

## Atlas 14 Outreach – Development Scenarios (Updated 6/19/20)<sup>1</sup>

The following are written responses to the development scenarios that were part of the virtual presentation on April 29, 2020, and as have been requested by the ACEA. Should there be any discrepancies between the video recording of the presentation and these written responses, these written responses will be the official intended response. In such an event, or for any other need for clarification, please reach out to Laton Carr, P.E. ([lcarr@roundrocktexas.gov](mailto:lcarr@roundrocktexas.gov)).

Please note that the following scenarios have City of Round Rock (CoRR) responses that have been annotated for clarification in response to questions posed by the Austin Area Contractors and Engineers Association (ACEA) in a Zoom meeting with CoRR staff on June 3, 2020. The scenarios are intended to be illustrative to help clarify impacts that the adoption of the Atlas 14 rainfall data would have on development scenarios. The scenarios, however, cannot be all encompassing of all situations; the number of varying parameters from development to development are infinite. That said, staff is committed to using common sense and dealing fairly when applying the Atlas 14 rainfall data in the spirit of its intent to assure public safety.<sup>1</sup>

### **Scenario 1: Application of Standards to Platted Lots with Future Site Development Intentions**

The plat has been recorded for my commercial lots. We had to do a flood study with CoRR current<sup>1</sup> rain data according to the current version of the Drainage Design and Construction Standards (DACS) to map the floodplain when we platted recently. We are marketing the lots for commercial developments.

With this ordinance,

- Will the buyer have to re-study the floodplain under Atlas 14 rainfall data?

**CoRR Response:** The buyer, or future developer, of the site will not be required to re-study the floodplain if the buyer is not re-platting the lot(s).

- Will the buyer have to detain Atlas 14 developed flows or are they grandfathered into the pre-ordinance standards of the CoRR current<sup>1</sup> rainfall data?

**CoRR Response:** While the site developer would not be required with a Site Development Permit (SDP) to re-visit the floodplain delineation, the buyer is not exempt from detaining Atlas 14 developed flows once the ordinance goes into effect. There would be no grandfathering (vesting) of runoff calculations associated with the SDP in this scenario.

- If they have to detain the Atlas 14 developed flows, is it the difference of the Atlas 14 undeveloped flows and the Atlas 14 developed flows?

**CoRR Response:** Detention after the ordinance would be a move to all-Atlas-14 rainfall data. The required detention volume would be the area between the hydrographs of the existing and developed runoff flows as calculated strictly with Atlas 14 rainfall intensities.

### **Scenario 2: Vesting of General SIP's or SDP's**

We had a pre-submittal meeting a few weeks ago. Are we grandfathered into the CoRR<sup>1</sup> current rainfall data per pre-ordinance drainage standards? Or will we have to detain Atlas 14 rainfall data runoff under the new ordinance?

**CoRR Response:** A pre-submittal meeting would not vest a development to use pre-ordinance CoRR<sup>1</sup> rainfall data. If a complete flood study, a complete Subdivision Improvement Permit (SIP) application, or

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a complete Site Development Permit (SDP) application with a full design submittal is under review by Planning and Development Services (PDS) staff at the time the ordinance is adopted, then CoRR<sup>1</sup> current rainfall data may continue to be used with the applicable caveats. Caveats would be that if Atlas 14 rainfall data is not used in floodplain or in detention calculations, the engineer will be required to acknowledge Atlas 14 is the best available rainfall data in the region currently and in line with Texas Board of Professional Engineer's rules\* the report will need to clarify why the engineer in his or her professional judgement has elected not to use the data in his or her calculations.

\*§137.55 ENGINEERS SHALL PROTECT THE PUBLIC (a) Engineers shall be entrusted to protect the health, safety, property, and welfare of the public in the practice of their profession. The public as used in this section and other rules is defined as any individual(s), client(s), business or public entities, or any member of the general population whose normal course of life might reasonably include an interaction of any sort with the engineering work of the license holder.

### **Scenario 3: Vesting of Multi-Phase SIP's**

We have someone interested in 110 acres who wants to develop a single-family subdivision. If they set up a pre-submittal meeting before the ordinance, will they be grandfathered into the current pre-ordinance standards?

**CoRR Response:** There would be no grandfathering (vesting) into pre-ordinance standards by a pre-submittal meeting date. Vesting would only be by the submittal of a complete Site Development or Subdivision Improvement Permit. Vesting for flood study standards would also be possible through final plat approvals by the Planning and Zoning Commission (P&Z).

### **Scenario 4: RSMP Participation**

We had a pre-submittal meeting regarding our site, and the meeting minutes say that we can request participation in the Regional Stormwater Management Program (RSMP), but it would require a conveyance study where we will need to demonstrate that we don't cause any adverse impacts downstream by not detaining onsite. We plan on getting started on that analysis as soon as we get a contract with the owner in place. There are currently no apparent flooding issues downstream, but if the ordinance gets adopted before we get an approval on our RSMP conveyance study and the Atlas 14 existing condition shows downstream issues, how will that be treated?

