

# Green Area Ratio (GAR) Online Training

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Photo credit: Oculus, Inc.

#### Resources

- GAR Information: <u>https://doee.dc.gov/GAR</u>
- Zoning Regulation: <a href="http://handbook.dcoz.dc.gov/zoning-">http://handbook.dcoz.dc.gov/zoning-</a>

rules/general-rules/green-area-ratio/

- **PropertyQuest:** <u>https://propertyquest.dc.gov/</u>
- 2016 Zoning Map: <u>http://maps.dcoz.dc.gov/zr16/</u>
- DOEE Stormwater Regulation: <u>https://doee.dc.gov/swregs</u>
- DOEE Public Trainings: <u>https://doee.dc.gov/swtraining</u>

# Agenda

- Part I: An Introduction to GAR
- Part II: GAR Applicability
- Part III: Plan Development, Permitting Process, and Construction
- Part IV: Landscape Elements and Submission Requirements

# Green Area Ratio (GAR) Online Training Part I: <u>An Introduction to the Green Area Ratio</u>

Photo credit: Oculus, Inc.



### WHAT IS GAR?

#### **Green Area Ratio**

#### What is it?

 A flexible green site design requirement established in 2013 that varies by zone.



#### Menu items may include...

- Permeable pavement
- Vegetated roofs
- Native vegetation
- Rain gardens
- Trees & shrubs
- Green facades

#### **Involved** Parties





### HOW GAR WORKS

### GAR: How does it work?

#### How to calculate:

- Add up landscape elements by number or size
  - # trees
  - Size of green roof
  - Size of rain garden
  - # of plants
  - Soil depths
- Divide by lot area
- = GAR score





$\supset$	GAR LANDSCAPE ELEMENTS	MULTIPLIER
	Landscaped area (select one of the following for each area)	
	Landscaped areas with a soil depth of less than 24"	0.3
	Landscaped areas with a soil depth of 24" or more	0.6
	Bioretention facilities	0.4
	Plantings	
	Ground covers, or other plants less than 2' tall at maturity	0.2
	Plants at least 2' tall at maturity	0.3
	Tree canopy for all new trees with mature canopy spread of 40' or less	0.5
	Tree canopy for all new trees with mature canopy spread of 40' or greater	0.6
	Tree canopy for preservation of existing trees 6" to 24" in diameter	0.7
	Tree canopy for preservation of existing trees 24" diameter or larger	0.8
	Vegetated wall, plantings on a vertical surface	0.6
	Vegetated roofs	
	Extensive vegetated roof over at least 2" but less than 8" of growth medium	0.6
	Intensive vegetated roof over at least 8" of growth medium	0.8
	Permeable paving	
	Permeable paving over at least 6" and less than 2' of soil or gravel	0.4
	Permeable paving over at least 2' of soil or gravel	0.5
	Other	
	Enhanced tree growth systems	0.4
	Renewable energy generation (area of)	0.5
	Water features (using at least 50% recycled water)	0.2
	Bonuses	
	Native plant species	0.1
	Landscaping in food cultivation	0.1
_	Harvested stormwater irrigation	0.1

#### **Stackable Elements**





### **RELATED REGULATIONS**

### **Related Zoning Requirements**

#### Pervious surface requirements Landscaping for parking lots





#### Pervious Surface Requirements

- In zones R and RF
- Applies when building a new principal structure or increasing existing lot occupancy by 10%+ for an addition to a principal structure, or 25%+ for an addition to a historic structure
- Pervious = grass; mulched groundcover; plants; trees; permeable pavers; and decks or porches
- C-501 of DCMR 11, DC Zoning Regulations

Zone District and Structure	Minimum Percentage of Pervious Surface
R-3, R-13, R-17, R-20	20%
R-2	30%
R-6 to R-12, R-14 to R-16, R- 19, R-21, R-1-A, R-1-B	50%

# Landscaping for Surface Parking

- Minimum 10% of lot landscaped
- Landscape end islands of 9+ spaces
- Trees must be min. 2.5" DBH at planting
- Plant 4' from protective barriers
- Special exception relief from BZA if impracticable
- C-715 of DCMR 11, DC Zoning Regulations







