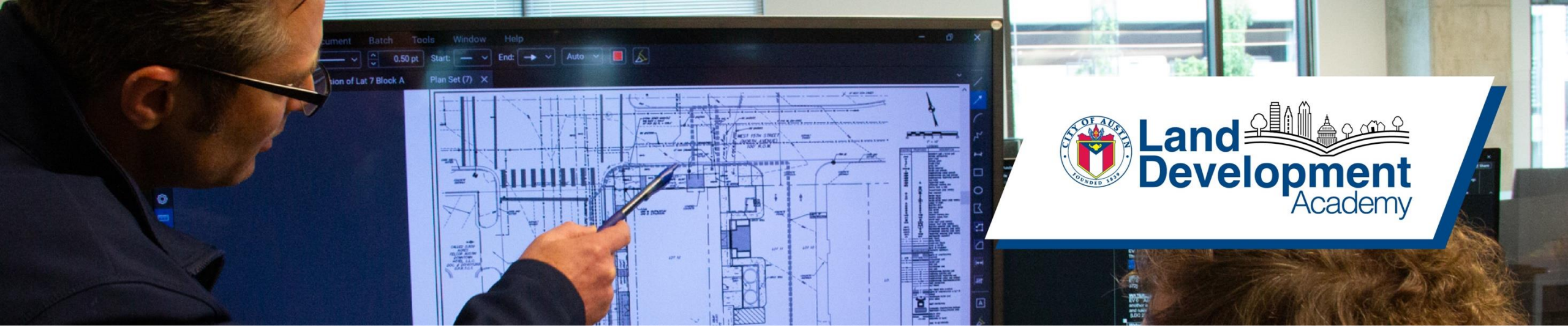

Environmental Review Permitting

Parts 1 & 2

Mike McDougal

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Austin Development Services

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ENGAGEMENT FORMAT

- Presentation with multiple breaks for Q&A
- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

PRELIMINARY INFORMATION

- Training a new EV Reviewer requires months.
- We'll cover the same material in about 4 hours. Warp speed!
- This information is a very condensed summary of EV Review.
- The specific regulations are much more detailed.
- I'm happy to meet one-on-one to discuss any of these topics.

PRELIMINARY INFORMATION

- Two hours today and two hours tomorrow
- Break after an hour
- Time for questions at the end of both days, and several times during the presentation

EIGHT TOPICS TO COVER

1. Watershed Classifications & Regulations
2. Impervious Cover
3. Construction On Slopes Limits
4. Grading Limits & Grading Administrative Variances

EIGHT TOPICS TO COVER

5. Critical Water Quality Zone Regulations

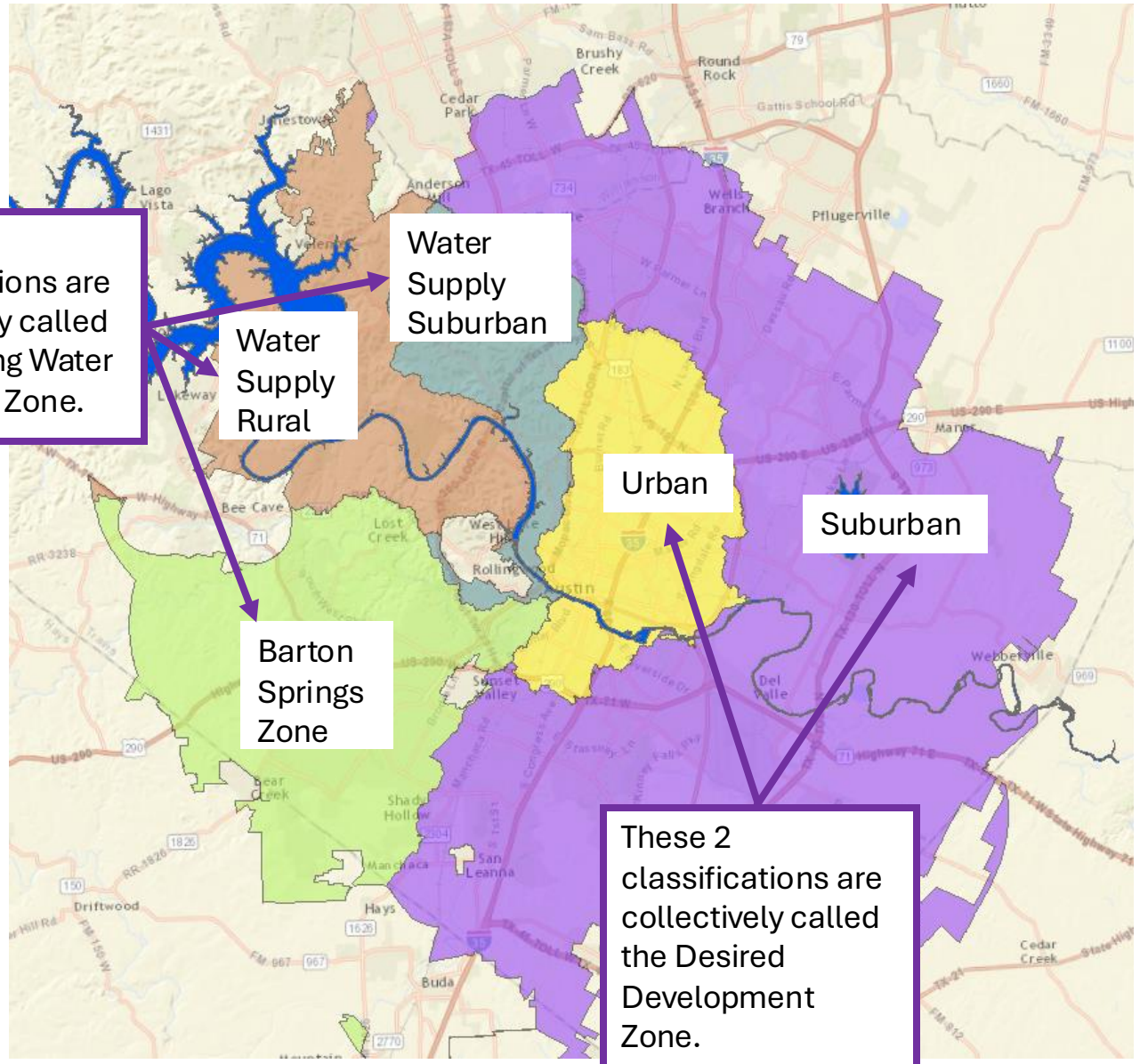
6. Water Quality Transition Zone Regulations

7. Erosion / Sedimentation Control Requirements

8. Landscape Requirements & Compatibility Requirements

1.
Watershed Classifications & Regulations

FIVE WATERSHED CLASSIFICATIONS



LAND DEVELOPMENT CODE 25-8 REGULATIONS VARY BY WATERSHED CLASSIFICATION

- Impervious cover calculations and impervious cover limits
- Grading limits
- Construction on slopes
- Administrative and Land Use Commission variances
- Creek setbacks (CWQZ and WQTZ).

2.

Impervious Cover

WHAT IS CONSIDERED IMPERVIOUS COVER

Impervious cover is defined as the total area of any surface that prevents the infiltration of water into the ground, such as roads, parking areas, concrete, and buildings.
[LDC 25-8-1(11)]

WHAT IS CONSIDERED IMPERVIOUS COVER

Unpaved roads, driveways, and parking areas compacted by vehicle use shall be considered impervious cover. [ECM 1.8.1.B]

Dirt roads are considered impervious cover per the ECM.

WHY LIMIT IMPERVIOUS COVER?

IC is a source of pollution:

- Fertilizers
- Oils
- Pesticides, etc.

WHY LIMIT IMPERVIOUS COVER?

Limiting IC helps to preserve existing vegetation & to:

- Maintain healthy ecosystems
- Promote biodiversity
- Promote water quality

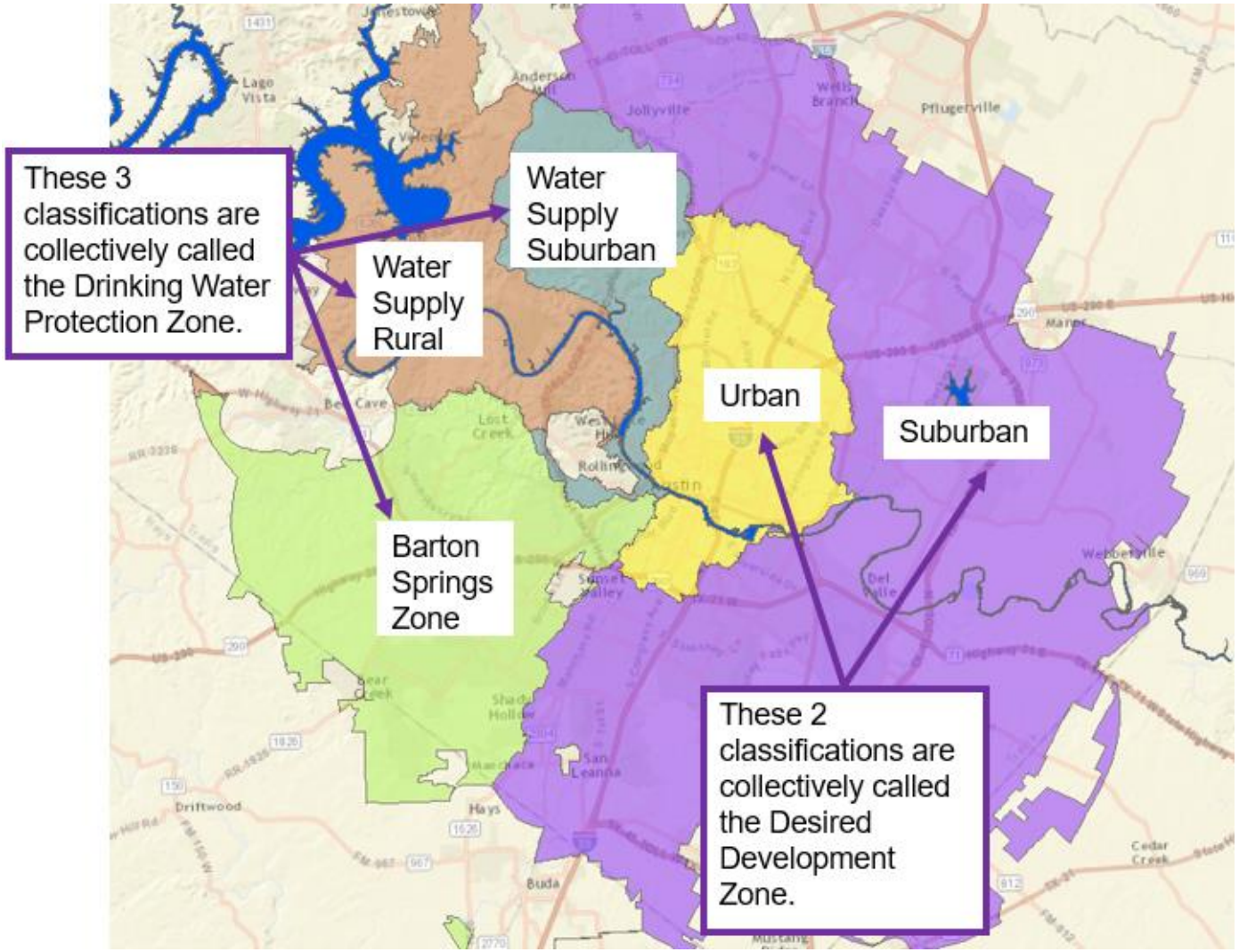
LDC HAS ZONING IC AND WATERSHED IC LIMITS

LDC 25-2 describes zoning impervious cover limits.

This is *not necessarily* the same impervious cover limit described in LDC 25-8 (watershed IC limits).

The following information pertains to the watershed IC limits per LDC 25-8.

WATERSHED IC CALCULATIONS VARY BY WATERSHED CLASSIFICATION



URBAN WATERSHED CLASSIFICATION
IC PER LDC 25-8-372

- In the urban full purpose watershed classification, there is no watershed IC limit.
- The watershed IC limit points to the zoning IC limit.
- The Site Plan Reviewer applies the zoning IC limit.

URBAN WATERSHED CLASSIFICATION
IC PER LDC 25-8-372

- Consequently, EV Review does not regulate IC in the full purpose urban watershed classification. These projects do not need watershed IC calculations (i.e., no Q tables).

SUBURBAN WATERSHED CLASSIFICATION
IC PER LDC 25-8-392

- The suburban watershed classification IC limit is based on Gross Site Area.
- The Gross Site Area = Lot Size.
- Use ECM Appendix Q2 table for *suburban watersheds*.

ECM APPENDIX Q2 TABLE FOR SUBURBAN WATERSHEDS

APPENDIX Q-2

IMPERVIOUS COVER

SUBURBAN WATERSHEDS

NOTE: Q-1 TABLES ARE NOT REQUIRED FOR SUBURBAN WATERSHEDS

1	IMPERVIOUS COVER ALLOWED AT	50	% X *(GROSS SITE AREA)* 10.00	= 5.00	ACRES

PROPOSED IMPERVIOUS COVER

2	EXISTING IMPERVIOUS COVER PROPOSED TO REMAIN	= 0	ACRES
3	PROPOSED NEW IMPERVIOUS COVER	= 1.23	ACRES
4	**TOTAL PROPOSED IMPERVIOUS COVER**	= 1.23	**ACRES**

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

5	TOTAL ACREAGE WITH SLOPES 15-25% = _____	ACRES X 10%	= _____	ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		**IMPERVIOUS COVER**		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF SLOPE CATEGORY	ACRES
6	0-15%	_____	_____	_____	_____
7	15-25%	_____	_____	_____	_____
8	25-35%	_____	_____	_____	_____
9	OVER 35%	_____	_____	_____	_____
10	GROSS SITE AREA	_____			

Assume:
50% IC limit
Lot Size = 10 acres
IC Limit is 50% x 10 acres = 5 acres

ECM APPENDIX Q2 TABLE FOR SUBURBAN WATERSHEDS

APPENDIX Q-2

IMPERVIOUS COVER

SUBURBAN WATERSHEDS

NOTE: Q-1 TABLES ARE NOT REQUIRED FOR SUBURBAN WATERSHEDS

1	IMPERVIOUS COVER ALLOWED AT	50	% X *(GROSS SITE AREA)* 10.00	= 5.00	ACRES

PROPOSED IMPERVIOUS COVER

2	EXISTING IMPERVIOUS COVER PROPOSED TO REMAIN	= 0	ACRES
3	PROPOSED NEW IMPERVIOUS COVER	= 1.23	ACRES
4	**TOTAL PROPOSED IMPERVIOUS COVER**	= 1.23	**ACRES**

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

5	TOTAL ACREAGE WITH SLOPES 15-25% =	_____	ACRES X 10% =	_____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

			IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPES				
	SLOPE CATEGORIES	ACRES	ACRES	% OF SLOPE CATEGORY	ACRES
6	0-15%	_____	_____	_____	_____
7	15-25%	_____	_____	_____	_____
8	25-35%	_____	_____	_____	_____
9	OVER 35%	_____	_____	_____	_____
10	GROSS SITE AREA	_____			

Existing IC to remain = 0 acres

ECM APPENDIX Q2 TABLE FOR SUBURBAN WATERSHEDS

APPENDIX Q-2

IMPERVIOUS COVER

SUBURBAN WATERSHEDS

NOTE: Q-1 TABLES ARE NOT REQUIRED FOR SUBURBAN WATERSHEDS

1	IMPERVIOUS COVER ALLOWED AT	50	% X *(GROSS SITE AREA)* 10.00	= 5.00	ACRES

PROPOSED IMPERVIOUS COVER

2	EXISTING IMPERVIOUS COVER PROPOSED TO REMAIN	= 0	ACRES
3	PROPOSED NEW IMPERVIOUS COVER	= 1.23	ACRES
4	**TOTAL PROPOSED IMPERVIOUS COVER**	= 1.23	**ACRES**

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

5	TOTAL ACREAGE WITH SLOPES 15-25% = _____	ACRES X 10%	= _____	ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF SLOPE CATEGORY	ACRES
6	0-15%	_____	_____	_____	_____
7	15-25%	_____	_____	_____	_____
8	25-35%	_____	_____	_____	_____
9	OVER 35%	_____	_____	_____	_____
10	GROSS SITE AREA	_____			

