



**Signature Report**

**September 21, 2009**

**Ordinance**

**Proposed No.** 2009-0473.2

**Sponsors** Hague

1 AN ORDINANCE relating to compliance with the National  
2 Flood Insurance Program; and amending Ordinance 10870,  
3 Section 138, as amended, and K.C.C. 21A.06.490,  
4 Ordinance 10870, Section 470, as amended, and K.C.C.  
5 21A.24.230, Ordinance 10870, Section 471, as amended,  
6 and K.C.C. 21A.24.240, Ordinance 10870, Section 472, as  
7 amended, and K.C.C. 21A.24.250 and Ordinance 10870,  
8 Section 474, as amended, and K.C.C. 21A.24.270.

9

10 **STATEMENT OF FACTS:**

- 11 1. King County and nearly twenty-one thousand other communities across  
12 the United States and its territories participate in the National Flood  
13 Insurance Program by adopting and enforcing floodplain management  
14 regulations to reduce future flood damage.
- 15 2. The National Flood Insurance Program makes federally backed flood  
16 insurance available to homeowners, renters and business owners in these  
17 communities.

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18           3. Participation in the National Flood Insurance Program is voluntary;  
19           however federally-backed flood insurance is not available in communities  
20           that do not participate in the National Flood Insurance Program.

21           4. The Federal Emergency Management Agency ("FEMA"), or state  
22           agency acting on behalf of FEMA, conducts Community Assistance Visits  
23           to provide technical assistance to communities and to determine if the  
24           community is in compliance with the National Flood Insurance Program.

25           5. The Washington State Department of Ecology, acting on behalf of  
26           FEMA, conducted a Community Assistance Visit for King County on  
27           January 15, 2009.

28           6. The Community Assistance Visit identified issues with King County  
29           flood regulations that must be corrected in order for King County's  
30           regulations to be in compliance with the National Flood Insurance  
31           Program.

32           7. The issues identified generally related to performance standards for the  
33           AO ("shallow flooding") flood zone. In addition, King County flood  
34           regulations allow a Professional Engineer to prepare a Federal Emergency  
35           Management Agency Elevation Certificate; only Professional Land  
36           Surveyors are allowed to complete Elevation Certificates.

37           8. Adoption of this ordinance will resolve the flood regulation issues  
38           identified through the Community Assistance Visit.

39           BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

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40            SECTION 1. Ordinance 10870, Section 138, as amended, and K.C.C.

41            21A.06.490 are each hereby amended to read as follows:

42            Flood protection elevation: an elevation that is three-feet above the base flood  
43            elevation. For flood zones that establish flood depths instead of base flood elevations, the  
44            flood protection elevation is the depth number specified in feet on the flood insurance rate  
45            map plus one foot. The flood protection elevation is measured from the highest adjacent  
46            grade of the footprint of the existing or proposed structure. If the flood insurance rate map  
47            does not specify a depth, the flood protection elevation is at least two feet as measured  
48            from the highest adjacent grade of the footprint of the existing or proposed structure.

49            SECTION 2. Ordinance 10870, Section 470, as amended, and K.C.C.

50            21A.24.230 are each hereby amended to read as follows:

51            A. A flood hazard area consists of the following components:

- 52            1. Floodplain;
- 53            2. Zero-rise flood fringe;
- 54            3. Zero-rise floodway;
- 55            4. FEMA floodway; and
- 56            5. Channel migration zones.

57            B. The department shall delineate a flood hazard area after reviewing base flood  
58            elevations and flood hazard data for a flood having a one percent chance of being equaled  
59            or exceeded in any given year, often referred to as the "one-hundred-year flood." The  
60            department shall determine the base flood for existing conditions. If a basin plan or  
61            hydrologic study including projected flows under future developed conditions has been  
62            completed and approved by King County, the department shall use these future flow

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63 projections. Many flood hazard areas are mapped by FEMA in a scientific and engineering  
64 report entitled "The Flood Insurance Study for King County and Incorporated Areas."