#### **GAR & Stormwater Overlap**

#### **Green Area Ratio Rule**

- DCMR Chapter 11
- Requires a C of O
- No Maintenance Covenant
- Interior Renovations:
  - 100% construction cost trigger
- Area Calculations
- Design constraints maximizes healthy vegetation

#### **Stormwater Rule**

- DCMR Chapter 21
- Includes Public Right of Way
- Unrelated to C of O
- Maintenance Covenant Required
- Interior Renovations:
  - 50% construction cost trigger
- Volume Calculations
- Contributing Drainage Area
- Design constraints maximizes stormwater retention

Overlap: to achieve stormwater environmental benefits Landscape Elements are often the same practices as LID BMPs

# Green Area Ratio (GAR) Online Training Part II: GAR Applicability



Photo credit: Oculus, Inc.



# Exemptions, Reduced GAR Score, & Campus Plans

### Who does not have a GAR?

- Properties within R-, RF-, USN, STE, HE, WR-1, & WR-6
- Buildings that do not require a Certificate of Occupancy,
  - Single family residences
- DC Water wastewater treatment facilities.
- Interior renovations of existing buildings when
  - Located within the Central Employment Area,

#### Who does not have a GAR?



### Who does not have a GAR?

- Properties within R-, RF-, USN, STE, HE, WR-1, & WR-6
- Buildings that do not require a Certificate of Occupancy,
  - Single family residences
- DC Water wastewater treatment facilities.
- Interior renovations of existing buildings when
  - Located within the Central Employment Area,
  - 100 percent lot occupancy,
  - Existing roof not capable of supporting vegetated system, and
  - Proposed work does not result in a roof capable of supporting vegetated roof.
- Interior renovations whose construction costs are less than 100% of the building value
- Buildings or structures deemed "historic resources",
  - Except when additions increase the gross floor area by 50 percent.



#### **GAR Exemption Status Application**

From 11 DCMR Sublifie C § Chapter 6 of the Zoning Regulations

I hereby request evidence of exemption from the Green Area Ratio (GAR) Subtitle C Chapter 6 of DCMR Title 11 for the proposed construction on the property identified below (Any property within the R-, RF-, USN, STE, HE, WR-1, and WR-6 Districts (Subtille C §601.2) is exempt from GAR.]

Address:		Zoning District:	
Square:	Lot	Building Permit Number:	
Cost of Construction:		Assessed Building Value:	

This property is subject to a previously approved GAR Plan Yes No If yes, please provide approved DOEE Plan Number: \_\_\_\_

Allowable Exemptions (CHECK ONE):	Required
<ol> <li>Single dwelling unit (Sublifie A §302.2); buildings otherwise not requiring a certificate of occupancy (Sublifie C §601.3 (a)).</li> </ol>	OZA
<ol> <li>Municipal wastewater treatment facilities operated by DC Water (Subtitle C §601.3(b)).</li> </ol>	DC Water and OZA
3. Interior Renovations: (1) is located in the Central Employment Area; (2) Has an existing one hundred percent (100%) lot occupancy prior to the filing of the building permit; (3) Has an existing roof that cannot support a dead load of four inches (4 in.) of growth medium on the root; and (4) The work proposed by the building permit application will not result a roof capable of supporting a dead load of four inches (4 in.) of growth medium on the root; and (4) The work proposed by the building permit application will not result a roof capable of supporting a dead load of four inches (4 in.) of growth medium on the root. [Subtitle C §c01.3 (c)].	Structural and OZA In
4. Additions, interior renovations, or both are less than 100 percent of the assessed building value as set forth in the records of the Ottice of Tax and Revenue as of the date of the building permit application (Subtilie C § 601.3). (A cost estimate certifying the cast of construction is required).	OZA
<ol> <li>Building(s) or structure(s) certified by the DC inventory of Historic Sites, or State Historic Preservation Officer, as "historic resource(s)"; any addition results in an increase in the gross floor area of the historic resource by less than fifty percent (50%) (subtitie C \$60.3(d), \$60.7).</li> </ol>	Historic and OZA

Applicant Name: Address:

\_\_ Email: \_\_\_\_\_ Date: \_ Phone: Signature:

Below for D.C. Government Use Only.

