of Section 16C.05.28.010(1)(c).

(d) New construction and substantial improvement of any residential structure in an AO zone shall meet the requirements in Appendix A.

(e) New construction and substantial improvement of any residential structure in an Unnumbered A zone for which a BFE is not available and cannot be reasonably obtained shall be reasonably safe from flooding, but in all cases the lowest floor shall be at least two feet above the Highest Adjacent Grade.

Development Impact: *A number of additional language, but all is currently required per 2018 IBC – refers ASCE 24 which lists specific construction standards for residential structures in SFHAs:*

Amendment identifies “one foot or above BFE” requirement for all new construction/substantial improvements to residential structures and associated utilities located in SFHAs. Also identifies floodproofing requirements for fully enclosed floors below BFE and attached garages while providing option to have engineer design/certify [flood] openings of garages.

NOTE: Currently no AO Zones in Yakima County.

Also identifies the requirement for new construction/substantial improvement of residential structures in A Zones (unnumbered – no BFE data exists) must be located at least 2' above HIGHEST ADJACENT GRADE (e.g. Lower Valley - Zillah).

16C.05.28.020(2) Specific Standards

16C.05.28.020 Specific Standards.

In all special flood hazard areas where base elevation data has been provided as set forth in Section 16C.05.20.010 or Section 16C.05.44.060, the following regulations shall apply, in addition to the general regulations of Section 16C.05.28.010:

(2) Nonresidential Construction. New construction and substantial improvement of any commercial, industrial or other nonresidential structure, and any addition to an existing

floodproofed structure that would extend beyond the existing floodproofing, shall meet the requirements of subsection A or B below.

(A) New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall meet all of the following requirements:

(i) In AE and A1-30 zones or other A zoned areas where the BFE has been determined or can be reasonably obtained: New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall have the lowest floor, including basement, elevated a minimum of one foot above the base flood elevation, or elevated as required by ASCE 24, whichever is greater. Mechanical equipment; and utilities and shall be waterproofed or elevated at least one foot above the BFE, or as required by ASCE 24, whichever is greater.

(ii) If located in an AO zone, the structure shall meet requirements in Appendix A.

(iii) If located in an Unnumbered A zone for which a BFE is not available and cannot be reasonably obtained, the structure shall be reasonably safe from flooding, but in all cases the lowest floor shall be at least two feet above the Highest Adjacent Grade.

(iv) Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or if used solely for parking, access or storage shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

a) Have a minimum of two openings with a total net area of not less than one square inch for every square foot of enclosed area subject to flooding.

b) The bottom of all openings shall be no higher than one foot above grade.

c) Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwater.

d) A garage attached to a residential structure, constructed with the garage floor slab below the BFE, must be designed to allow for the automatic entry and exit of floodwaters.

Alternatively, a registered engineer or architect may design and certify engineered openings.

(B) If the requirements of subsection A are not met, then new construction and substantial improvement of any commercial, industrial or other nonresidential structure shall meet all of the following requirements:

- (e)(i) Be floodproofed so that below an elevation one foot above base flood level the structure is watertight, with walls substantially impermeable to the passage of water or dry floodproofed to the elevation required by ASCE 24, whichever is greater;
- (e)(ii) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;
- (e)(iii) Be certified by a registered professional engineer or architect that the design and method of construction are in accordance with accepted standards of practice for meeting provisions of this subsection, based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the building official;
- (e)(iv) Nonresidential structures that are elevated, not floodproofed, must meet the same standards for space below the lowest floor as described in Section 16C.05.28.020(2)(A)(iv) above;
- (e)(v) Meet the special standards for structures set forth in Section 16C.05.28.010(1)(c) above if within one hundred feet of a floodway or within one hundred feet of the ordinary high water mark and no floodway has been established;
- (f) Applicants floodproofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g., a building constructed to the base flood level will be rated as one foot below the level). Floodproofing the building an additional foot will reduce insurance premiums significantly. (Ref. IBC 1612.5.)