65 When there are multiple sources of flood hazard data for flood plain boundaries, regulatory  
66 floodway boundaries, base flood elevations, or flood cross sections, the department may  
67 determine which data most accurately classifies and delineates the flood hazard area. The  
68 department may utilize the following sources of flood hazard data for floodplain  
69 boundaries, regulatory floodway boundaries, base flood elevations or cross sections when  
70 determining a flood hazard area:

- 71 1. Flood Insurance Rate Maps;
- 72 2. Flood Insurance Studies;
- 73 3. Preliminary Flood Insurance Rate Maps;
- 74 4. Preliminary Flood Insurance Studies;
- 75 5. Draft flood boundary work maps and associated technical reports;
- 76 6. Critical area reports prepared in accordance with FEMA standards contained in  
77 44 C.F.R. Part 65 and consistent with the King County Surface Water Design Manual  
78 provisions for floodplain analysis;
- 79 7. Letter of map amendments;
- 80 8. Letter of map revisions;
- 81 9. Channel migration zone maps and studies;
- 82 10. Historical flood hazard information; (~~and~~)
- 83 11. Wind and wave data provided by the United States Army Corps of Engineers;

84 and

85           12. Any other available data that accurately classifies and delineates the flood  
86           hazard area or base flood elevation.

87           C. A number of channel migration zones are mapped by the county for portions of  
88           river systems. These channel migration zones and the criteria and process used to  
89           designate and classify channel migration zones are specified by public rule adopted by the  
90           department. An applicant for a development proposal may submit a critical area report to  
91           the department to determine channel migration zone boundaries or classify channel  
92           migration hazard areas on a specific property if there is an apparent discrepancy between  
93           the site-specific conditions or data and the adopted channel migration zone maps.

94           SECTION 3. Ordinance 10870, Section 471, as amended, and K.C.C.  
95           21A.24.240 are each hereby amended to read as follows:

96           The following development standards apply to development proposals and  
97           alterations on sites within the zero-rise flood fringe:

98           A. Development proposals and alterations shall not reduce the effective base flood  
99           storage volume of the floodplain. A development proposal shall provide compensatory  
100           storage if grading or other activity displaces any effective flood storage volume.

101           Compensatory storage is not required for grading or fill placed within the foundation of an  
102           existing residential structure to bring the interior foundation grade to the same level as the  
103           lowest adjacent exterior grade. Compensatory storage shall:

104           1. Provide equivalent volume at equivalent elevations to that being displaced. For  
105           this purpose, equivalent elevations means having similar relationship to ordinary high  
106           water and to the best available ten-year, fifty-year and one-hundred-year water surface  
107           profiles;

- 108                   2. Hydraulically connect to the source of flooding;
- 109                   3. Provide compensatory storage in the same construction season as when the  
110 displacement of flood storage volume occurs and before the flood season begins on  
111 September 30 for that year; and
- 112                   4. Occur on the site. The director may approve equivalent compensatory storage  
113 off the site if legal arrangements, acceptable to the department, are made to assure that the  
114 effective compensatory storage volume will be preserved over time. The director may  
115 approve of off site compensatory storage through a compensatory storage bank managed by  
116 the department of natural resources and parks;
- 117                   B. A structural engineer shall design and certify all elevated buildings and submit  
118 the design to the department;
- 119                   C. A civil engineer shall prepare a base flood depth and base flood velocity  
120 analysis and submit the analysis to the department. A base flood depth and base flood  
121 velocity analysis is not required for agricultural structures that will not be used for human  
122 habitation. The director may waive the requirement for a base flood depth and base flood  
123 velocity analysis for agricultural structures that are not used for human habitation.  
124 Development proposals and alterations are not allowed if the base flood depth exceeds  
125 three feet and the base flood velocity exceeds three feet per second, except that the director  
126 may approve development proposals and alterations in areas where the base flood depth  
127 exceeds three feet and the base flood velocity exceeds three feet per second for the  
128 following projects;
- 129                   1. Agricultural accessory structures;
- 130                   2. Roads and bridges;