STATE HISTORIC PRESERVATION OFFICER [For review of GAR Exemption No. 4 only]

I hereby certify that this property is either a historic landmark or a building or structure contributing to the character of a historic district listed in the D.C. Inventory of Historic Sites. This certification does not constitute an interpretation of zoning or building codes and does not entitle the applicant to any relief not authorized by zoning or building code officials pursuant to the applicable codes.

Signature: Printed Name: \_\_\_\_ Date:

DC WATER OFFICER [For review of GAR Exemption No. 2 only]

I hereby certify that this property is a municipal wastewater treatment facility operated by DC Water. This certification does not constitute an Interpretation of zoning or building codes and does not entitle the applicant to any relief not authorized by zoning or building code officials pursuant to the applicable codes.

\_\_\_\_\_ Printed Name: \_\_\_\_ Signature: Date:

OFFICE OF ZONING ADMINISTRATOR ONLY [Exemption Categories—Subfille C §601]

I hereby certify that this property is exempt from the Green Area Ratio standards required pursuant to C-601.3 (C-601.3 (a) thru (d). This certification does not constitute an interpretation of zoning or building codes and does not entitle the applicant to any relief not authorized by zoning or building code officials pursuant to the applicable codes.

Signature: Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

DCRA STRUCTURAL [For review of GAR Exemption No. 3 only]

I find there is sufficient evidence the existing roof for the property is NOT capable of supporting a dead load of four inches (4 in.) of growth medium on the roof

I find there is sufficient evidence the proposed work will NOT result in a roof capable of supporting a dead load of four inches (4 in.) of growth medium on the roof

This review does not constitute an interpretation of zoning or building codes and does not entitle the applicant to any relief not authorized by zoning or building code officials pursuant to the applicable codes.

Printed Name:\_\_\_\_\_ Date:\_\_\_\_\_ Signature:

#### $\bigcirc$

#### Helpful reference for property summary: propertyquest.dc.gov/

PQ 1200 first st ne		Ownership and Taxes	
		Tax lot	0672 0856
Basic Information		Premises	1200 1ST ST NE
1200 1ST STREET NE		Owner	VEF-VN CAPITOL PLAZA I LLC
SSL (Square, Suffix & Lot)	0672 0856		5530 WISCONSIN AVE STE 1000
Lot type	tax lot		CHEVY CHASE, MD 20815-4330
Ward	Ward 6	Use	Commercial-Office-Large
ANC	ANC 6C	Land area	34405 square feet
SMD	SMD 6C06	Tax class	Commercial, industrial
Neighborhood Cluster	Cluster 25	Tax rate	n/a
Police District Fifth Police District		Current assessment (2016)	
Police Service Area	PSA 501	land	\$16 101 540
Voting Precinct	Precinct 83	in the second se	\$447.070.040
Zoning	D-5	Improvements	\$147,076,840
Downtown subarea	NoMa	total	\$163,178,380
2010 census tract 106		Proposed assessment (2017)	
2010 census block group	2	land	\$16,101,540
2010 census block	2023	improvements	\$136,528,090
No historic resources noted.		total	\$152,629,630

### **Transition Period: No GAR**

- Building Permit Filed prior to October 1, 2013,
  - DCRA officially accepted as being complete.
- Building Permit Filed on or after October 1, 2013,
  - Unexpired approval, provided the vote to approve occurred prior to October 1, 2013,
    - A first stage, second stage, or consolidated planned unit development,
    - A variance, special exception, design review under the CG or SEFC overlay, or
    - A concept design by the Historic Preservation Review Board or Commission of Fine Arts.

### **Transition Period: No GAR**

- Building Permit Filed on or after October 1, 2013,
  - Unexpired approval granted after October 1, 2013, provided a public hearing occurred prior to October 1, 2013,
    - A variance, special exception, or design review under the CG or SEFC overlay.
  - Unexpired approval granted after October 1, 2013, provided a set down for a public hearing occurred prior to October 1, 2013,
    - A first stage, second stage, or consolidated planned unit development.