Proposed IC = 1.23 acres

ECM APPENDIX Q2 TABLE FOR SUBURBAN WATERSHEDS

APPENDIX Q-2

IMPERVIOUS COVER

SUBURBAN WATERSHEDS

NOTE: Q-1 TABLES ARE NOT REQUIRED FOR SUBURBAN WATERSHEDS

1	IMPERVIOUS COVER ALLOWED AT	50	% X *(GROSS SITE AREA)* 10.00	= 5.00	ACRES

PROPOSED IMPERVIOUS COVER

2	EXISTING IMPERVIOUS COVER PROPOSED TO REMAIN	= 0	ACRES
3	PROPOSED NEW IMPERVIOUS COVER	= 1.23	ACRES
4	**TOTAL PROPOSED IMPERVIOUS COVER**	= 1.23	ACRES

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

5	TOTAL ACREAGE WITH SLOPES 15-25% =	_____	ACRES X 10%	= _____	ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF SLOPE CATEGORY	ACRES
6	0-15%	_____	_____	_____	_____
7	15-25%	_____	_____	_____	_____
8	25-35%	_____	_____	_____	_____
9	OVER 35%	_____	_____	_____	_____
10	GROSS SITE AREA	_____			

TOTAL Proposed IC =
0 acres + 1.23 acres

ECM APPENDIX Q2 TABLE FOR SUBURBAN WATERSHEDS

APPENDIX Q-2

IMPERVIOUS COVER

SUBURBAN WATERSHEDS

NOTE: Q-1 TABLES ARE NOT REQUIRED FOR SUBURBAN WATERSHEDS

1	IMPERVIOUS COVER ALLOWED AT	50	% X *(GROSS SITE AREA)* 10.00	= 5.00	ACRES

PROPOSED IMPERVIOUS COVER

2	EXISTING IMPERVIOUS COVER PROPOSED TO REMAIN	= 0	ACRES
3	PROPOSED NEW IMPERVIOUS COVER	= 1.23	ACRES
4	**TOTAL PROPOSED IMPERVIOUS COVER**	= 1.23	ACRES

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

5	TOTAL ACREAGE WITH SLOPES 15-25% = _____	ACRES X 10%	= _____	ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF SLOPE CATEGORY	ACRES
6	0-15%	_____	_____	_____	_____
7	15-25%	_____	_____	_____	_____
8	25-35%	_____	_____	_____	_____
9	OVER 35%	_____	_____	_____	_____
10	GROSS SITE AREA	_____			

TOTAL Proposed IC = 1.23 acres
1.23 acres <= 5 acres
Great!

ECM APPENDIX Q2 TABLE FOR SUBURBAN WATERSHEDS

APPENDIX Q-2

IMPERVIOUS COVER

SUBURBAN WATERSHEDS

NOTE: Q-1 TABLES ARE NOT REQUIRED FOR SUBURBAN WATERSHEDS

1	IMPERVIOUS COVER ALLOWED AT	50	% X *(GROSS SITE AREA)* 10.00	= 5.00	ACRES

PROPOSED IMPERVIOUS COVER

2	EXISTING IMPERVIOUS COVER PROPOSED TO REMAIN	= 0	ACRES
3	PROPOSED NEW IMPERVIOUS COVER	= 1.23	ACRES
4	**TOTAL PROPOSED IMPERVIOUS COVER**	= 1.23	**ACRES**

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

5	TOTAL ACREAGE WITH SLOPES 15-25% = _____	ACRES X 10%	= _____	ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF SLOPE CATEGORY	ACRES
6	0-15%	_____	_____	_____	_____
7	15-25%	_____	_____	_____	_____
8	25-35%	_____	_____	_____	_____
9	OVER 35%	_____	_____	_____	_____
10	GROSS SITE AREA	_____			

This section is very similar to the Q2 table for the DWPZ. We'll get to that in a minute.

IMPERVIOUS COVER CALCULATIONS SO FAR

- We've discussed the urban and suburban watershed classifications (collectively called the Desired Development Zone or DDZ).

- No Q tables are needed in the urban watershed classification; and

- A Suburban ECM Appendix Q2 table is needed in the suburban watershed classification.

Q&A Break

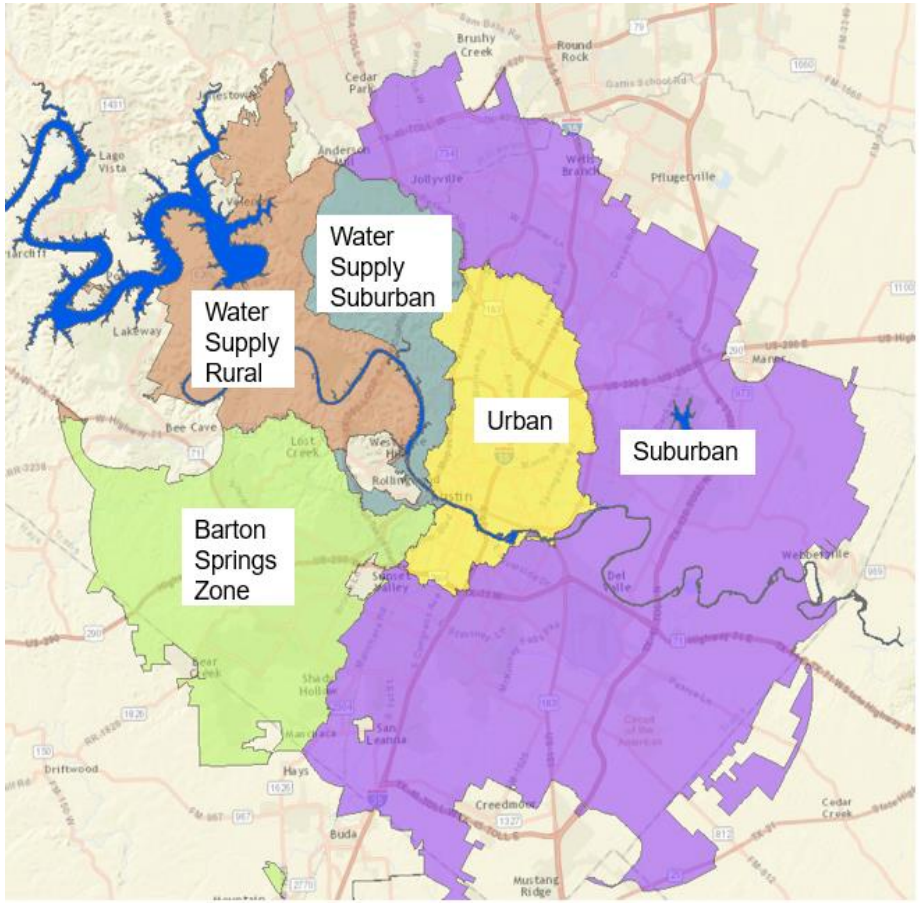
- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

IMPERVIOUS COVER CALCULATIONS REMAINING

This leaves the 3 other watershed classifications:

(1) Water Supply Suburban
(2) Water Supply Rural
(3) Barton Springs Zone

Collectively called the Drinking Water Protection Zone (DWPZ).



IC CALCULATIONS IN THE DWPZ

- In the DWPZ, the IC is calculated using Net Site Area rather than Gross Site Area.

- The Net Site Area is calculated using the ECM Appendix Q1 table.

THE ECM APPENDIX Q1 TABLE

The Q1 table used for calculating net site; the table has some deductions and some adjustments for slopes over 15%.

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
2	CRITICAL WATER QUALITY ZONE (CWQZ)		= 1.00	ACRES
3	WATER QUALITY TRANSITION ZONE (WQTZ)		= 15.00	ACRES
4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
	UPLAND AREA (GROSS SITE AREA MINUS			
6	**DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
8	AREA OF UPLANDS WITH SLOPES 15-25%	= 1.00 X 40%	= 0.40	ACRES
9	AREA OF UPLANDS WITH SLOPES 25-35%	= 1.00 X 20%	= 0.20	ACRES
10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

Lot Size

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
2	CRITICAL WATER QUALITY ZONE (CWQZ)		= 1.00	ACRES
3	WATER QUALITY TRANSITION ZONE (WQTZ)		= 15.00	ACRES
4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
	UPLAND AREA (GROSS SITE AREA MINUS			
6	**DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
8	AREA OF UPLANDS WITH SLOPES 15-25%	= 1.00 X 40%	= 0.40	ACRES
9	AREA OF UPLANDS WITH SLOPES 25-35%	= 1.00 X 20%	= 0.20	ACRES
10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

Area of CWQZ on the lot

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
2	CRITICAL WATER QUALITY ZONE (CWQZ)		= 1.00	ACRES
3	WATER QUALITY TRANSITION ZONE (WQTZ)		= 15.00	ACRES
4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
	UPLAND AREA (GROSS SITE AREA MINUS			
6	**DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
8	AREA OF UPLANDS WITH SLOPES 15-25%	= 1.00 X 40%	= 0.40	ACRES
9	AREA OF UPLANDS WITH SLOPES 25-35%	= 1.00 X 20%	= 0.20	ACRES
10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

Area of WQTZ on the lot

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
2	CRITICAL WATER QUALITY ZONE (CWQZ)		= 1.00	ACRES
3	WATER QUALITY TRANSITION ZONE (WQTZ)		= 15.00	ACRES
4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
	UPLAND AREA (GROSS SITE AREA MINUS			
6	**DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
8	AREA OF UPLANDS WITH SLOPES 15-25%	= 1.00 X 40%	= 0.40	ACRES
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10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

WW Irrigation Area on the lot

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

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1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
2	CRITICAL WATER QUALITY ZONE (CWQZ)		= 1.00	ACRES
3	WATER QUALITY TRANSITION ZONE (WQTZ)		= 15.00	ACRES
4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
	UPLAND AREA (GROSS SITE AREA MINUS			
6	**DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
8	AREA OF UPLANDS WITH SLOPES 15-25%	= 1.00 X 40%	= 0.40	ACRES
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10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

Line 2 + Line 3 + Line 4

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
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4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
6	**UPLAND AREA (GROSS SITE AREA MINUS DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
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9	AREA OF UPLANDS WITH SLOPES 25-35%	= 1.00 X 20%	= 0.20	ACRES
10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

Line 1 – Line 5

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
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4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
6	**UPLAND AREA (GROSS SITE AREA MINUS DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
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9	AREA OF UPLANDS WITH SLOPES 25-35%	= 1.00 X 20%	= 0.20	ACRES
10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

Area of slopes <=15%

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
2	CRITICAL WATER QUALITY ZONE (CWQZ)		= 1.00	ACRES
3	WATER QUALITY TRANSITION ZONE (WQTZ)		= 15.00	ACRES
4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
6	**UPLAND AREA (GROSS SITE AREA MINUS DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
8	AREA OF UPLANDS WITH SLOPES 15-25%	= 1.00 X 40%	= 0.40	ACRES
9	AREA OF UPLANDS WITH SLOPES 25-35%	= 1.00 X 20%	= 0.20	ACRES
10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

Area of slopes 15 to 25% x 40%

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
2	CRITICAL WATER QUALITY ZONE (CWQZ)		= 1.00	ACRES
3	WATER QUALITY TRANSITION ZONE (WQTZ)		= 15.00	ACRES
4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
6	**UPLAND AREA (GROSS SITE AREA MINUS DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
8	AREA OF UPLANDS WITH SLOPES 15-25%	= 1.00 X 40%	= 0.40	ACRES
9	AREA OF UPLANDS WITH SLOPES 25-35%	= 1.00 X 20%	= 0.20	ACRES
10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

Area of slopes 25 to 35% x 20%

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
2	CRITICAL WATER QUALITY ZONE (CWQZ)		= 1.00	ACRES
3	WATER QUALITY TRANSITION ZONE (WQTZ)		= 15.00	ACRES
4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
6	**UPLAND AREA (GROSS SITE AREA MINUS DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
8	AREA OF UPLANDS WITH SLOPES 15-25%	= 1.00 X 40%	= 0.40	ACRES
9	AREA OF UPLANDS WITH SLOPES 25-35%	= 1.00 X 20%	= 0.20	ACRES
10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

Area of slopes >35% x 0%

ECM APPENDIX Q1 TABLE - NET SITE AREA

APPENDIX Q-1

NET SITE AREA

NOTE: NET SITE AREA IS ONLY APPLICABLE TO WATERSHEDS CLASSIFIED AS WATER SUPPLY SUBURBAN / WATER SUPPLY RURAL/ BARTON SPRINGS ZONE

1	**GROSS SITE AREA**		= 23.50	**ACRES**
	SITE DEDUCTIONS			
2	CRITICAL WATER QUALITY ZONE (CWQZ)		= 1.00	ACRES
3	WATER QUALITY TRANSITION ZONE (WQTZ)		= 15.00	ACRES
4	WASTEWATER IRRIGATION AREAS		= 0.00	ACRES
5	**DEDUCTION SUBTOTAL**		= 16.00	**ACRES**
6	**UPLAND AREA (GROSS SITE AREA MINUS DEDUCTION SUBTOTAL)**		= 7.50	**ACRES**
	NET SITE AREA CALCULATIONS			
7	AREA OF UPLANDS WITH SLOPES 0-15%	= 5.00 X 100%	= 5.00	ACRES
8	AREA OF UPLANDS WITH SLOPES 15-25%	= 1.00 X 40%	= 0.40	ACRES
9	AREA OF UPLANDS WITH SLOPES 25-35%	= 1.00 X 20%	= 0.20	ACRES
10	AREA OF UPLANDS WITH SLOPES >35%	= 0.50 X 0%	= 0.00	ACRES
11		**NET SITE AREA**	= 5.60	**ACRES**

This number goes into **line 3** of the DWPZ Q2 table

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)				
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)			= _____	ACRES
	ALLOWABLE IMPERVIOUS COVER				
2	IMPERVIOUS COVER ALLOWED AT	_____% X	*(NON-FP WQTZ)*	= _____	ACRES
3	IMPERVIOUS COVER ALLOWED AT	_____% X	*(NET SITE AREA)*	= _____	ACRES
4			**TOTAL ALLOWED IMPERVIOUS COVER**	= _____	**ACRES**
	PROPOSED IMPERVIOUS COVER				
5	IMPERVIOUS COVER IN NON-FP WQTZ				
	5a	EXISTING PROPOSED TO REMAIN		= _____	ACRES
	5b	PROPOSED NEW		= _____	ACRES
	5c			**SUBTOTAL** = _____	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE				
	6a	EXISTING PROPOSED TO REMAIN		= _____	ACRES
	6b	PROPOSED NEW		= _____	ACRES
	6c			SUBTOTAL = _____	ACRES
7			**TOTAL PROPOSED IMPERVIOUS COVER**	= _____	**ACRES**

5.60

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER						
2	IMPERVIOUS COVER ALLOWED AT	10	% X	15.00 *(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN				=	1.00	ACRES
	5b PROPOSED NEW				=	0.00	ACRES
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN				=	0.00	ACRES
	6b PROPOSED NEW				=	1.40	ACRES
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER			15.00			
2	IMPERVIOUS COVER ALLOWED AT	10	% X	*(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN				=	1.00	ACRES
	5b PROPOSED NEW				=	0.00	ACRES
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN				=	0.00	ACRES
	6b PROPOSED NEW				=	1.40	ACRES
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER						
2	IMPERVIOUS COVER ALLOWED AT	10	% X	15.00 *(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN				=	1.00	ACRES
	5b PROPOSED NEW				=	0.00	ACRES
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN				=	0.00	ACRES
	6b PROPOSED NEW				=	1.40	ACRES
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER						
2	IMPERVIOUS COVER ALLOWED AT	10	% X	15.00 *(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN				=	1.00	ACRES
	5b PROPOSED NEW				=	0.00	ACRES
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN				=	0.00	ACRES
	6b PROPOSED NEW				=	1.40	ACRES
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER			15.00			
2	IMPERVIOUS COVER ALLOWED AT	10	% X	*(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN			1.00 ACRES			
	5b PROPOSED NEW			0.00 ACRES			
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN			0.00 ACRES			
	6b PROPOSED NEW			1.40 ACRES			
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER						
2	IMPERVIOUS COVER ALLOWED AT	10	% X	15.00 *(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN			1.00 ACRES			
	5b PROPOSED NEW			0.00 ACRES			
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN			0.00 ACRES			
	6b PROPOSED NEW			1.40 ACRES			
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER						
2	IMPERVIOUS COVER ALLOWED AT	10	% X	15.00 *(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN				=	1.00	ACRES
	5b PROPOSED NEW				=	0.00	ACRES
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN				=	0.00	ACRES
	6b PROPOSED NEW				=	1.40	ACRES
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

Non-FP WQTZ IC limit = 1.50 acres
Existing IC to remain = 1.00 acres
Proposed new IC = 0 acres
1.00 acres <= 1.50 acres
Great!