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- 131           3. Utilities;
- 132           4. Surface water flow control or surface water conveyance systems;
- 133           5. Public park structures; and
- 134           6. Flood hazard mitigation projects, such as, but not limited to construction, repair
- 135 or replacement of flood protection facilities or for building elevations or relocations;

136           D. Subdivisions, short subdivisions, urban planned developments and binding site

137 plans shall meet the following requirements:

138           1. New building lots shall include five thousand square feet or more of buildable

139 land outside the zero-rise floodway;

140           2. All utilities and facilities such as sewer, gas, electrical and water systems are

141 consistent with subsections E., F. and I. of this section;

142           3. A civil engineer shall prepare detailed base flood elevations in accordance with

143 FEMA guidelines for all new lots;

144           4. A development proposal shall provide adequate drainage in accordance with

145 the King County Surface Water Design Manual to reduce exposure to flood damage; and

146           5. The face of the recorded subdivision, short subdivision, urban planned

147 development or binding site plan shall include the following for all lots:

148           a. building setback areas restricting structures to designated buildable areas:

149           b. base flood data and sources and flood hazard notes including, but not limited

150 to, base flood elevation, required flood protection elevations, the boundaries of the

151 floodplain and the zero-rise floodway, if determined, and channel migration zone

152 boundaries, if determined; and

153           c. include the following notice:

154 "Lots and structures located within flood hazard areas may be inaccessible  
155 by emergency vehicles during flood events. Residents and property owners should take  
156 appropriate advance precautions.";

157 E. New residential structures and substantial improvements of existing residential  
158 structures shall meet the following standards:

159 1. Elevate the lowest floor, including basement, to the flood protection elevation;

160 2. Do not fully enclose portions of the structure that are below the lowest floor  
161 area;

162 3. Design and construct the areas and rooms below the lowest floor to  
163 automatically equalize hydrostatic and hydrodynamic flood forces on exterior walls by  
164 allowing for the entry and exit of floodwaters as follows:

165 a. provide a minimum of two openings on each of two opposite side walls in the  
166 direction of flow, with each of those walls having a total open area of not less than one  
167 square inch for every square foot of enclosed area subject to flooding;

168 b. design and construct the bottom of all openings so they are no higher than one  
169 foot above grade; and

170 c. screens, louvers or other coverings or devices are allowed over the opening if  
171 they allow the unrestricted entry and exit of floodwaters;

172 4. Use materials and methods that are resistant to and minimize flood damage;  
173 and

174 5. Elevate above or dry-proof all electrical, heating, ventilation, plumbing, air  
175 conditioning equipment and other utilities that service the structure, such as duct-work to  
176 the flood protection elevation;

177 F. New nonresidential structures and substantial improvements of existing  
178 nonresidential structures shall meet the following standards:

179 1. Elevate the lowest floor to the flood protection elevation;  
180 2. Dry flood-proof the structure to the flood protection elevation to meet the  
181 following standards:

182 a. the applicant shall provide certification by a civil or structural engineer that  
183 the dry flood-proofing methods are adequate to withstand the flood-depths, pressures,  
184 velocities, impacts, uplift forces and other factors associated with the base flood. After  
185 construction, the engineer shall certify that the permitted work conforms to the approved  
186 plans and specifications; and

187 b. approved building permits for dry flood-proofed nonresidential structures  
188 shall contain a statement notifying applicants that flood insurance premiums are based  
189 upon rates for structures that are one foot below the elevation to which the building is dry-  
190 floodproofed;

191 3. Nonresidential agricultural accessory buildings that do not equal or exceed a  
192 maximum assessed value of sixty-five thousand dollars may be designed and oriented to  
193 allow the free passage of floodwaters through the building in a manner affording minimum  
194 flood damage provided they meet the standards in subsection F.4. through F.6. of this  
195 section. Nonresidential agricultural accessory buildings that equal or exceed sixty-five  
196 thousand dollars may apply for an alteration exception pursuant to K.C.C. 21A.24.070.  
197 Nonresidential agricultural accessory buildings that do not meet the elevation standard in  
198 subsection F. 1. of this section or the dry flood-proofing standard in subsection F.2. of this