### **Transition Period: Reduced GAR**

- Building Permit Filed on or after October 1, 2013 but no later than July 14, 2014,
  - A Large Tract Review (LTR) completed prior to July 1, 2012,
  - Application consistent with conditions of LTR,
  - GAR equals 0.1 or greater,
    - independent of zone district.

#### GOVERNMENT OF THE DISTRICT OF COLUMBIA DEPARTMENT OF CONSUMER REGULATORY AFFAIRS



#### APPLICATION FOR EXEMPTION STATUS FROM D.C. ZONING REGULATION GREEN AREA RATIO BASED ON TRANSITION PERIOD FILING STATUS

I hereby request evidence of a transition period exemption from the Green Area Ratio (GAR) Subtitle C, Chapter 6 of DCMR Title 11 for the proposed construction on the property identified below.

Address:\_\_\_\_\_

Square: \_\_\_\_\_Lot:\_\_\_\_Building Permit #:\_\_\_\_\_

Allowable Transition Period Exemptions (CHECK ONE):

	Building Permit filed prior to October 1 <sup>st</sup> , 2013.
	Unexpired approval of a first stage, second stage, or consolidated planned unit development (PUD) when
<u> </u>	Unexpired approve occurred before October 1 <sup>a</sup> , 2013. Unexpired approve occurred before October 1 <sup>a</sup> , 2013.
5	Unexpired approval of a concept design by the Historic Preservation Review Board or Commission of Fine Arts when vote to approve occurred before October 1 <sup>st</sup> , 2013.
	Unexpired approval of a variance, special exception, design review under the CG or SEFC overlay when a public hearing occurred before October 1 <sup>st</sup> , 2013.
-	Unexpired approval of a first stage, second stage, or consolidated planned unit development (PUD) when public hearing occurred before October 1 <sup>st</sup> , 2013.
	Property is not exempt from GAR. The applicable zone is, and the minimum required score is, The lot area is

NOTE: When impervious surface or lot occupancy is increased by 20 percent or more, that increase is not covered under this exemption. The GAR is applied to the modification.

Applicant	
· · · ·	

Telephone

Address

Signature	Si	gnature
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Date

ZONING OFFICE USE ONLY

EFC overlay vote prior 10/01/2013.
EFC public hearing prior 10/01/2013.
vote prior 10/01/2013.
, and the minimum required score is

Office of Zoning Administrator

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### **Reduced GAR**

- A special exception from the Board of Zoning Adjustment (BZA) may be granted if the application meets sustainability goals through means outside the scope of the GAR.
- Full or partial reduction in GAR score requirement
- Upload BZA Order with reduced GAR requirements to the stormwater database
- 6-month process



#### **Campus Plan**

- College or university proposing new building or addition to existing building
  - Demonstrates the extent to which GAR is met
  - Reviewed by the Zoning Commission
  - Must be reviewed by the Zoning Commission prior to submitting to DOEE for technical review



### Who has a GAR Requirement?

#### GAR Required by Zone District: Effective September 6, 2016

Zone District	Green Area Ratio
RA-1, RA-2, RA-6, RA-7, RA-8 RC-1; WR-2, WR-3, WR-4, WR-5, WR-7, WR-8	0.40
RA-3, RA-4, RA-5, RA-9, RA-10 MU-1, MU-2, MU-3, MU-4, MU-5, MU-6, MU-12, MU-13, MU-14, MU- 15, MU-16, MU-17, MU-18, MU-19, MU-23, MU-24, MU-25, MU-26, MU-27, NC-1, NC-2, NC-3, NC-4, NC-5, NC-7, NC-9, NC-10, NC-11, NC-14, NC-16, NC-17 SEFC-2, SEFC-3, CG-1, CG-2, RC-2, RC-3 ARTS-1, ARTS-2, D-2, CG-5	0.30
MU-7, MU-8, MU-28, CG-3 NC-6, NC-8, NC-12, NC-13, NC-15, ARTS-3	0.25
MU-9, MU-10, MU-20, MU-21, MU-22, MU-29 D-3, D-4 , D-5, D-1-R, D-4-R, D-5-R, D-6, D-6-R, D-7, D-8 SEFC-1, CG-4, ARTS-4	0.20
<ul> <li>PDR (all lots unless otherwise noted):</li> <li>Lot with principal building that is one (1) story in height</li> <li>Lot with principal building that is two (2) stories in height</li> </ul>	0.30 0.10 0.20