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER						
	VER ALLOWED AT	10	% X	15.00 (NON-FP WQTZ)	=	1.50	ACRES
	VER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
				TOTAL ALLOWED IMPERVIOUS COVER	=	2.90	**ACRES**
	OUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a	EXISTING PROPOSED TO REMAIN			=	1.00	ACRES
	5b	PROPOSED NEW			=	0.00	ACRES
	5c				**SUBTOTAL**	=	1.00 **ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a	EXISTING PROPOSED TO REMAIN			=	0.00	ACRES
	6b	PROPOSED NEW			=	1.40	ACRES
	6c				SUBTOTAL	=	1.40 ACRES
7					**TOTAL PROPOSED IMPERVIOUS COVER**	=	2.40 **ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER			15.00			
2	IMPERVIOUS COVER ALLOWED AT	10	% X	*(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN				=	1.00	ACRES
	5b PROPOSED NEW				=	0.00	ACRES
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN				=	0.00	ACRES
	6b PROPOSED NEW				=	1.40	ACRES
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

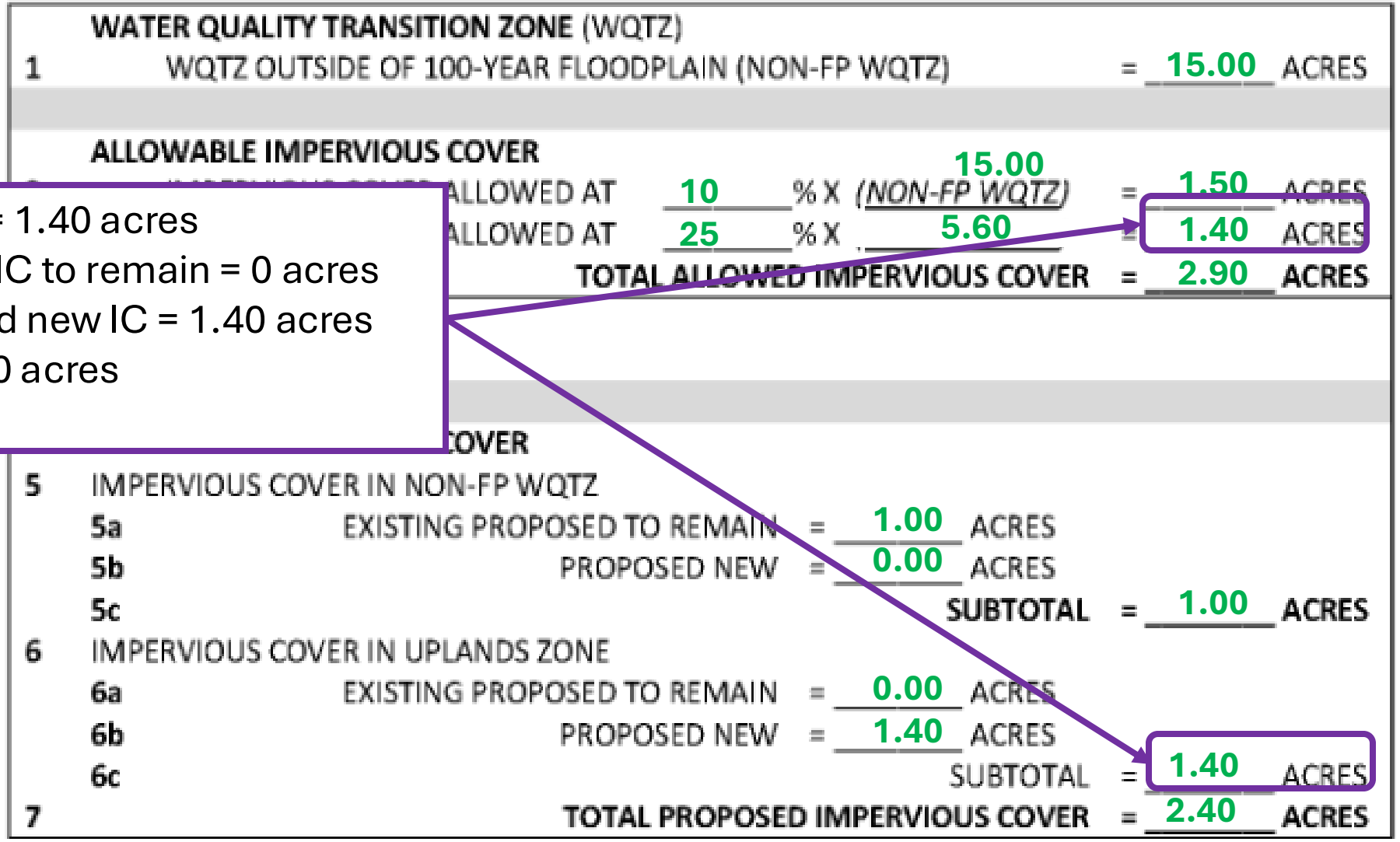
DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER			15.00			
2	IMPERVIOUS COVER ALLOWED AT	10	% X	*(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN				=	1.00	ACRES
	5b PROPOSED NEW				=	0.00	ACRES
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN				=	0.00	ACRES
	6b PROPOSED NEW				=	1.40	ACRES
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER						
2	IMPERVIOUS COVER ALLOWED AT	10	% X	15.00 *(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN				=	1.00	ACRES
	5b PROPOSED NEW				=	0.00	ACRES
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN				=	0.00	ACRES
	6b PROPOSED NEW				=	1.40	ACRES
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE



	WATER QUALITY TRANSITION ZONE (WQTZ)					
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				= 15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER					
	ALLOWED AT	10	% X	15.00 (NON-FP WQTZ)	= 1.50	ACRES
	ALLOWED AT	25	% X	5.60	= 1.40	ACRES
	TOTAL ALLOWED IMPERVIOUS COVER				= 2.90	**ACRES**
	COVER					
5	IMPERVIOUS COVER IN NON-FP WQTZ					
	5a EXISTING PROPOSED TO REMAIN			= 1.00	ACRES	
	5b PROPOSED NEW			= 0.00	ACRES	
	5c **SUBTOTAL**				= 1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE					
	6a EXISTING PROPOSED TO REMAIN			= 0.00	ACRES	
	6b PROPOSED NEW			= 1.40	ACRES	
	6c SUBTOTAL				= 1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				= 2.40	**ACRES**

Uplands IC limit = 1.40 acres
Uplands Existing IC to remain = 0 acres
Uplands Proposed new IC = 1.40 acres
1.40 acres <= 1.40 acres
Great!

DRINKING WATER PROTECTION ZONE
ECM APPENDIX Q2 TABLE

	WATER QUALITY TRANSITION ZONE (WQTZ)						
1	WQTZ OUTSIDE OF 100-YEAR FLOODPLAIN (NON-FP WQTZ)				=	15.00	ACRES
	ALLOWABLE IMPERVIOUS COVER			15.00			
2	IMPERVIOUS COVER ALLOWED AT	10	% X	*(NON-FP WQTZ)*	=	1.50	ACRES
3	IMPERVIOUS COVER ALLOWED AT	25	% X	5.60	=	1.40	ACRES
4	**TOTAL ALLOWED IMPERVIOUS COVER**				=	2.90	**ACRES**
	PROPOSED IMPERVIOUS COVER						
5	IMPERVIOUS COVER IN NON-FP WQTZ						
	5a EXISTING PROPOSED TO REMAIN				=	1.00	ACRES
	5b PROPOSED NEW				=	0.00	ACRES
	5c **SUBTOTAL**				=	1.00	**ACRES**
6	IMPERVIOUS COVER IN UPLANDS ZONE						
	6a EXISTING PROPOSED TO REMAIN				=	0.00	ACRES
	6b PROPOSED NEW				=	1.40	ACRES
	6c SUBTOTAL				=	1.40	ACRES
7	**TOTAL PROPOSED IMPERVIOUS COVER**				=	2.40	**ACRES**

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	_____	_____	_____	_____
10	15-25%	_____	_____	_____	_____
11	25-35%	_____	_____	_____	_____
12	OVER 35%	_____	_____	_____	_____
13	GROSS SITE AREA	_____			

Acreage of slopes from 0 to 15%?

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	_____	_____	_____	_____
10	15-25%	_____	_____	_____	_____
11	25-35%	_____	_____	_____	_____
12	OVER 35%	_____	_____	_____	_____
13	GROSS SITE AREA	_____			

Acreage of slopes from 15 to 25%?

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	_____	_____	_____	_____
10	15-25%	_____	_____	_____	_____
11	25-35%	_____	_____	_____	_____
12	OVER 35%	_____	_____	_____	_____
13	GROSS SITE AREA	_____			

Acreage of slopes from 25 to 35%?

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	_____	_____	_____	_____
10	15-25%	_____	_____	_____	_____
11	25-35%	_____	_____	_____	_____
12	OVER 35%	_____	_____	_____	_____
13	GROSS SITE AREA	_____			

Acreage of slopes over 35%?

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	_____	_____	_____	_____
10	15-25%	_____	_____	_____	_____
11	25-35%	_____	_____	_____	_____
12	OVER 35%	_____	_____	_____	_____
13	GROSS SITE AREA	_____			

Sum of lines 9 through 12

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	_____	_____	_____	_____
10	15-25%	_____	_____	_____	_____
11	25-35%	_____	_____	_____	_____
12	OVER 35%	_____	_____	_____	_____
13	GROSS SITE AREA	_____			

Acreage of buildings & parking spaces on the slope categories

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	_____	_____	_____	_____
10	15-25%	_____	_____	_____	_____
11	25-35%	_____	_____	_____	_____
12	OVER 35%	_____	_____	_____	_____
13	GROSS SITE AREA	_____			

Acreage buildings & parking spaces / slope category x 100

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	_____	_____	_____	_____
10	15-25%	_____	_____	_____	_____
11	25-35%	_____	_____	_____	_____
12	OVER 35%	_____	_____	_____	_____
13	GROSS SITE AREA	_____			

Drives & roads on slope categories

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

5 acres of slopes from 0 to 15%
2 acres of buildings on slopes from 0 to 15%
2 / 5 = 40%

CATEGORY
___ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	5.00	2.00	40%	1.00
10	15-25%	1.50	0.15	10%	0.50
11	25-35%	0.00			
12	OVER 35%	0.00			
13	GROSS SITE AREA	6.50			

LDC 25-8-301 and 302 limit construction on slopes

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

1.5 acres of slopes from 15% to 25%
0.15 acres of buildings on slopes from 15% to 25%
0.15 / 1.5 = 10%

Y SLOPE CATEGORY

_____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	5.00	2.00	40%	1.00
10	15-25%	1.50	0.15	10%	0.50
11	25-35%	0.00			
12	OVER 35%	0.00			
13	GROSS SITE AREA	6.50			

LDC 25-8-301 and 302 limit construction on slopes

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPE

1 acre of driveway on slopes from 0% to 15%

PROPOSED IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	5.00	2.00	40%	1.00
10	15-25%	1.50	0.15	10%	0.50
11	25-35%	0.00			
12	OVER 35%	0.00			
13	GROSS SITE AREA	6.50			

LDC 25-8-301 and 302 limit construction on slopes

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

PROPOSED IMPERVIOUS COVER (

0.5 acre of driveway on slopes from 15% to 25%

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	5.00	2.00	40%	1.00
10	15-25%	1.50	0.15	10%	0.50
11	25-35%	0.00			
12	OVER 35%	0.00			
13	GROSS SITE AREA	6.50			

LDC 25-8-301 and 302 limit construction on slopes

SLOPES ON THE ECM APPENDIX Q2 TABLES

- Same for all watershed classifications (except urban)

6.5 acres = 5 + 1.5 + 0 + 0

ALLOWABLE IMPERVIOUS COVER BREAKDOWN BY SLOPE CATEGORY

8 TOTAL ACREAGE WITH SLOPES 15-25% = _____ ACRES X 10% = _____ ACRES

IMPERVIOUS COVER ON SLOPES

	SLOPES		IMPERVIOUS COVER		
			BUILDING & OTHER IMPERVIOUS COVER		DRIVES / ROADWAYS
	SLOPE CATEGORIES	ACRES	ACRES	% OF CATEGORY	ACRES
9	0-15%	5.00	2.00	40%	1.00
10	15-25%	1.50	0.15	10%	0.50
11	25-35%	0.00			
12	OVER 35%	0.00			
13	GROSS SITE AREA	6.50			

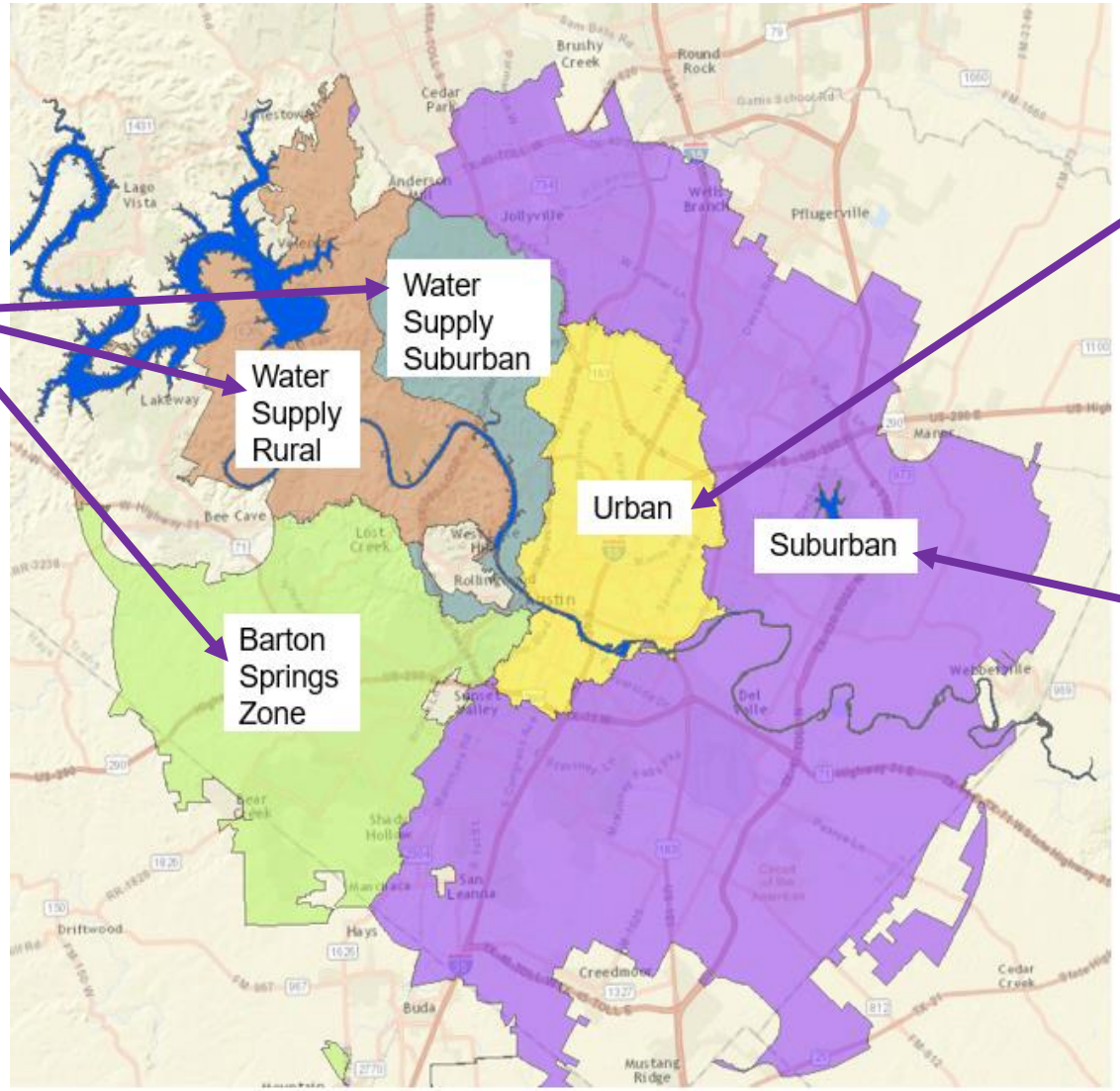
LDC 25-8-301 and 302 limit construction on slopes