**CoRR Response:** The engineer is not absolved of responsibilities to mitigate flows that would cause an identifiable adverse impact to other properties. If a complete conveyance study associated with a Regional Stormwater Management Program (RSMP) is not, or has not been, under review at the time that the ordinance is adopted, then use of Atlas 14 rainfall data will be required to calculate runoff flows.

In the event that a complete conveyance study is submitted for review before the ordinance is adopted, the engineer is required to acknowledge Atlas 14 is the best available rainfall data in the region currently and, in line with Texas Board of Professional Engineer's rules\*, the report will need to clarify why the engineer in his or her professional judgement has elected not to use the data in his or her calculations.

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### **Scenario 5: House Remodels**

My house is 2' above the current ultimate (future) 1% annual chance floodplain. Once this ordinance goes into effect will I be able to get a permit to remodel my house? Or will I be determined to be in the floodplain if I'm not above the current effective Federal Emergency Management Agency (FEMA)<sup>1</sup> 0.2% annual chance (500-yr) floodplain like in Austin?

**CoRR Response:** The effective FEMA 0.2% will not be the assumed regulatory 1% annual chance floodplain for developed neighborhoods that have been built out. Like anything, that could change one day, but it is not part of this ordinance effort and is not currently being considered by staff. This ordinance will be for new development and will not change the current effective FEMA Flood Insurance Rate Map (FIRM). Note that the FIRM could be changed by FEMA at any time in the future, but that change would not be in any way coordinated with the City's current adoption of the Atlas 14 rainfall data.

### **Scenario 6: New House Construction**

We are under construction on our Phase 2 Subdivision Improvement Permit (SIP) of our project. We've recorded the plat on Phase 1 and have pulled about half the building permits. The Phase 2 plat is not yet recorded. There are two more phases under design, one of which is an SIP currently under review by Planning and Development Services (PDS). How does this ordinance affect:

- The required finished floor elevation of the rest of the Phase 1 buildings?

**CoRR Response:** The ordinance will not affect anything on the plat of development that is already built, i.e. the developer will not be required to go back and re-visit the flood study, or readjust flood limits, drainage easements, minimum finished floor elevations (MFFE), etc. for phase 1. That said, the professional designer<sup>1</sup> is not absolved of his or her responsibility to his or her professional board of getting the finished floor elevation (FFE) of a building to at least the MFFE or to a safe alternative, just as is required currently<sup>1</sup>.

Typically, the Building Official will review a building permit to make sure the MFFE is met or exceeded by the professional designer's proposed FFE. In the rare case where the Building Official becomes aware of an issue where a floodplain has changed over time and encroaches upon previously platted MFFEs, he may bring the issue to the professional designer's attention prior to or during his review of the building permit. Upon the Building Official's advisement of the new or updated information regarding known flood limits, it will be left to the design professional's judgement as to how to treat that new information. When the new information is under consideration by the professional designer, and where it is not possible or reasonable to put the FFE 2' above the ultimate (future) 1% annual chance floodplain elevation on a lot with MFFEs approved by P&Z prior to the adoption of Atlas 14 rainfall data, City staff will work with

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the professional designer as needed to help him or her with a safe and acceptable alternative. Ultimately, it is up to the professional designer's judgement as to how to provide a safe FFE for his or her client. (This is the current policy and is more apt to occur in an older subdivision, but is applicable in general.)<sup>1</sup>

- The required finished floor elevation (FFE) of the Phase 2 buildings?

**CoRR Response:** The ordinance will not affect anything that is approved/permited and under construction, such as the final plat, Subdivision Improvement Permit (SIP), or a Building Permit.

- The required finished floor elevations of the rest of the phases?

**CoRR Response:** The FFEs for the rest of the phases 3 and 4 will depend on the status of the final plats. If a final plat has been approved by the Planning and Zoning Commission (P&Z), then the MFFE's will have been established by a P&Z-approved and unexpired final plat.

- The unrecorded plat ultimate (future) 1% annual chance floodplain limits and Minimum Finished Floor Elevations (MFFE's)?

**CoRR Response:** The floodplain limits and MFFE's for a final plat will depend on the status of the final plat. If the final plat is approved by P&Z, then the floodplain limits and MFFE's will be set, with the caveat as stated previously of the professional designer's<sup>1</sup> responsibility to propose a safe FFE<sup>1</sup> at the time of building permit. However, it is important to note that the flood study will be required to be revisited for any final plat that has not already been approved by P&Z. For a final plat not yet approved by P&Z the flood limits, and the easements that contain them, are still subject to the new standard of the adopted ordinance specifying Atlas 14 rainfall data. An approval of the preliminary plat will not suffice to vest the final plat area with respect to the Atlas 14 ordinance.