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199 section will be assessed at the flood insurance rate based on the risk to which the building  
200 is exposed;

201 4. Use materials and methods that are resistant to and minimize flood damage;

202 5. Design and construct the areas and rooms below the lowest floor to  
203 automatically equalize hydrostatic and hydrodynamic flood forces on exterior walls by  
204 allowing for the entry and exit of floodwaters as follows:

205 a. provide a minimum of two openings on each of two opposite side walls in the  
206 direction of flow, with each of those walls having a total open area of not less than one  
207 square inch for every square foot of enclosed area subject to flooding;

208 b. design the bottom of all openings is no higher than one foot above grade; and

209 c. screens, louvers or other coverings or devices are allowed if they do not  
210 restrict entry and exit of floodwaters; and

211 6. Dry flood proof all electrical, heating, ventilation, plumbing, air conditioning  
212 equipment and other utility and service facilities to, or elevated above, the flood protection  
213 elevation;

214 G. Anchor all new construction and substantially improved structures to prevent  
215 flotation, collapse or lateral movement of the structure. The department shall approve the  
216 method used to anchor the new construction;

217 H. Newly sited manufactured homes and substantial improvements of existing  
218 manufactured homes shall meet the following standards:

219 1. Manufactured homes shall meet all the standards in this section for residential  
220 structures and the following standards:

221 a. anchor all manufactured homes; and

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222                   b. install manufactured homes using methods and practices that minimize flood  
223 damage;

224                   2. All manufactured homes within a new mobile home park or expansion of an  
225 existing mobile home park must meet the requirements for flood hazard protection for  
226 residential structures; and

227                   3. Only manufactured homes are allowed in a new or existing mobile home park  
228 located in a flood hazard area;

229                   I. Public and private utilities shall meet the following standards:

230                   1. Dry flood-proof new and replacement utilities including, but not limited to,  
231 sewage treatment and storage facilities, to, or elevate above, the flood protection elevation;

232                   2. Locate new on-site sewage disposal systems outside the floodplain. When  
233 there is insufficient area outside the floodplain, new on-site sewage disposal systems are  
234 allowed only in the zero-rise flood fringe. Locate on-site sewage disposal systems in the  
235 zero-rise flood fringe to avoid:

236                   a. impairment to the system during flooding;

237                   b. contamination from the system during flooding;

238                   3. Design all new and replacement water supply systems to minimize or eliminate  
239 infiltration of floodwaters into the system;

240                   4. Above-ground utility transmission lines, except for electric transmission lines,  
241 are allowed only for the transport of nonhazardous substances; and

242                   5. Bury underground utility transmission lines transporting hazardous substances  
243 at a minimum depth of four feet below the maximum depth of scour for the base flood, as

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244 predicted by a civil engineer, and achieve sufficient negative buoyancy so that any potential  
245 for flotation or upward migration is eliminated;

246 J. Critical facilities are allowed within the zero-rise flood fringe only when a  
247 feasible alternative site is not available and the following standards are met:

248 1. Elevate the lowest floor to the five-hundred year floodplain elevation or three  
249 or more feet above the base flood elevation, whichever is higher;

250 2. Dry flood-proof and seal structures to ensure that hazardous substances are not  
251 displaced by or released into floodwaters; and

252 3. Elevate access routes to or above the base flood elevation from the critical  
253 facility to the nearest maintained public street or roadway;

254 K. New construction or expansion of existing farm pads is allowed only as follows:

255 1. A farm pad is allowed only if there is no other suitable holding area on the site  
256 outside the floodplain;