WATERSHED IC CALCULATIONS

Net Site Area IC Limit

Need ECM Appendix Q1 Net Site Area Table

Need ECM Appendix Q2 WSS / WSR / BSZ Impervious Cover Table



IC is regulated only by zoning IC limit in full purpose urban

Gross Site Area IC Limit

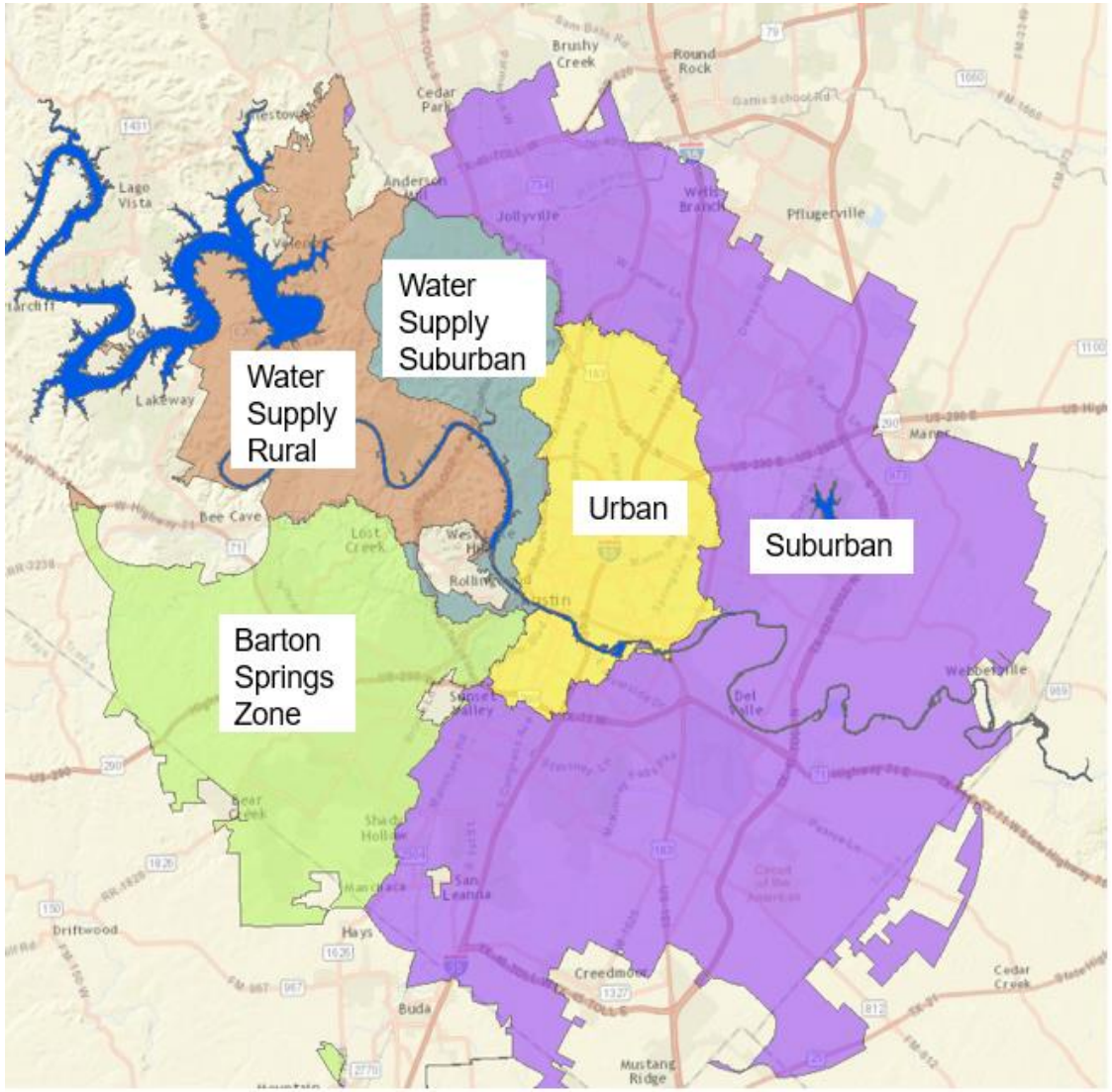
Need ECM Appendix Q2 Suburban Impervious Cover Table

Q&A Break

- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

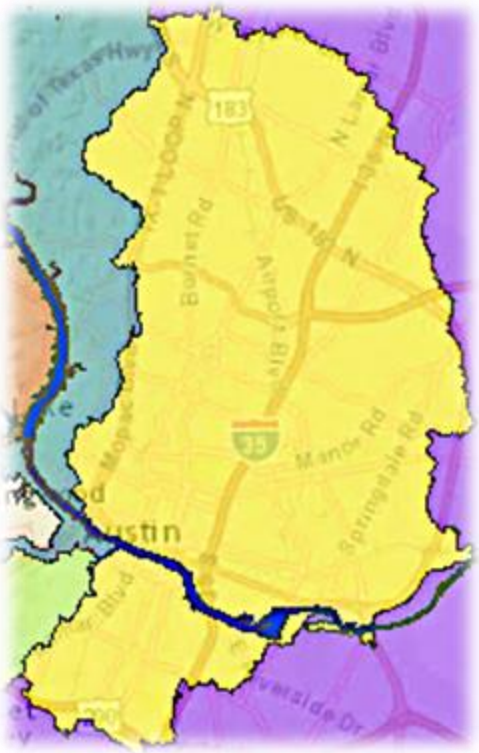
Bio Break

WHAT ARE THE WATERSHED IMPERVIOUS COVER LIMITS?

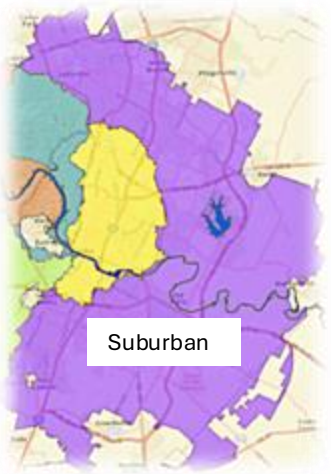


IMPERVIOUS COVER LIMITS
URBAN WATERSHED CLASSIFICATION – LDC 25-8-372

- No watershed IC limit for full purpose urban; only a zoning IC limit.



IMPERVIOUS COVER LIMITS *SUBURBAN* WATERSHED CLASSIFICATION – LDC 25-8-392



- Impervious cover limit varies from 45% to 80%.
- Depends on:
  - Extraterritorial Jurisdiction (ETJ) vs. full purpose
  - Project type (commercial, single family, multifamily)
  - Specific watershed (Lake, Rattan, Buttercup, Brushy, and South Brushy Creek watersheds have a lower IC limit).
- Based on Gross Site Area (do not use Q1 Table).

IMPERVIOUS COVER LIMITS
WATER SUPPLY SUBURBAN – LDC 25-8-423

- 30% for single family or duplex residential use.
- 40% for commercial, multifamily residential use, or mixed use.
- 65% for a public mobility project in the right-of-way.
- Based on Net Site Area (NSA) (must use Q1 Table).

IMPERVIOUS COVER LIMITS
WATER SUPPLY RURAL – LDC 25-8-453

- One unit per 2 acres; min lot size = ¾ acre for single family or duplex use.
    - Must have 2x acreage based on quantity of units proposed; and
    - Lots must be at least ¾ acre in size.
- Based on NSA (must use Q1 table).

IMPERVIOUS COVER LIMITS
WATER SUPPLY RURAL – LDC 25-8-453

- 20% for commercial, multifamily residential use, or mixed use.
- 55% for a public mobility project in the right-of-way.
- Based on NSA (must use Q1 Table).

IMPERVIOUS COVER LIMITS
BARTON SPRINGS ZONE – LDC 25-8-514

- 15% in the entire Edwards Aquifer Recharge Zone.
- 20% in the Edwards Aquifer Contributing Zone within the Barton Creek watershed.
- 25% in the remainder of the Edwards Aquifer Contributing Zone.
- Based on NSA (must use Q1 Table).

WHAT IF A PROJECT IS EXCEEDING THE WATERSHED IC LIMIT?

There is no administrative variance option to increase the watershed impervious cover limit.

There are 4 possible solutions if a project is exceeding the standard watershed IC limits.

FIRST, CHECK CODE AND ECM

LDC 25-8-63 and **ECM 1.8.1** describe in detail what is considered impervious cover.

Consult these sections of Code and Criteria.

1

SECOND, CONSIDER CAVANAUGH CREDITS

A site must qualify for Cavanaugh impervious cover credits:

- Cannot drain to Jollyville Plateau Salamander (JPS) habitat; and
- Cannot be in the Barton Spring Zone (BSZ); and
- Additional limits for sites built without a permit trying to become compliant.

If a proposed project qualifies, the IC limit can increase by +10% (for example from 20% to 30%).

2

THIRD, CONSIDER A TDI

A Transfer of Development Intensity (TDI)

Basic concept:

- Dedicate land for preservation to COA or an entity approved by COA.
- Can increase IC limit on a nearby property.
- IC limit increase is based on quantity of land dedicated and watershed classification.

3

THIRD, CONSIDER A TDI

A Transfer of Development Intensity (TDI)

Caveat:

- Please call EV Review before acquiring land to be dedicated.
- Per Code, the dedication must be approved by the Watershed Protection Department (WPD).
- Not Applicable in Barton Springs Zone (BSZ).

3

THIRD, CONSIDER A TDI

The Transfer of Development Intensity (TDI) is ***not*** the moving of unused IC from one lot to another.

3

LAST OPTION:
PURSUE A VARIANCE / SOS AMENDMENT

- Request a Land Use Commission variance / Save Our Springs (SOS) Amendment.
- Variances must be approved by the Land Use Commission.
- SOS Amendments must be approved by City Council.

4

Q&A Break

- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

3.

Construction on Slopes Limits

CONSTRUCTION ON SLOPES LIMITS

- Code Reference: LDC 25-8-301 & 302
- Criteria Reference: ECM 1.8.2
- Construction on slopes limits are based on existing conditions.

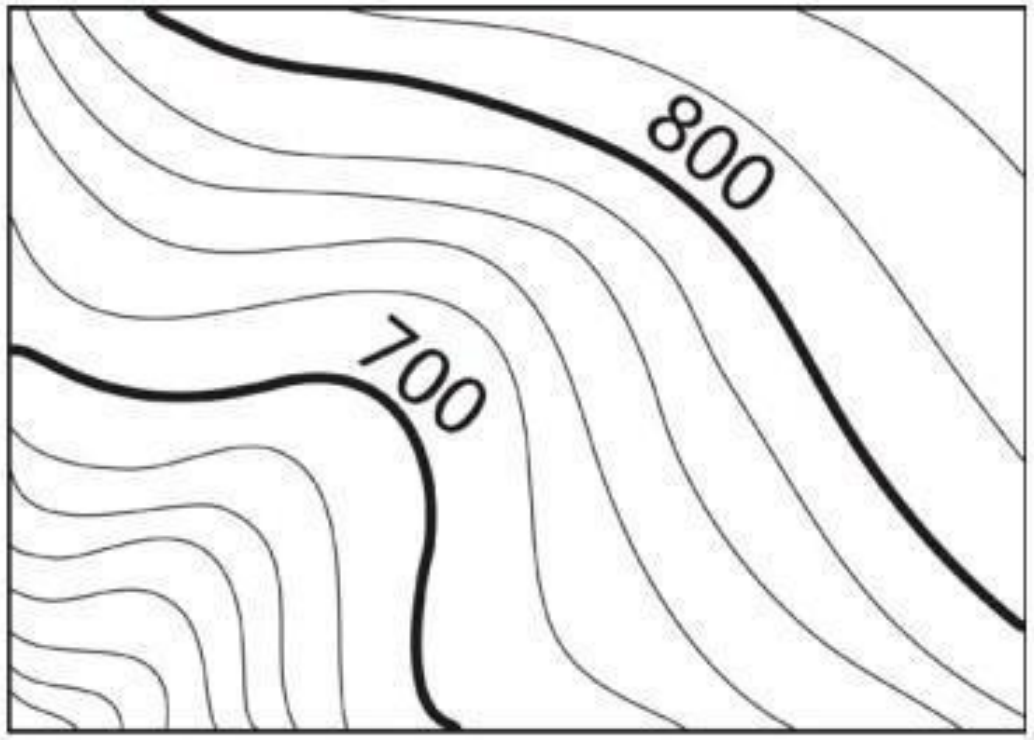
CONSTRUCTION ON SLOPES LIMITS

- “The slopes will be graded flat during construction. I’m not building on a slope!”
- Shift construction away from existing slopes to preserve natural character.
- Sediment transport occurs more readily when there is construction on slopes.

CONSTRUCTION ON SLOPES LIMITS

Not Applicable in
the Urban Watershed classification
per LDC 25-8-303.

CONSTRUCTION ON SLOPES LIMITS



Contours should be based on a 2-foot interval.

Slopes exhibits should be calculated using a 2-foot interval.

CONSTRUCTION ON SLOPES LIMITS

FOR DRIVEWAYS / DRIVE AISLES / PUBLIC ROADS / PRIVATE ROADS

Drives and roads are only allowed on slopes over 15% if providing primary access to:

- At least 5 residential units; OR
- At least 2 flat, contiguous acres

CONSTRUCTION ON SLOPES LIMITS

FOR DRIVEWAYS / DRIVE AISLES / PUBLIC ROADS / PRIVATE ROADS

What constitutes primary access?

It depends on the project, design requirements, and the size of the property.

CONSTRUCTION ON SLOPES LIMITS

FOR DRIVEWAYS / DRIVE AISLES / PUBLIC ROADS / PRIVATE ROADS

A large grocery store was allowed three driveways as primary access.

A gas station was allowed one driveway as primary access.

CONSTRUCTION ON SLOPES LIMITS

FOR BUILDINGS AND GARAGES

- Buildings / garages are allowed on slopes up to 15%; and
- 10% of the slopes from 15% to 25% can have buildings / garages.