### **Scenario 7: Existing Regional Pond**

We have a Planned Unit Development (PUD) for which we built a regional detention facility for the contributing PUD lots. About 60% of the contributing PUD area is developed. After this ordinance is passed, how will the undeveloped sites in the contributing PUD area be treated? Will they be grandfathered and allowed to pass flows as long as site impervious covers don't exceed pond As-Built design? Will we be required to increase the volume of our regional pond? Or will we be required to provide some amount of onsite detention?

**CoRR Response:** We could not look the other way if there is not capacity in the existing regional detention facility. **However,**

- **If it can be demonstrated** that there is no adverse impact or safety issues associated with passing the additional Atlas 14 flows that exceed the existing pond capacity, we feel that it would not be necessary to detain the overage of Atlas 14 flows in the basin, i.e. additional onsite or regional detention, if that is the opinion of the engineer-of-record.
- **If it cannot be demonstrated** that Atlas 14 flows could be passed safely through the pond and downstream channel(s) without associated adverse impacts occurring, only then would the excess Atlas 14 flows need to be detained within the contributing basin of the regional pond.

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### **Scenario 8: Pre-Ordinance Infrastructure Constructed Downstream<sup>1</sup>**

We built the two lower-basin phases of our development last year. We plan to come in with the other two upstream phases for permitting later this year and construct them as soon as they are permitted. The lower-basin drainage infrastructure was sized for fully-developed, undetained contributing flows in accordance with the current Drainage Design and Construction Standards (DACS) standards (2.2.1 Design Assumptions for Storm Flow Analysis). How will you treat upstream development after the adoption of Atlas 14 rainfall data?

**CoRR Response:** Drainage calculations for the two upper-basin phases will be required to use the Atlas 14 rainfall data in this scenario. The previously constructed drainage system downstream would suffice if conveyance of the increased upstream flows can be shown to be conveyed in accordance with the drainage design criteria, e.g. keeping the 4% annual chance (25-yr) flows under the gutter flow line, and the 1% annual chance (100-yr) flows within right-of-way and drainage easements. Additionally, if the engineer can clearly demonstrate no identifiable adverse impacts to properties downstream, or otherwise offsite of the subject development, then no additional detention would necessarily be required. If conveyance of developed flows could not be demonstrated to be compliant with the DACS through existing infrastructure or channels, then at least some amount of detention would be required within the upper-basin phases.

### **Scenario 9: Pre-Ordinance Infrastructure Constructed Upstream<sup>1</sup>**

We will turn in a site plan after the adoption of the ordinance, and our site is on a lot that has contributing runoff from an area that has a commercial development on it with parking, drive aisles, a building, and two detention ponds. How do we model the contributing flows? Contributing runoff flows calculated with Atlas 14 rainfall data are expected to exceed the earlier design capacities of the ponds and conveyance systems that were all built years ago.

**CoRR Response:** Flows from upstream contributing areas will need to be modeled as fully-developed and undetained with the Atlas 14 rainfall criteria. If the upstream area is already developed, the As-Built developed conditions will need to be modeled to determine the expected flows and effectiveness of existing detention ponds. Where ponds and drainage infrastructure already exist, modeling those built features with the Atlas 14 and accounting for the resulting exceedances will be necessary. Assumptions of design parameters such as pond and channel freeboard, for example, will be required to be factored into the upstream modelling for the same reasons of factor of safety, etc. as when the pond or channel was designed. Effects of exceedances of capacity in above- and below-ground stormwater conveyance will also be required to be factored into design considerations. In some instances, these may be considerable, while in others these may be negligible.

According to the DACS Design Criteria Manual (DCM) (2.2.1 Design Assumptions for Storm Flow Analysis)

*...When analyzing an area for channel design purposes, urbanization of the full watershed without detention ponds shall be assumed [unless the Engineer desires to incorporate the flow reduction benefits of existing upstream detention ponds]... In the event the Engineer desires to incorporate the flow reduction benefits of existing upstream detention ponds, [certain] field investigations and hydrologic analysis will be required: (Please note that under no circumstances will the previously approved construction plans of the upstream ponds suffice as an adequate analysis. While the responsibility of the individual site or subdivision plans rests with the*

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*Engineer of record, any subsequent engineering analysis must assure that all the incorporated ponds work collectively.)....*

Staff commits to being reasonable and fair in the review of these situations as well as memorializing clarifications in guiding documents such as pre-development meeting minutes, director memos, etc. as needed. The intent is to meet the spirit of the city code, which is to protect life and property through engineering design of new development.

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<sup>1</sup>Updates on June 19, 2020 to annotated scenarios that were previously issued on May 28, 2020.