### Who has a GAR?

- All New Buildings that require a Certificate of Occupancy (C of O).
  - Submit during the Foundation-to-Grade (FD) or Building (B) permit application
- Additions and Interior Renovations to existing buildings,
  - When the construction cost exceeds 100% of the assessed building value within any 12-month period.
  - A "historic resource" with a 50 percent (or more) increase to the gross floor area.
  - Submit during the Building (B) permit application

#### $\bigcirc$

#### Helpful reference for property summary: propertyquest.dc.gov/

PQ 1200 first st ne		Ownership and Taxes	
		Tax lot	0672 0856
Basic Information		Premises	1200 1ST ST NE
1200 1ST STREET NE		Owner	VEF-VN CAPITOL PLAZA I LLC
SSL (Square, Suffix & Lot)	0672 0856		5530 WISCONSIN AVE STE 1000
Lot type	tax lot		CHEVY CHASE, MD 20815-4330
Ward	Ward 6	Use	Commercial-Office-Large
ANC	ANC 6C	Land area	34405 square feet
SMD	SMD 6C06	Tax class	Commercial, industrial
Neighborhood Cluster	Cluster 25	Tax rate	n/a
Police District Fifth Police District		Current assessment (2016)	
Police Service Area	PSA 501	land	\$16 101 540
Voting Precinct	Presingt 83	improvements	\$147.076.840
Zoning	D-5	improvements	\$147,070,040
Downtown subarea	NoMa	total	\$163,178,380
2010 census tract 106		Proposed assessment (2017)	
2010 census block group	2	land	\$16,101,540
2010 census block 2023		improvements	\$136,528,090
No historic resources noted.		total	\$152,629,630

### Definitions...

- Addition and interior renovation of existing building structure
  - Extension or increase in floor area or height.
  - Alteration, renovation or repair to the interior of the existing structure.
- Assessed value of the building, not including the land value
  - Office of Tax and Revenue records.
  - Date of the building permit application.
- Historic resource is a building or structure,
  - Certified by the DC Inventory of Historic Sites or State Historic
     Preservation Officer .
- Construction cost for an addition, alteration, or repair
  - Amount indicated by the applicant in the building permit application (Contract Agreement Form).

### Definitions...

• **Construction cost** for an addition, alteration, or repair

Per Section 108.3 of DCMR 12, DC Construction Code, the applicant for abuilding permit shall provide an estimate permit value

- The building permit valuation shall be based on the TOTAL value of materials and labor, including electrical, gas, mechanical, plumbing equipment, and permanent systems
- The total value shall not include architectural, engineering, and other associated professional costs
- The valuation will be reviewed by DCRA during the building permit review process
- OZA will request a copy of the construction cost estimate when an applicant requests an exemption from GAR compliances based on the applicant's assertion that the cost of construction for the addition, interior renovation, or both, are less than 100% of the assessed building value pursuant to C-601.3 of DCMR 11, District of Columbia Zoning Regulations

# Green Area Ratio (GAR) Online Training Part III:

#### Plan Development, Permitting Process, and Construction



Photo credit: Oculus, Inc.


## **GAR Plan Development**

### **GAR Plan Development**

- Do you know the project boundaries?
- Have you hired a Landscape Expert?
- Do you know the score for your zone?
- Design considerations,
  - Stormwater obligations.
  - Energy goals.
  - Green building standards.