CONSTRUCTION ON SLOPES LIMITS

FOR BUILDINGS AND GARAGES

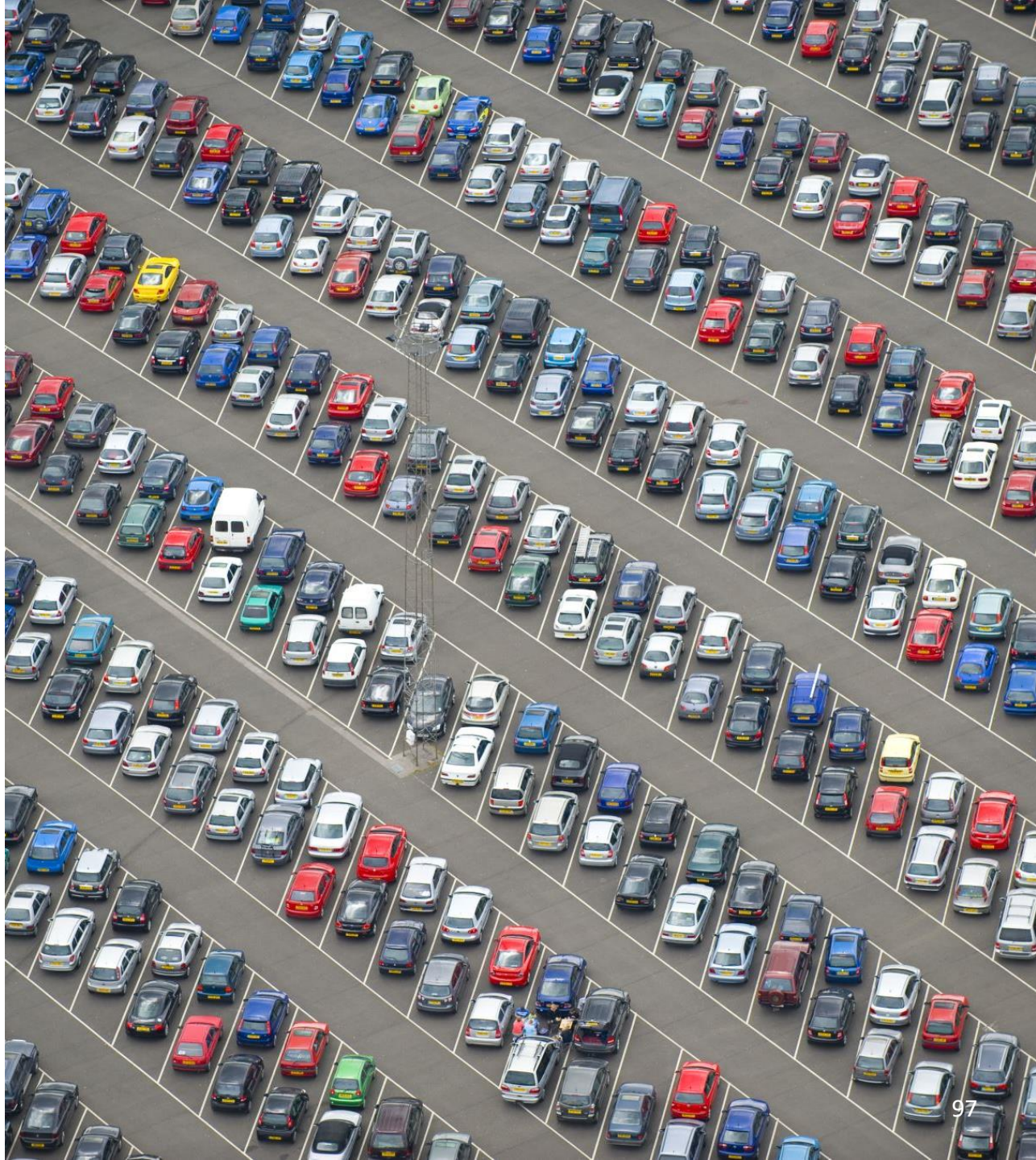
- A property has 1.5 acres of slopes from 15% to 25%.
  - 0.15 acres may have buildings.

- This does not increase the IC limits discussed previously

CONSTRUCTION ON SLOPES LIMITS

FOR PARKING SPACES

Parking spaces (e.g., a parking lot) may not be on slopes over 15%.



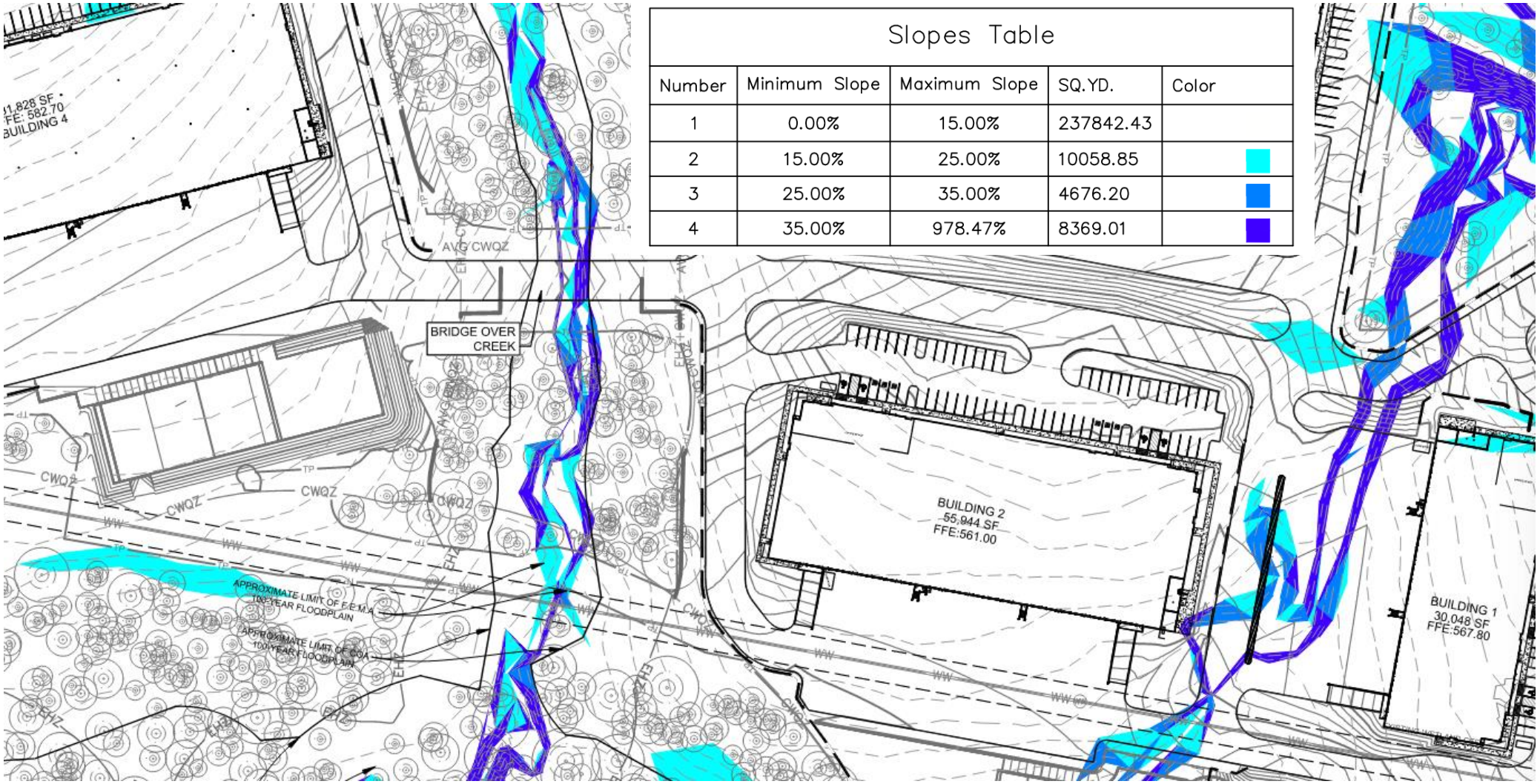
CONSTRUCTION ON SLOPES LIMITS REVIEW

The ECM Q2 tables show construction on slopes.

But an exhibit is often necessary to fully assess construction on slopes compliance.

- Your EV Reviewer might ask for a slopes exhibit to expedite the review for construction on slopes.

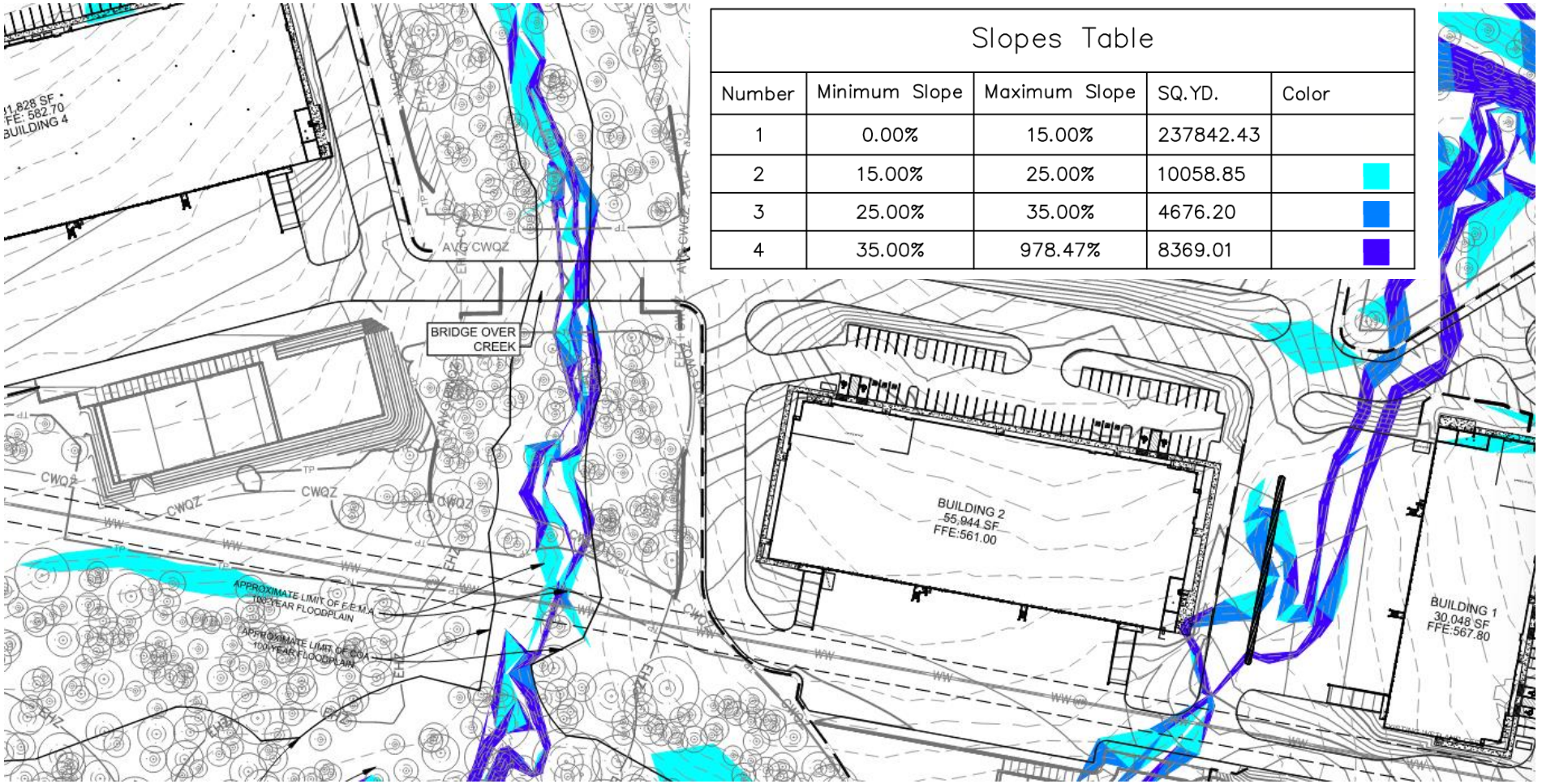
SLOPES EXHIBIT



EV Review often needs to ask for a construction on slopes exhibit.

Use a 2-foot contour interval.

SLOPES EXHIBIT



Slopes Table

Number	Minimum Slope	Maximum Slope	SQ.YD.	Color
1	0.00%	15.00%	237842.43	
2	15.00%	25.00%	10058.85	
3	25.00%	35.00%	4676.20	
4	35.00%	978.47%	8369.01	

The slopes information presented in this exhibit must match the slopes information in the Q tables.

CONSTRUCTION ON SLOPES LIMITS

There is no administrative variance option for construction on slopes.

GRADING LIMITS AND SLOPES LIMITS

Grading limits can sometimes vary based on slopes.

- EV Review might ask for the slopes exhibit to also show grading over 4 feet.

This can create a very busy exhibit; adjustment to the exhibit might be necessary to facilitate the review process.

CONSTRUCTION ON SLOPES LIMITS

Why limit construction on slopes?

- Greater runoff during construction = less soil stabilization.
- More difficult to establish vegetation = less soil stabilization.
- Preservation of natural topography.

Q&A Break

- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

4.

Grading Limits & Grading Administrative Variances

GRADING LIMITS

- Code Reference: LDC 25-8-341 & 342
- Based on existing conditions.
- Cut and fill are collectively called *grading*.

GRADING LIMITS

Not Applicable in the Urban Watershed classification per LDC 25-8-341 & 342.

GRADING LIMITS

Most of the Cut Regulations [LDC 25-8-341] are identical to Fill Regulations [LDC 25-8-342].

GRADING LIMITS
WHERE CUT AND FILL ARE IDENTICAL

- Grading within a building footprint is not limited.
- Cut and fill within a public ROW is not limited.

GRADING LIMITS
WHERE CUT AND FILL ARE IDENTICAL

Cut and fill over 4 feet are allowed for the construction of **water quality / detention ponds and appurtenances** for conveyance if:

- the design and location of the facility within the site minimize the amount of grading over four feet;
- the grading is the minimum necessary for the appropriate functioning of the facility; **and**

GRADING LIMITS
WHERE CUT AND FILL ARE IDENTICAL

- The cut is not located on a slope with a gradient of more than 15 percent or within 100 feet of a classified waterway.

This is why EV Review might ask for slopes and grading information to be shown on the same exhibit.

GRADING LIMITS
WHERE CUT AND FILL ARE IDENTICAL

Cut and fill from 4 to 8 feet are allowed for construction of a **multi-use trail**, if:

- the grading over 4 feet is not located on a slope with a gradient of more than 15 percent or within 100 feet of a classified waterway;

This is why EV Review might ask for slopes and grading information to be shown on the same exhibit.

- the grading over 4 feet is located in a public right-of-way or public easement; **and**

GRADING LIMITS
WHERE CUT AND FILL ARE IDENTICAL

- the trail is designed in accordance with the Environmental Criteria Manual.

GRADING LIMITS
WHERE CUT AND FILL ARE IDENTICAL

Grading from 4 to 8 feet is allowed for construction of a **private street or driveway necessary to provide primary access** if:

- the construction complies with LDC 25-8-301, 302, and 303 (Construction on Slopes);

- the grading over 4 feet is not within a critical water quality zone;

GRADING LIMITS
WHERE CUT AND FILL ARE IDENTICAL

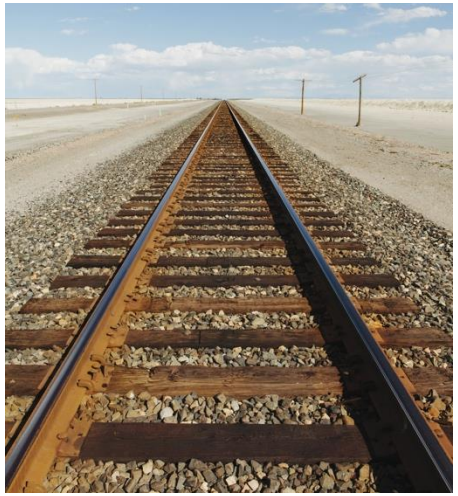
- the grading over 4 feet is the minimum necessary comply with safety access requirements and the horizontal and vertical curve requirements of the Transportation Criteria Manual; **and**

- there is no other feasible alternative.

Q&A Break

- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

GRADING LIMITS
WHERE CUT AND FILL DIFFER



- Cut is not limited for a swimming pool (does not include deck). *There is no corresponding language for fill over 4 feet to construct a swimming pool.*

- Fill is not limited in a rail line ROW. *There is no corresponding language for cut over 4 feet in a rail line ROW.*

GRADING LIMITS WHERE CUT AND FILL DIFFER

- LDC 25-8-341 (cut) and 342 (fill) have provisions for quarrying, mining, and land fills.

- ***These are not identical.***

GRADING LIMITS
MISCELLANEOUS

Pipeline installation is not considered grading since the trench will be backfilled to approximately pre-construction topography.