257 2. Construct the farm pad to the standards in an approved farm management plan  
258 prepared in accordance with K.C.C. 21A.24.051 and K.C.C. chapter 21A.30. The farm  
259 management plan shall demonstrate compliance with the following:

260 a. flood storage compensation consistent with subsection A. of this section;

261 b. siting and sizing that do not increase base flood elevations consistent with  
262 K.C.C. 21A.24.250.B.; and

263 c. siting that is located in the area least subject to risk from floodwaters; ~~((and))~~

264 L. New construction or expansion of existing livestock manure storage facilities is  
265 only allowed as follows:

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266           1. The livestock manure storage facility is only allowed if there is not a feasible  
267 alternative area on the site outside the floodplain;

268           2. Construct the livestock manure storage facility to the standards in an approved  
269 farm management plan prepared in accordance with K.C.C. 21A.24.051 and K.C.C.  
270 chapter 21A.30. The farm management plan shall demonstrate compliance with the  
271 following:

272           a. flood storage compensation consistent with subsection A. of this section;

273           b. siting and sizing that do not increase base flood elevations consistent with  
274 K.C.C. 21A.24.250.B. and 21A.24.260.D;

275           c. dry flood-proofing to the flood protection elevation; and

276           d. siting that is located in the area least subject to risk from floodwaters; and

277           M. Recreational vehicles must be on site for fewer than one hundred eighty days or  
278 be fully licensed and ready for highway use.

279           SECTION 4. Ordinance 10870, Section 472, as amended, and K.C.C.  
280 21A.24.250 are each hereby amended to read as follows:

281           The following development standards apply to development proposals and  
282 alterations on sites within the zero-rise floodway:

283           A. The development standards that apply to the zero-rise flood fringe also apply to  
284 the zero-rise floodway. The more restrictive requirements shall apply where there is a  
285 conflict;

286           B. A development proposal shall not increase the base flood elevation except as  
287 follow:

288 1. Revisions to the Flood Insurance Rate Map are approved by FEMA, in  
289 accordance with 44 CFR 70, to incorporate the increase in the base flood elevation; and

290 2. Appropriate legal documents are prepared and recorded in which all property  
291 owners affected by the increased flood elevations consent to the impacts on their property;

292 C. If post and piling construction techniques are used, the following are presumed  
293 to produce no increase in the base flood elevation and a critical areas report is not required  
294 to establish this fact:

295 1. New residential structures outside the FEMA floodway on lots in existence  
296 before November 27, 1990, that contain less than five thousand square feet of buildable  
297 land outside the zero-rise floodway if the total building footprint of all existing and  
298 proposed structures on the lot does not exceed two-thousand square feet;

299 2. Substantial improvements of existing residential structures in the zero-rise  
300 floodway, but outside the FEMA floodway, if the footprint is not increased; or

301 3. Substantial improvements of existing residential structures that meet the  
302 standards for new residential structures in K.C.C. ~~((21A.24.240.D))~~ 21A.24.240.E;

303 D. When post or piling construction techniques are not used, a critical areas report  
304 is required in accordance with K.C.C. 21A.24.110 demonstrating that the proposal will not  
305 increase the base flood elevation;

306 E. During the flood season from September 30 to May 1 the following are not  
307 allowed to be located in the zero-rise floodway;

308 1. All temporary seasonal shelters, such as tents ~~((and recreational vehicles)),~~  
309 awnings and greenhouses, except for those used for agricultural activities and domestic  
310 household use; and

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311           2. Staging or stockpiling of equipment, materials or substances that the director  
312 determines may be hazardous to the public health, safety or welfare except for those used  
313 for agricultural activities and domestic household use;

314           F. New residential structures and substantial improvements to existing residential  
315 structures or any structure accessory to a residential use shall meet the following standards:

316           1. Locate the structures outside the FEMA floodway;  
317           2. Locate the structures only on lots in existence before November 27, 1990, that  
318 contain less than five thousand square feet of buildable land outside the zero-rise floodway;  
319 and