Development Impact: *A number of additional language, but all is currently required per 2018 IBC – refers ASCE 24 which lists specific construction standards for nonresidential developments in SFHAs:*

Amendment identifies types of nonresidential construction/uses that must adhere to BFE standards in accordance with ASCE 24.

NOTE: Currently no AO Zones in Yakima County.

Also identifies the requirement for new construction/substantial improvement of nonresidential structures in A Zones (unnumbered – no BFE data exists) must be located at least 2' above HIGHEST ADJACENT GRADE (e.g. Lower Valley - Zillah).

Lists specific floodproofing requirements for “fully enclosed areas below lowest floor” used solely for parking, access or storage while providing option for openings to be designed/certified by an engineer.

16C.05.28.020(3) Specific Standards

16C.05.28.020 Specific Standards.

In all special flood hazard areas where base elevation data has been provided as set forth in Section 16C.05.20.010 or Section 16C.05.44.060 , the following regulations shall apply, in addition to the general regulations of Section 16C.05.28.010:

(3) Agricultural Construction. New construction and substantial improvement of any agricultural structure shall either have the lowest floor, including basement, elevated at a minimum to or above the base flood elevation; or meet the floodproofing requirements of subsection (2) of this section. ~~Agricultural construction or other accessory structures that constitute a minimal investment and comply with the floodway encroachment standards may be exempt from the floodproofing and elevation requirements of subsection (2) above when such structures, together with attendant utility sanitary facilities:~~

- (a) ~~Have a low potential for structural flood damage;~~
- (b) ~~Are designed and oriented to allow the free passage of floodwaters through the structure in a manner affording minimum flood damage; and~~
- (c) ~~Ensure that all electrical and mechanical equipment subject to floodwater damage and permanently affixed to the structure be elevated a minimum of one foot above the base flood elevation or higher, or floodproofed;~~
- (d) ~~Are constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters; and~~
- (e) ~~Will not be used for human habitation.~~

Development Impact: *Already a requirement per Section G1001.1, 2018 IBC – adopted by reference per YCC 13.05.010.*

Amendment removes floodplain management regulation exemptions for agricultural and accessory structures located within the SFHAs. All agricultural construction and accessory structures (even small projects) within SFHAs must obtain a permit and adhere to floodplain management regulations. Please see Section 3 (p. 25) of [FEMA Floodplain Management Requirements for Agricultural Structures and Accessory Structures guidance document](#)

Guidance document states – “Communities that participate in the NFIP agree to regulate development in SFHAs and require permits for that development. Those communities have adopted floodplain management regulations that meet or exceed the minimum requirements outlined in NFIP regulations (44 C.F.R. § 60.3). Specific requirements for structures depend on the flood zone and whether structures are residential or non-residential. Agricultural structures and accessory structures are regulated as non-residential structures. Some states exempt agricultural structures or structures on farms from state and local building and zoning codes. This exemption does not exempt agricultural structures from floodplain management regulations administered by communities that participate in the NFIP.”

Guidance doc specifically states that NFIP takes precedence over less stringent State and Local requirements in NFIP-participating communities.

16C.05.28.020(4) Specific Standards

16C.05.28.020 Specific Standards.

In all special flood hazard areas where base elevation data has been provided as set forth in Section 16C.05.20.010 or Section 16C.05.44.060 , the following regulations shall apply, in addition to the general regulations of Section 16C.05.28.010:

(4) Manufactured Homes.

(a) ~~All Manufactured manufactured homes to be placed or substantially improved on sites shall be anchored in accordance with Section 16C.05.28.010(1)(b)~~ shall have the lowest floor elevated ~~to or one foot or more~~ above the base flood elevation, and shall be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement in accordance with Section 16C.05.28.010(1)(b).