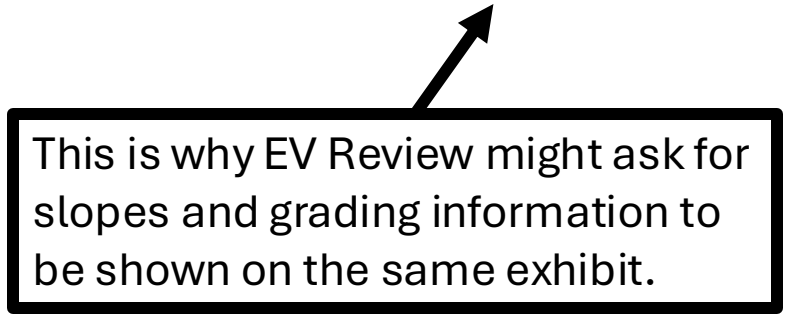
GRADING LIMITS
ADMINISTRATIVE VARIANCE

- LDC 25-8-42(B)(7) & (D)(7)
- Administrative variance allows grading up to 8 feet in the **Suburban Watershed classification** if:
  - on slopes <=15% and >100 feet from the centerline of a classified waterway.

This is why EV Review might ask for slopes and grading information to be shown on the same exhibit.

GRADING LIMITS
ADMINISTRATIVE VARIANCE

- LDC 25-8-42(B)(7) & (D)(7)
- Administrative variance allows grading up to 8 feet for the construction of a **public primary or secondary educational facility** if:
  - on slopes <=15% and >100 feet from the centerline of a classified waterway.



GRADING LIMITS
ADMINISTRATIVE VARIANCE

- Grading is the most common administrative variance.

- LDC 25-8-42 contains other administrative variances.
  - It includes *all* EV administrative variances
  - *Some* requirements in LDC 25-8 can be varied administratively. Most cannot.

GRADING EXHIBIT

EV Review often needs to ask for a grading exhibit. This should be based on a 1-foot contour interval.

Elevations Table				
Number	Minimum Elevation	Maximum Elevation	SQ.YD.	Color
1	−23.97	−16.00	5915.62	
2	−16.00	−8.00	10813.16	
3	8.00	16.00	22032.26	
4	16.00	22.58	2058.35	

EV Review often asks for grading within building footprints to NOT be shown.

GRADING LIMITS

Grading limits can vary based on Critical Water Quality Zone proximity.

- EV Review might ask for the Critical Water Quality Zone to be shown on the grading exhibit.

Why limit grading?

- More grading (esp. fill) = greater potential for soil to runoff.
- Preservation of natural topography.

QUESTIONS

Mike McDougal
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Development Services Department
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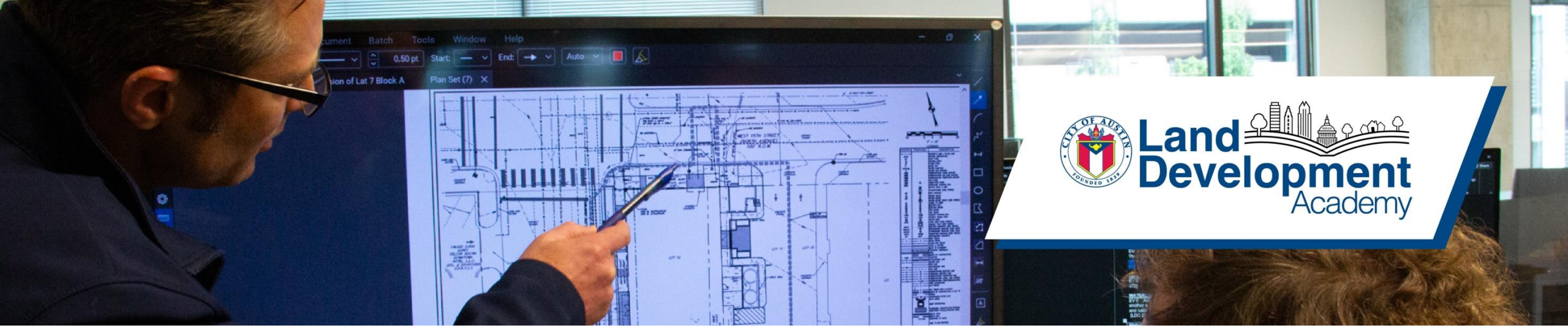
Post-Engagement Survey

Land Development Academy



Environmental Review Permitting

Parts 1 & 2

Mike McDougal

Environmental Policy Program Manager

Austin Development Services

512-974-6380

mike.mcdougal@austintexas.gov

ENGAGEMENT FORMAT

- Presentation with multiple breaks for Q&A
- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

PRELIMINARY INFORMATION

- Two hours today
- Break after an hour
- Time for questions at the end of the day, and several times during the presentation

EIGHT TOPICS TO COVER

1. Watershed Classifications & Regulations
2. Impervious Cover
3. Construction On Slopes Limits
4. Grading Limits & Grading Administrative Variances

EIGHT TOPICS TO COVER

5. Critical Water Quality Zone Regulations

6. Water Quality Transition Zone Regulations

7. Erosion / Sedimentation Control Requirements

8. Landscape Requirements & Compatibility Requirements

Q&A Break

- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

5.

Critical Water Quality Zone (CWQZ) Regulations

6.

Water Quality Transition Zone (WQTZ) Regulations

CWQZs AND WQTZs KEEP SPACE BETWEEN CONSTRUCTION AND CREEKS

A creek with 64 acres of drainage (or more) is called a classified waterway.

CWQZs AND WQTZs KEEP SPACE BETWEEN CONSTRUCTION AND CREEKS

LDC limits development adjacent to creeks with at least 64 acres of drainage.

CWQZs AND WQTZs KEEP SPACE BETWEEN CONSTRUCTION AND CREEKS

A classified waterway will have a Critical Water Quality Zone (CWQZ).

In the Drinking Water Protection Zone (DWPZ) there will also be a Water Quality Transition Zone (WQTZ).

CWQZs AND WQTZs KEEP SPACE BETWEEN CONSTRUCTION AND CREEKS

Construction within a Critical Water Quality Zone and a Water Quality Transition Zone is very limited.

WHY HAVE CRITICAL WATER QUALITY ZONES AND WATER QUALITY TRANSITION ZONES?

By promoting healthy soils and vegetation along the creek corridor and allowing the stream adequate space to migrate over time, stream buffers help control flood impacts, reduce channel erosion and property loss, help maintain good water quality, reduce operation and maintenance costs, and provide multiple community benefits. [ECM 1.5.1]

CRITICAL WATER QUALITY ZONES AND WATER QUALITY TRANSITION ZONES

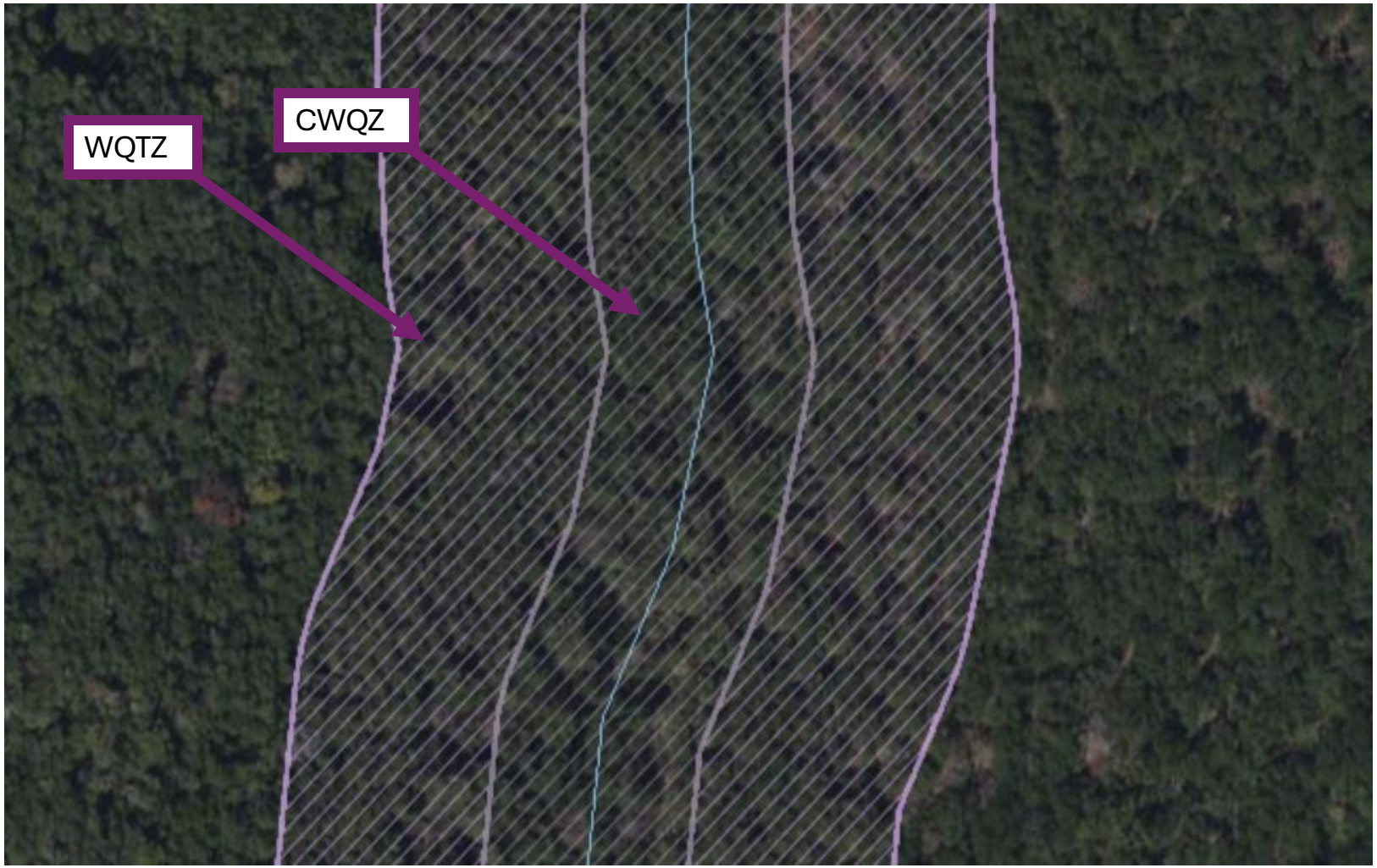
- Critical Water Quality Zones and Water Quality Transition Zones are collectively called **waterway setbacks**.
- Urban and Suburban Watershed Classifications have a Critical Water Quality Zone.
- Water Supply Suburban, Water Supply Rural, and Barton Springs Zone have ***both*** a Water Quality Transition Zone and a Critical Water Quality Zone.

CWQZ

Waterways with at least 64 acres of drainage have a construction setback called a **Critical Water Quality Zone (CWQZ)**.

Development in a Critical Water Quality Zone is very limited.

CWQZ AND WQTZ



In the Drinking Water Protection Zone (DWPZ), there is a Critical Water Quality Zone and a Water Quality Transition Zone.

WHAT IS ALLOWED IN THE CRITICAL WATER QUALITY ZONE

In all watersheds

- development is prohibited in a CWQZ
- except… LDC 25-8-261 then goes into substantial detail describing what is allowed.
- See also ECM 1.5.3.

WHAT IS ALLOWED IN THE CRITICAL WATER QUALITY ZONE

Examples of what might be allowed in the CWQZ:

- Utilities crossing directly into or through the Critical Water Quality Zone;
- public streets;
- open space; and
- parkland

WHAT IS ALLOWED IN THE CRITICAL WATER QUALITY ZONE

- LDC 25-8-261 is very complicated and lengthy.
- What is allowed in the Critical Water Quality Zone varies substantially by watershed classification and there are construction & design requirements.
- Recommend speaking to an Environmental Reviewer as needed.

CRITICAL WATER QUALITY ZONE ADMINISTRATIVE VARIANCES

- LDC 25-8-42 includes an administrative variance to allow a private driveway and a public street to cross a Critical Water Quality Zone, but *not* in the Barton Springs Zone.

- LDC 25-8-262 describes *when* a public road or a private driveway may cross the Critical Water Quality Zone.

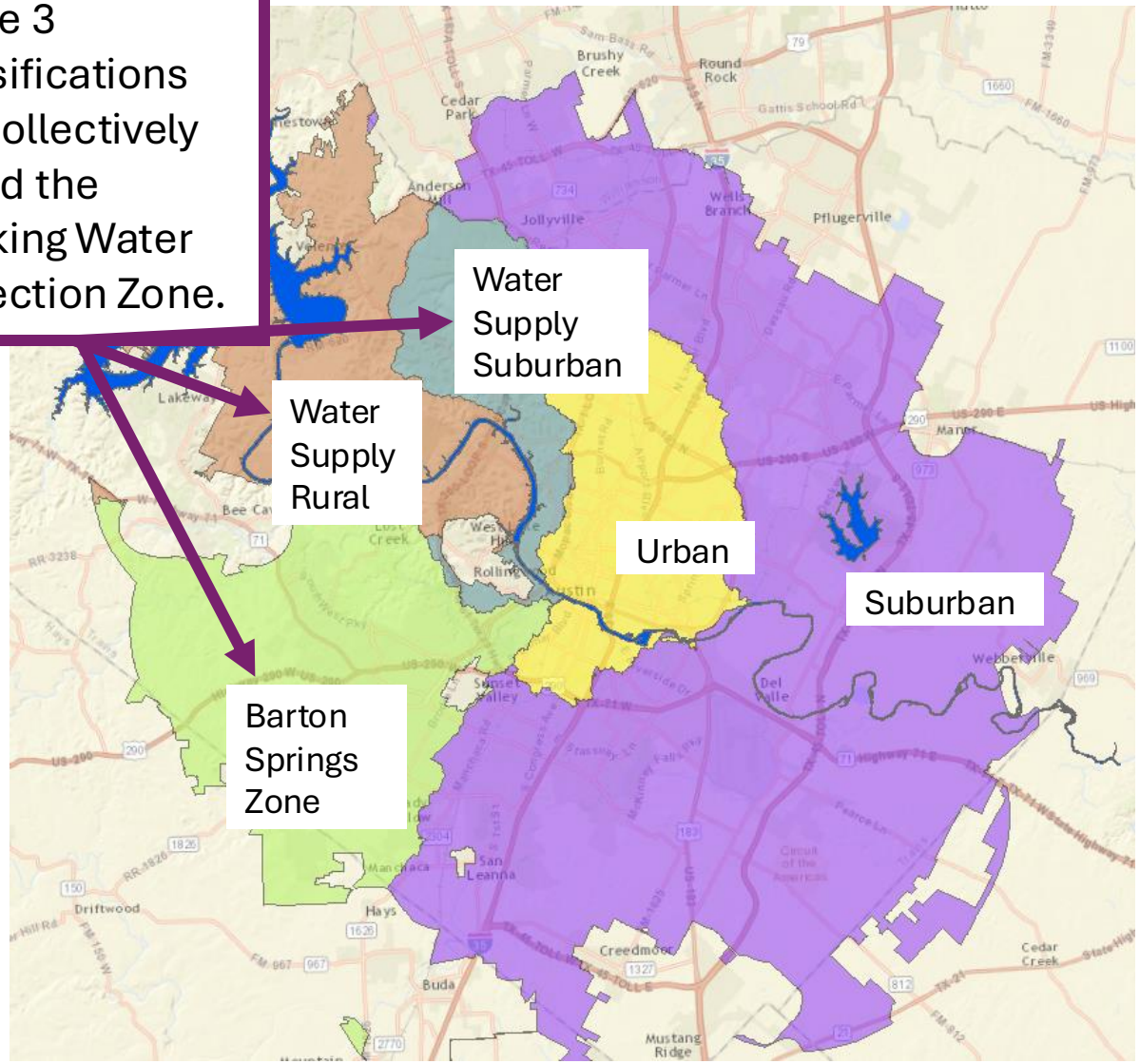
- Design requirements and site conditions are lengthy.

Q&A Break

- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

WATER QUALITY TRANSITION ZONES

These 3 classifications are collectively called the Drinking Water Protection Zone.