320           3. To the maximum extent practical, locate the structures the farthest distance  
321 from the channel, unless the applicant can demonstrate that an alternative location is less  
322 subject to risk;

323           G. Public and private utilities are only allowed if:

324           1. The department determines that a feasible alternative site is not available;  
325           2. A waiver is granted by the Seattle-King County department of public health for  
326 new on-site sewage disposal facilities;

327           3. The utilities are dry flood-proofed to or elevated above the flood protection  
328 elevation;

329           4. Above-ground utility transmission lines, except for electrical transmission  
330 lines, are only allowed for the transport of nonhazardous substances; and

331           5. Underground utility transmission lines transporting hazardous substances are  
332 buried at a minimum depth of four feet below the maximum dept of scour for the base

333 flood, as predicted by a civil engineer, and achieve sufficient negative buoyancy so that any  
334 potential for flotation or upward migration is eliminated;

335 H. Critical facilities, except for those listed in subsection ~~((I))~~H. of this section are  
336 not allowed within the zero-rise floodway; and

337 I. Structures and installations that are dependent upon the zero-rise floodway are  
338 allowed in the zero-rise floodway if the development proposal is approved by all agencies  
339 with jurisdiction and meets the development standards for the ~~((zero-rise))~~ zero-rise  
340 floodway. These structures and installations may include, but are not limited to:

341 1. Dams or diversions for water supply, flood control, hydroelectric production,  
342 irrigation or fisheries enhancement;

343 2. Flood damage reduction facilities, such as levees, revetments and pumping  
344 stations;

345 3. Stream bank stabilization structures only if a feasible alternative does not exist  
346 for protecting structures, public roadways, flood protection facilities or sole access routes.  
347 Bank stabilization projects must be consistent with the Integrated Streambank Protection  
348 Guidelines (Washington State Aquatic Habitat Guidelines Program, 2002) and use  
349 bioengineering techniques to the maximum extent practical. An applicant may use  
350 alternative methods to the guidelines if the applicant demonstrates that the alternative  
351 methods provide equivalent or better structural stabilization, ecological and hydrological  
352 functions and salmonid habitat;

353 4. Surface water conveyance facilities;

354 5. Boat launches and related recreation structures;

355 6. Bridge piers and abutments; and

356 7. Approved aquatic area or wetland restoration projects including, but not limited  
357 to, fisheries enhancement projects.

358 SECTION 5. Ordinance 10870, Section 474, as amended, and K.C.C.  
359 21A.24.270 are each hereby amended to read as follows:

360 A. For all new structures or substantial improvements in a flood hazard area, the  
361 applicant shall provide a FEMA elevation certificate completed by a ~~((civil engineer or))~~  
362 land surveyor licensed by the state of Washington documenting:

- 363 1. The actual as-built elevation of the lowest floor, including basement; ~~((and))~~  
364 2. The actual as-built elevation to which the structure is dry flood-proofed, if  
365 applicable; and  
366 3. If the structure has a basement.

367 B. The applicant shall submit a FEMA elevation certificate before the issuance of a  
368 certificate of occupancy or temporary certificate of occupancy, whichever occurs first. For  
369 unoccupied structures, the applicant shall submit the FEMA elevation certificate before the  
370 issuance of the final letter of completion or temporary letter of completion, whichever  
371 occurs first.

372 C. ~~((The engineer or land surveyor shall indicate if the structure has a basement.~~  
373 ~~∅.))~~ The department shall maintain the certifications required by this section for  
374 public inspection and for certification under the National Flood Insurance Program.

375 SECTION 6. If any provision of this ordinance or its application to any person or  
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377 circumstance is held invalid, the remainder of the ordinance or the application of the  
378 provision to other persons or circumstances is not affected.

379

KING COUNTY COUNCIL  
KING COUNTY, WASHINGTON

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Dow Constantine, Chair

ATTEST:

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Anne Noris, Clerk of the Council

APPROVED this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

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Kurt Triplett, County Executive

**Attachments**      None