Development Impact: *Already a requirement per Section G501, 2018 IBC – adopted by reference per YCC 13.05.010. Amendment expands what constitutes manufactured home development and specifically identifies 1' above BFE requirement for lowest floor.*

16C.05.28.020(5) Specific Standards

16C.05.28.020 Specific Standards.

In all special flood hazard areas where base elevation data has been provided as set forth in Section 16C.05.20.010 or Section 16C.05.44.060 , the following regulations shall apply, in addition to the general regulations of Section 16C.05.28.010:

(5) Recreational Vehicles.

Recreational vehicles placed on sites are required to either:

- a) Be on the site for fewer than 180 days, or
- b) Be fully licensed and ready for highway use, on wheels or jacking system, attached to the site only by quick disconnect type utilities and security devices, and have no permanently attached additions; or
- c) Meet the requirements of section 16C.05.28.020(4), above.

Development Impact: *New addition to 16C, but already a requirement per Section G601, 2018 IBC – adopted by reference per YCC 13.05.010. Amendment identifies standards for: duration of stay, licensing requirements, capable mobility, no additions, etc. Amendment also requires that any permanent recreational vehicles (e.g. RV camp host) to meet manufactured home requirements – amended above in YCC 16C.05.28.020(4).*

16C.05.28.020(6) Specific Standards

16C.05.28.020 Specific Standards.

In all special flood hazard areas where base elevation data has been provided as set forth in Section 16C.05.20.010 or Section 16C.05.44.060 , the following regulations shall apply, in addition to the general regulations of Section 16C.05.28.010:

(6) Enclosed Area Below the Lowest Floor

If buildings or manufactured homes are constructed or substantially improved with fully enclosed areas below the lowest floor, the areas shall be used solely for parking of vehicles, building access, or storage.

Development Impact: *New addition to 16C, but already a requirement per Section G901.1 and G1001.4, 2018 IBC – adopted by reference per YCC 13.05.010.*

Amendment clearly identifies what the “enclosed area below the lowest floor” can be used for when located within SFHAs.

16C.05.28.020(7) Specific Standards

16C.05.28.020 Specific Standards.

In all special flood hazard areas where base elevation data has been provided as set forth in Section 16C.05.20.010 or Section 16C.05.44.060 , the following regulations shall apply, in addition to the general regulations of Section 16C.05.28.010:

(7) AE and A1-30 Zones with Base Flood Elevations but No Floodways

In areas with BFEs (when a regulatory floodway has not been designated), no new construction, substantial improvements, or other development (including fill) shall be permitted within zones A1-30 and AE on the community’s FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

Development Impact: *New addition to 16C, but already a requirement per Section 103.4, 2018 IBC – adopted by reference per YCC 13.05.010.*

Amendment identifies requirement that new developments within SFHAs with available flood elevations, but no floodway MUST demonstrate that cumulative effect of proposed development (when combined with all other flood encroachments) will not increase the design flood elevation more than 1' at any point within the NFIP community.

16C.05.28.020(8) Specific Standards

16C.05.28.020 Specific Standards.

In all special flood hazard areas where base elevation data has been provided as set forth in Section 16C.05.20.010 or Section 16C.05.44.060 , the following regulations shall apply, in addition to the general regulations of Section 16C.05.28.010:

(8) Livestock Sanctuary Areas.

Elevated areas for the for the purpose of creating a flood sanctuary for livestock are allowed on farm units where livestock is allowed. Livestock flood sanctuaries shall be sized appropriately for the expected number of livestock and be elevated sufficiently to protect livestock. Proposals for livestock flood sanctuaries shall meet all procedural and substantive requirements of this chapter. To be “elevated sufficiently to protect livestock” typically means to be elevated at least one foot above the BFE.

Development Impact: *Already a standard required by [RCW 86.16.190](#). Amendment adds language that clearly identifying requirement to provide livestock sanctuary areas in SFHAs.*

16C.05.36.020(2) Prohibited Uses

16C.05.36.020 Prohibited Uses.