Only exist in the DWPZ:

- Water Supply Suburban
- Water Supply Rural
- Barton Springs Zone

WATER QUALITY TRANSITION ZONE CODE REFERENCES

Code References	
Urban	N/A
Suburban	N/A
Water Supply Suburban	LDC 25-8-422
Water Supply Rural	LDC 25-8-452
Barton Springs Zone	LDC 25-8-482
Criteria References	
All	ECM 1.5.4

WHAT IS ALLOWED IN WQTZ
WATER SUPPLY SUBURBAN

Over the South Edwards Aquifer Recharge Zone

- Development allowed in the Critical Water Quality Zone (CWQZ) is allowed in the Water Quality Transition Zone (WQTZ); and
- Minor drainage facilities or water quality controls that comply with Section 25-8-263 (Floodplain Modification) and the floodplain modification criteria in the Environmental Criteria Manual.

WHAT IS ALLOWED IN WQTZ
WATER SUPPLY SUBURBAN

***NOT** over the South Edwards Aquifer Recharge Zone*

- The impervious cover of the land area of a site may not exceed 18%.
  - In determining land area, land in the 100-year floodplain is excluded.
- This impervious cover limit does not apply to a public mobility project in the right-of-way allowed to cross a CWQZ under Section 25-8-262 (CWQZ Mobility Crossings).
- Water quality controls may be in a WQTZ that does not lie over the South Edwards Aquifer recharge zone.

WHAT IS ALLOWED IN WQTZ
WATER SUPPLY SUBURBAN

Over the South Recharge Zone:

- Water Quality Transition Zone equals the Critical Water Quality Zone.
- Minor drainage facilities or water quality controls are allowed with some limitations.

Not South Recharge:

- 18% IC limit.

WHAT IS ALLOWED IN WQTZ
WATER SUPPLY RURAL

Over the South Edwards Aquifer Recharge Zone

- Development allowed in the Critical Water Quality Zone (CWQZ) is allowed in the Water Quality Transition Zone (WQTZ); and
- Minor drainage facilities or water quality controls that comply with Section 25-8-263 (Floodplain Modification) and the floodplain modification criteria in the Environmental Criteria Manual.

WHAT IS ALLOWED IN WQTZ
WATER SUPPLY RURAL

***NOT** over the South Edwards Aquifer Recharge Zone*

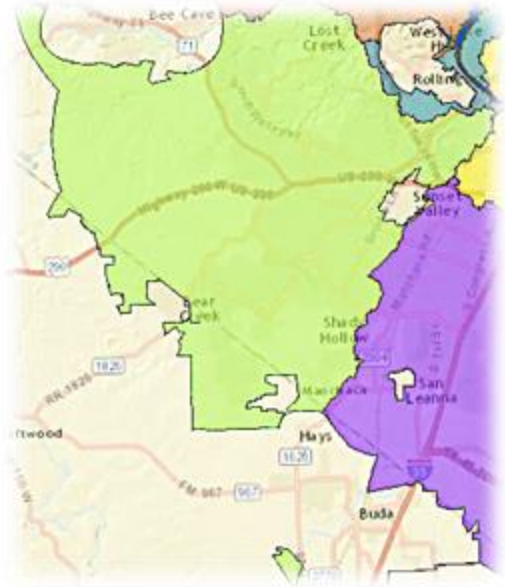
- Development allowed in the CWQZ
- Streets or public mobility projects in the right-of-way
- Minor drainage facilities or water quality controls that comply with Section 25-8-263 (Floodplain Modification) and the floodplain modification guidelines of the Environmental Criteria Manual; and
- Duplex or single-family residential development with a minimum lot size of two acres and a density of not more than one unit for each three acres, excluding acreage in the 100-year flood plain.

WHAT IS ALLOWED IN WQTZ
BARTON SPRINGS ZONE

Over the ~~South~~ Edwards Aquifer Recharge Zone

- Development allowed in the Critical Water Quality Zone (CWQZ) is allowed in the Water Quality Transition Zone (WQTZ); and
- Minor drainage facilities or water quality controls that comply with Section 25-8-263 (Floodplain Modification) and the floodplain modification criteria in the Environmental Criteria Manual.

WHAT IS ALLOWED IN WQTZ
BARTON SPRINGS ZONE



NOT *over the ~~South~~ Edwards Aquifer Recharge Zone*

- Development allowed in the CWQZ
- Minor drainage facilities or water quality controls that comply with Section 25-8-263 (Floodplain Modification) and the floodplain modification guidelines of the Environmental Criteria Manual;
- Streets; and
- Duplex or single-family residential housing with a minimum lot size of two acres and a density of not more than one unit for each three acres, excluding acreage in the 100-year floodplain.

CRITICAL WATER QUALITY ZONE BUFFER AVERAGING

- In the Suburban watershed classification only;
- The CWQZ can be squeezed up to half its standard width;
- The CWQZ must be expanded an equal or greater amount elsewhere;
- The expansion must be contiguous to the CWQZ;

CRITICAL WATER QUALITY ZONE BUFFER AVERAGING

- The expansion should maintain a reasonable connection with the functions of the riparian zone and floodplain;
- The expansion area should not be over Critical Environmental Features (CEFs). CEFs already have a setback. Expanding the CWQZ over a CEF would represent a net reduction in preserved area.

CRITICAL WATER QUALITY ZONE BUFFER AVERAGING

Like squeezing a balloon – it'll just expand somewhere else the same amount.

See ECM 1.5.2.D and LDC 25-8-92(B)(4) for additional requirements.

Q&A Break

- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

7.

Erosion / Sedimentation Control Requirements

CONSEQUENCES OF LAND DEVELOPMENT

Erosion and sedimentation are naturally occurring processes.

But land development accelerates the processes of erosion and sedimentation.

CONSEQUENCES OF LAND DEVELOPMENT

Sediment transported to waterways can affect water quality.

Too much erosion and sedimentation negatively impact the city's drinking water supply and the ecosystem.

CONSEQUENCES OF LAND DEVELOPMENT

Erosion / sedimentation control is required for land development to promote water quality.

EROSION / SEDIMENTATION CONTROL METHODS

- Minimizing the area of the site that is disturbed at any one time during construction;

- Preserving the existing natural vegetation to the greatest extent feasible;

EROSION / SEDIMENTATION CONTROL METHODS

- Covering exposed soils with temporary stabilization soon after disturbance;
- Restoring vegetation as rapidly as possible in disturbed areas;
- Keeping the velocity of stormwater below the erosive level;
- Promoting sheet flow rather than concentrated flow;
- Protecting and maintaining stable slopes; and
- Limiting grading and limiting construction on slopes.

EROSION / SEDIMENTATION CONTROL METHODS

- Covering exposed soils with temporary stabilization soon after disturbance;
- Restoring vegetation as rapidly as possible in disturbed areas;

EROSION / SEDIMENTATION CONTROL METHODS

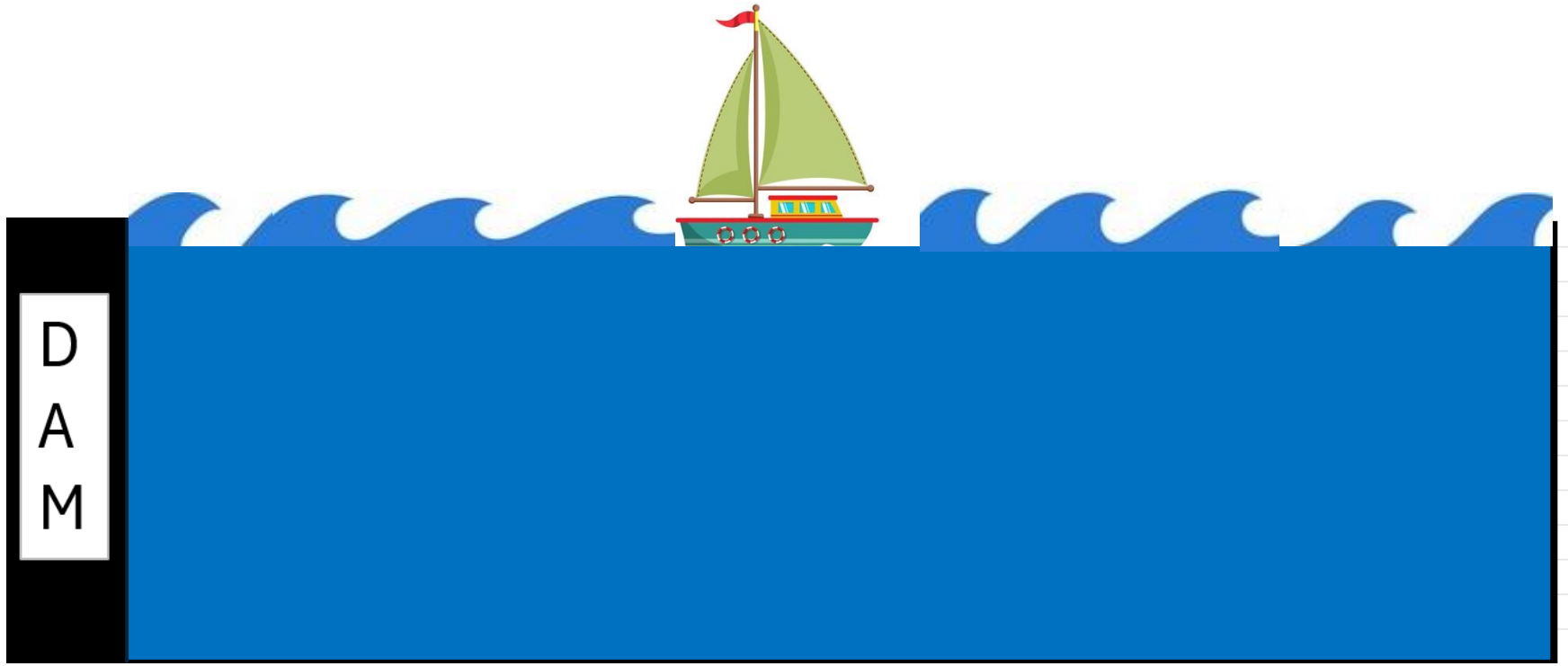
Keeping sediment within the Limit of Construction (LOC):

- Silt fence / Triangular Filter Dike (TFD) / Mulch sock
- Temporary sediment basins + dewatering skimmers

SILT FENCE
BASIC CONCEPT

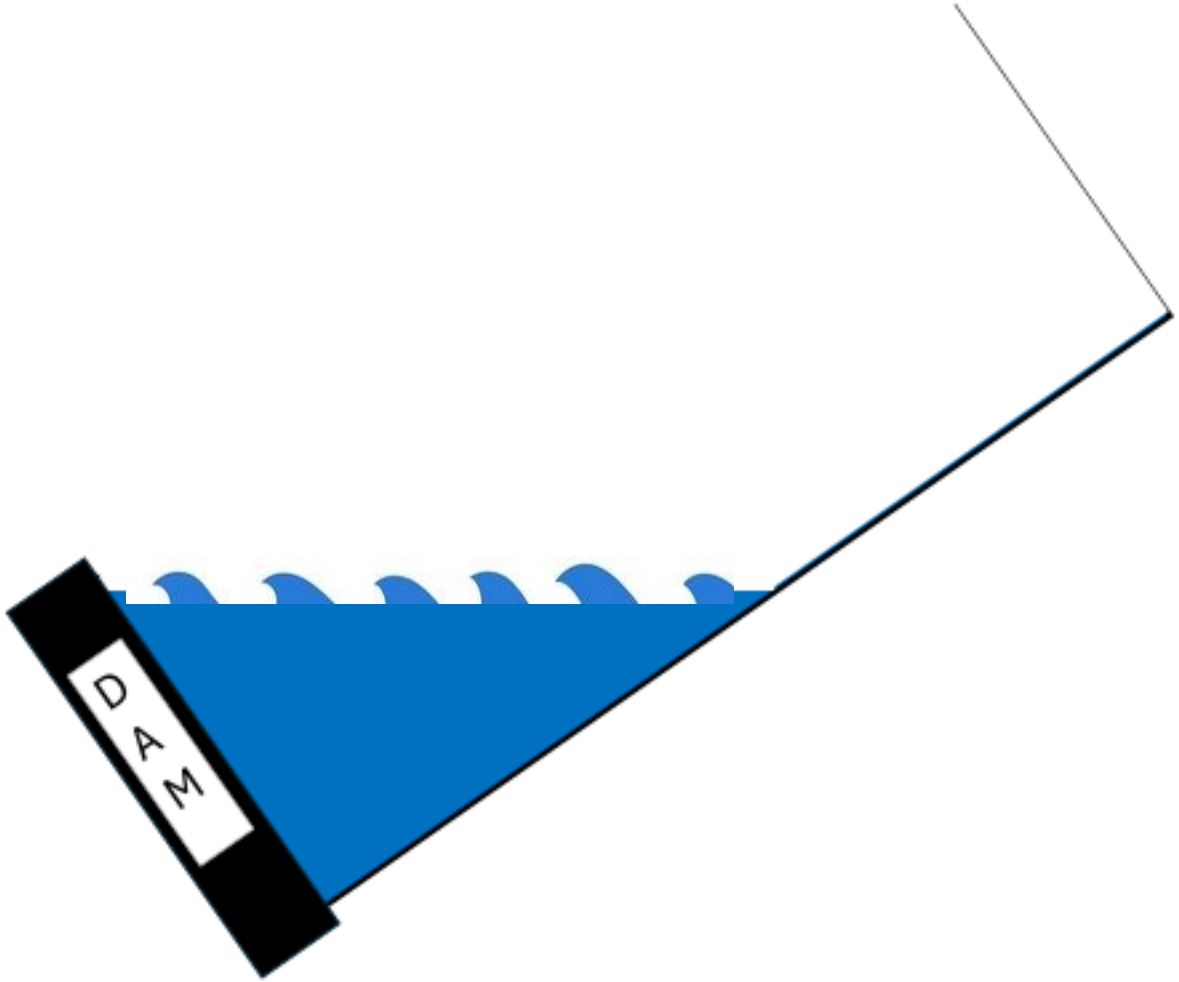
- Silt fence acts as a barrier (dam) to keep surface water and sediment onsite.
- Larger limit of construction requires more silt fence.
- Less intuitive: a steeper slope reduces the how much a silt fence can dam.

SILT FENCE BASIC CONCEPT



Silt fence can contain more on flatter sites.

SILT FENCE BASIC CONCEPT



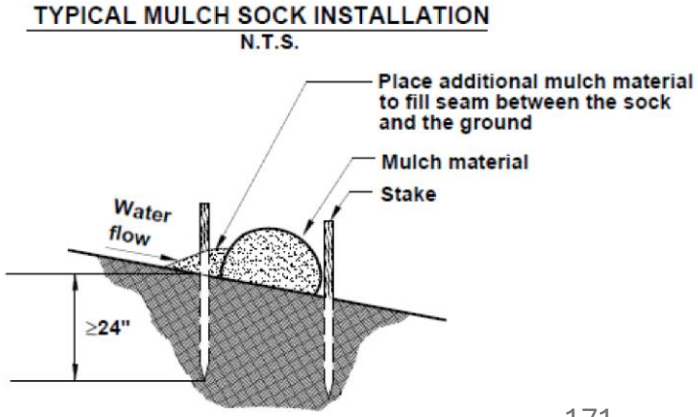
Silt fence contains less on steeper sites.

SILT FENCE QUANTITY REQUIRED IN SUMMARY

ECM Table 1.4.5.G.1 provides information describing how much silt fence is required based on Limit of Construction (LOC) area and slope within LOC.

When your EV Reviewer asks for more silt fence, it is likely based on this table.

These same concepts generally apply to TFD and mulch sock.



SILT FENCE BASIC CONCEPT

EV Review typically asks for Erosion/Sedimentation Control (ESC) along the upslope LOC boundary.

"Why is upslope silt fence required? Water won't flow uphill."

SILT FENCE BASIC CONCEPT

- The silt fence must account for rain falling onto the LOC ***and also*** for water running onto the site from upslope.

- It’s easier to divert potential surface water run-on around the site than it is to prevent runoff from the LOC.

SILT FENCE BASIC CONCEPT

- Upslope silt fence could possibly create drainage issues for the upslope property.
- EV Review and the design engineer should collaborate.

TEMPORARY SEDIMENT BASINS

- If a water quality / detention pond is proposed as part of the construction, this can possibly be used as a temporary sediment basin during construction.

- The presence of a temporary sediment basin means that the quantity of required silt fence / mulch sock / TFD is reduced.

Q&A Break

- Two ways to participate:
  - Speak by raising your hand on the control panel. You will be asked to unmute. Please mute yourself when finished.
  - Written questions using the Q&A function at the bottom of your screen.

8. Landscape Requirements & Compatibility Requirements

WHEN LANDSCAPE REQUIREMENTS DO NOT APPLY PER ECM 2

Most notable exemptions to landscape requirements:

- Property zoned Downtown Mixed Use or Central Business District;
- A lot containing one single family residence;
- A lot containing one duplex residence, unless the residence exceeds 4,000 square feet of gross floor area or has more than six bedrooms; or
- Extraterritorial Jurisdiction (ETJ) Projects
  - (except COA funded projects must have landscaping in ETJ)

LANDSCAPE REQUIREMENTS IN SUMMARY PER ECM 2

1. At least 20% of the area between the building and the ROW must be landscape / grass (20% of the streetyard must be landscape / grass).
2. Trees are required between the building and the ROW (streetyard trees).
3. The parking lot must be screened from the ROW with a wall, decorative fence, or vegetation.
4. Parking lot islands and trees are required within 50 feet of each parking space.
5. Parking lot islands must be at least 8 feet wide.
6. A minimum square footage of parking lot islands / medians / peninsulas is required based on the quantity of parking spaces proposed (total square footage of islands).

AT LEAST 20% OF THE AREA BETWEEN THE BUILDING AND THE ROW MUST BE LANDSCAPE / GRASS

Streetyard is defined as the area between the front of the building and the Right of Way (ROW).

20% of this area must be vegetated.

Streetyard

AT LEAST 20% OF THE AREA BETWEEN THE BUILDING AND THE ROW MUST BE LANDSCAPE / GRASS

Parking lot is behind the building.

The streetyard is still the area between the building and the ROW.

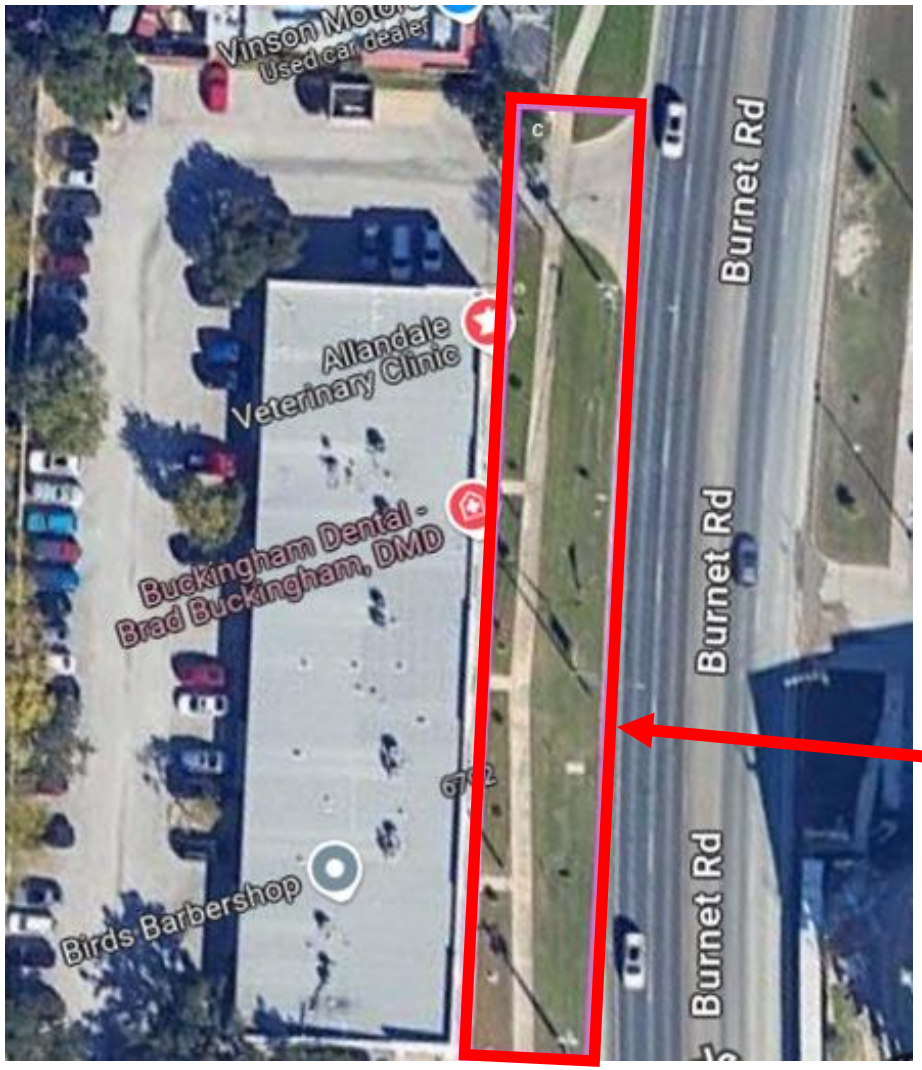
20% of this area must be vegetated.

AT LEAST 20% OF THE AREA BETWEEN THE BUILDING AND THE ROW MUST BE LANDSCAPE / GRASS

What if there is no building and the entire property is a parking lot?

Per ECM 2.4.1.B, the streetyard is the area between front ROW and the rear property line.

STREETYARD TREES ARE REQUIRED



Streetyard

Trees are required in the streetyard.

STREETYARD TREES ARE REQUIRED

The quantity of trees required is based on the size of the streetyard.

TOTAL STREET YARD AREA	REQUIRED TREES
1,000 to 10,000 sq. ft.	1 tree/1,000 sq. ft.
10,000 to 110,000 sq. ft.	10 trees for first 10,000 sq. ft. plus 1 tree/2,500 sq. ft. over 10,000 sq. ft.
over 110,000 sq. ft.	50 trees for first 110,000 sq. ft. plus 1 tree/5,000 sq. ft. over 110,000 sq. ft.

STREETYARD TREES ARE REQUIRED

Existing trees >=2 inches in diameter that meet tree preservation criteria can count.

All trees measuring six (6) inches or more in trunk diameter measured at 4½ feet above the ground shall count double.

PARKING LOT MUST BE SCREENED FROM THE ROW

1 point of screening is required for each linear foot of parking lot to be screened.

- If parking lot frontage along ROW = 50 feet, 50 points of screening is required.

Screening can include:

- Trees
- Shrubs
- Decorative walls / fences

Existing trees meeting tree preservation criteria count.

PARKING LOT SCREENING

Central Market North

NO PARKING LOT SCREENING

Target on Ben White Blvd

TREES ARE REQUIRED WITHIN 50 FEET OF EACH PARKING SPACE

A tree and parking lot island are required within 50 feet of each parking space.

Existing trees meeting tree preservation criteria count.

PARKING LOT ISLANDS MUST BE AT LEAST 8 FEET WIDE

Parking lot islands must be at least 8 feet wide.

This helps provide soil volume for tree plantings and helps to avoid sprinkler system overspray onto pavement.

PARKING LOT ISLANDS / PENINSULAS / MEDIANS

90 square feet for each 12 parking spaces in the streetyard.

The parking lot is in the streetyard.

Therefore, the total square footage of required islands is:

Qty of parking spaces / 12 x 90

PARKING LOT ISLANDS / PENINSULAS / MEDIANS

Qty of parking spaces / 12 x 90

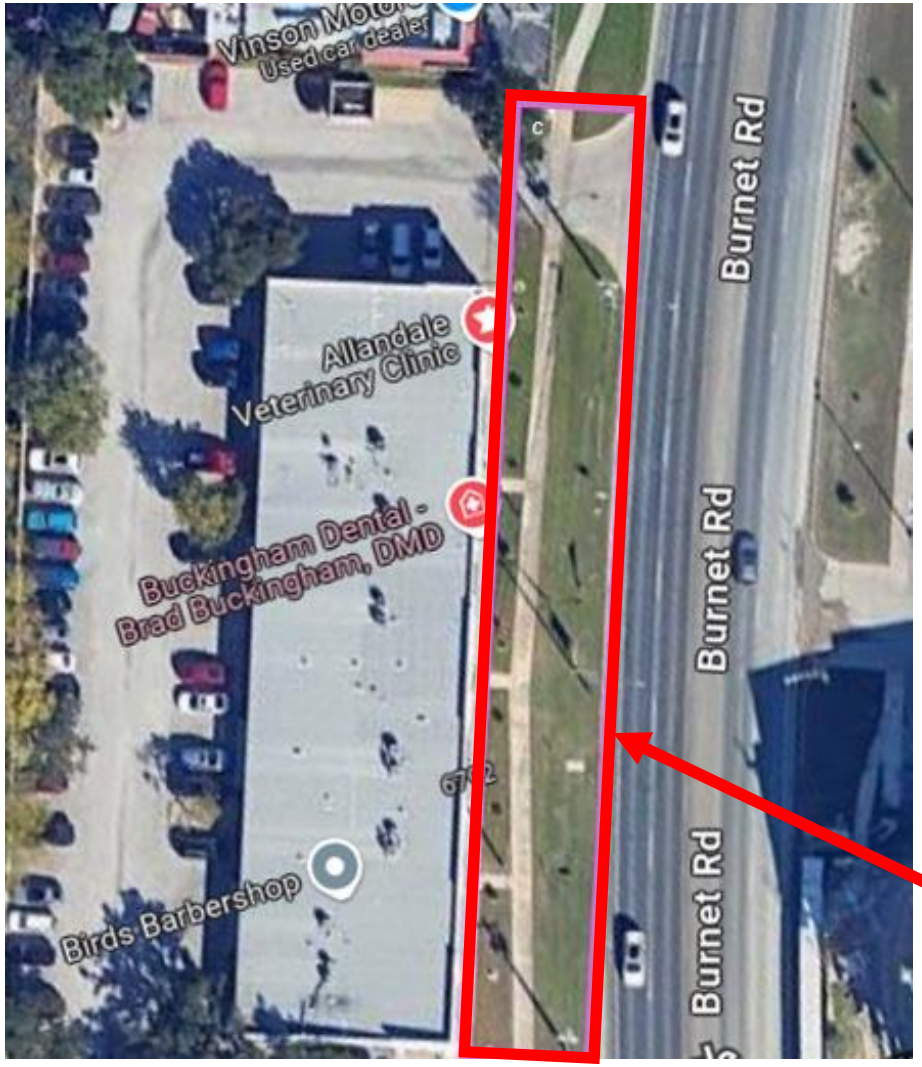
Suppose there 48 parking spaces:

48 / 12 x 90 =

360 sf of islands / medians / peninsulas are required

Streetyard

PARKING LOT ISLANDS / PENINSULAS / MEDIANS



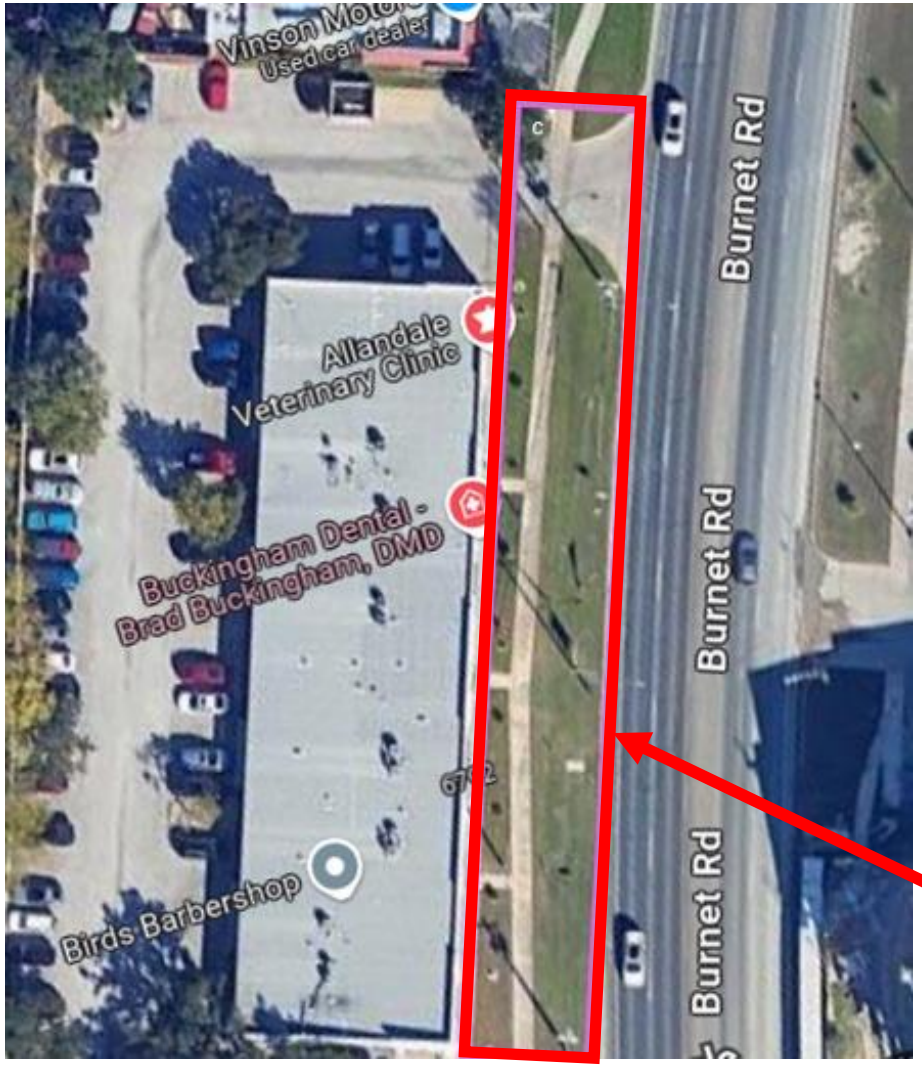
60 square feet for each 12 parking spaces in the non-streetyard.

The parking lot is NOT in the streetyard.

Therefore, the total square footage of required islands is:

Qty of parking spaces / 12 x 60

PARKING LOT ISLANDS / PENINSULAS / MEDIANS



Qty of parking spaces / 12 x 60

Suppose there 72 parking spaces:

72 / 12 x 60 =

360 sf of islands / medians / peninsulas are required

SIMPLEST PATH TO ACHIEVE LANDSCAPE COMPLIANCE

Begin with ECM Appendix C (landscape calculation table).

When a landscape plan is required, EV Review will require ECM Appendix C in the plan set.

OTHER PLANTING REQUIREMENTS

The following are not exactly landscape requirements, but they do involve landscape concepts:

1. Vegetation is required for WQ ponds (green pond requirement).

2. Parking lot islands should be designed to intercept surface water.

3. When compatibility setbacks are required, there can be a vegetation requirement.

4. Hill Country Roadway – very complicated; recommend calling EV Review.

FINAL THOUGHTS

Call EV Review if a project site:

- has slopes over 15%,
- is within a Hill Country Roadway,
- is within / adjacent to a classified waterway, or
- if grading over 4 feet outside of buildings or ponds is proposed.

LDC 25-8-281 and 282 limit construction adjacent to bluffs, canyon rimrocks, caves, faults and fractures, seeps, sinkholes, springs, and wetlands. These are reviewed by the Watershed Protection Department.

WE'VE CROSSED THE FINISH LINE!!!

RESOURCES

Resource	Link
Land Development Academy	publicinput.com/landdevelopmentacademy
DSD Public Meetings web page	https://www.austintexas.gov/page/public-meetings
Municode – Chapter 25	https://library.municode.com/tx/austin/codes/land_development_code?nodeId=TIT25LADE
DSD Land Development Information Services	https://www.austintexas.gov/pdc-appointments#spanclassckanchoridenvironmentspanLandscapeEnvironmental
Permitting and Development Center Appointments	https://www.austintexas.gov/pdc-appointments
Find your watershed	https://www.atxwatersheds.com/findyourwatershed/
Property Profile	https://maps.austintexas.gov/GIS/PropertyProfile/

Bio Break

QUESTIONS

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Post-Engagement Survey

Land Development Academy