The following uses/developments are prohibited in the floodway:

(2) All encroachments, including fill, new construction, substantial improvements, and other development unless certification by a registered professional engineer is provided demonstrating through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the effect of the subject encroachment together with the cumulative effects of all similar potential encroachments shall not materially cause water to be diverted from the established floodway, cause erosion, obstruct the natural flow of water, reduce the carrying capacity of the floodway, or result in any increase in flood levels during the occurrence of the base flood discharge;

Development Impact: *Already a standard required by Section G103.5, 2018 IBC – adopted by reference per YCC 13.05.010. Amendment adds “substantial improvements” as developments that cannot encroach floodway without engineer demonstrating no cumulative impacts – diversions, erosion, flow obstructions, reduction of flood carrying capacity, or increase flood levels.*

16C.05.44.030 Permit – Required

16C.05.44.030 Permit – Required.

Prior to any construction or development within a special flood hazard area a flood hazard permit shall be obtained. The permit shall be for all structures including manufactured homes, as set forth in the “Definitions,” and for all development including fill and other activities, also as set forth in the “Definitions.” This permit may be in addition to the critical area development authorization as set forth in Chapter 16C.03 of this title.

Development Impact: *NONE. Better identifies construction and development that requires a permit in SFHAs.*

16C.05.44.040 Permit Application

16C.05.44.040 Permit – Application.

All persons applying for a flood hazard permit shall submit a written application, accompanied by an application fee as specified in YCC Title 20, using the forms supplied. The application shall not be considered complete until the following minimum information is provided:

(6) Elevation in relation to mean sea level, of the lowest floor (including basement) of all structures recorded on a current elevation certificate with Section B completed by the Floodplain Administrator.

(7) Elevation in relation to mean sea level to which any structure has been flood proofed;

(8) Where a structure is to be flood proofed, certification by a registered professional engineer or architect that the flood proofing methods for any nonresidential structure meet flood proofing criteria in Section 16C.05.28.020(2);

(9) Description of the extent to which a watercourse will be altered or relocated as a result of proposed development;

(10) Where development is proposed in a floodway, an engineering analysis indicating no rise of the Base Flood Elevation; and

(11) Information required by other sections of Chapters 16C.05.20 through 16C.05.72.

Development Impact: *Not new standards, but new language to provide better clarity for what is required as part of an application for development within SFHAs.*

Appendix C – Standards for Shallow Flooding Areas (AO Zones)

Appendix A C – Standards for Shallow Flooding Areas (AO Zones)

Shallow flooding areas appear on FIRMs as AO zones with depth designations. The base flood depths in these zones range from 1 to 3 feet above ground where a clearly defined channel does not exist, or where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is usually characterized as sheet flow. In addition to other provisions in this code, the following additional provisions also apply in AO zones:

1. New construction and substantial improvements of residential structures and manufactured homes within AO zones shall have the lowest floor (including basement and mechanical equipment) elevated above the highest adjacent grade to the structure, one foot or more above* the depth number specified in feet on the community's FIRM (at least two feet above the highest adjacent grade to the structure if no depth number is specified).
2. New construction and substantial improvements of nonresidential structures within AO zones shall either:
 - a. Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, one foot or more above* the depth number specified on the FIRM (at least two feet if no depth number is specified); or
 - b. Together with attendant utility and sanitary facilities, be completely flood proofed to or above that level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer, or architect as in Section 16C.05.28.020(2)(B)(c).
3. Require adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures.
4. Recreational vehicles placed on sites within AO zones on the community's FIRM either:
 - a. Be on the site for fewer than 180 consecutive days, or
 - b. Be fully licensed and ready for highway use, on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or
 - c. Meet the requirements of subsections (1) and (3) above and the anchoring requirements for manufactured homes (Section 16C.05.28.010(1)(b).

Development Impact: *NONE at this time – Yakima County currently does not have any mapped AO Zones.*