- Based on the property's **Record Lot** boundary
  - If separated into tax lots, show how the whole record lot and each tax lot comply with GAR
- Multiple/phased lots within one permit
  - Each lot must meet its GAR score
  - Checklist sign-off occurs at each phase completion
- Multiple zones in one lot
  - Each zone must meet score, but whole lot may be used
  - Confirmed by OZA
- Lots with historic structures
  - The addition exceeds 50% of the existing gross floor area
  - The historic structure's footprint is excluded from lot area



#### https://dcra.dc.gov/node/1410041





Applicable GAR Area - Record Lot Boundaries





Applicable GAR Area - Front Yard in PROW





Building



Area eligible to meet GAR score

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SMD	SMD 6C06	lax class	Commercial, industrial		
Neighborhood Cluster	Cluster 25	Tax rate	n/a		
Police District Fifth Police District		Current assessment (2016)			
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Voting Precinct	Precinct 83		\$10,101,540		
Zoning	D-5	improvements	\$147,076,840		
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#### DC OpenData



DC's Real Property Tax Administration defines assessment and taxation lots, often referred to as A&T lots or simply tax lots. These lots are strictly for real estate taxation purposes and normally defined under two circumstances:

- When property owners ask for their real property tax bills to be consolidated, after they have bought several contiguous record lots; this is called a combine;
- When part of a record lot is sold, but no new record lot is yet defined; this is called a split request.

Tax lots are not determined by survey, and are therefore not official lots in the same way record lots are. These lots are normally numbered between 800 and 1999within a square to differentiate them from record lots on the property tax maps. When a tax lot is established by RPTA, an A&T Plat is generated by RPTA and forwarded to the surveyor's office. These A&T Plats are not reviewed but simply filed by the Surveyor; they do not comply with the standards required of subdivision plats, and are not recorded. Tax Lots are not normally acceptable when applying for building permits and must be converted to Record Lots through the normal subdivision process involving the D.C. Surveyor's Office before permits will be issued. The only exception is if the lot does not face a public street. Furthermore, at the time of

#### About

DCGIS Open Data: Property and Land Shared By: DCGISopendata Data Source: maps2.dcgis.dc.gov

View Metadata Create Webmap Create a Story Map



- Based on the property's **Record Lot** boundary
  - If separated into tax lots, show how the whole record lot and each tax lot comply with GAR
- Multiple/phased lots within one permit
  - Each lot must meet its GAR score
  - Checklist sign-off occurs at each phase completion
- Multiple zones in one lot
  - Each zone must meet score, but whole lot may be used
  - Confirmed by OZA
- Lots with historic structures
  - The addition exceeds 50% of the existing gross floor area
  - The historic structure's footprint is excluded from lot area



#### Phased Development Plan

If the development plan is phased, then submit one master plan outlining the phases, and then submit the GAR under the individual permits associated with each phase.





#### Phased Development Plan

If the development plan is phased, then submit one master plan outlining the phases, and then submit the GAR under the individual permits associated with each phase.





Area required to meet GAR score for Phase 1



#### Phased Development Plan

If the development plan is phased, then submit one master plan outlining the phases, and then submit the GAR under the individual permits associated with each phase.





Area required to meet GAR score for Phase 2



#### Phased Development Plan

If the development plan is phased, then submit one master plan outlining the phases, and then submit the GAR under the individual permits associated with each phase.





Area required to meet GAR score for Phase 3



#### Phased Development Plan

If the development plan is phased, then submit one master plan outlining the phases, and then submit the GAR under the individual permits associated with each phase.





- Based on the property's **Record Lot** boundary
  - If separated into tax lots, show how the whole record lot and each tax lot comply with GAR
- Multiple/phased lots within one permit
  - Each lot must meet its GAR score
  - Checklist sign-off occurs at each phase completion
- Multiple zones in one lot
  - Each zone must meet score, but whole lot may be used
  - Confirmed by OZA
- Lots with historic structures
  - The addition exceeds 50% of the existing gross floor area
  - The historic structure's footprint is excluded from lot area



Multiple Zones in One Lot Where One Lot Does Not Have a GAR Requirement

If developing a record lot which contains more than one zone and one zone does not have a GAR requirement, the applicant is required to meet the minimum score for the zone with the GAR requirement. The denominator for the score sheet is the area within the zone with the GAR requirement, not the entire lot. The landscape elements (LE) used to meet the GAR score may be selected from anywhere within the property.



The property to the left is split into 2 zones. Zone 1 has no GAR requirement. Zone 2 has a GAR requirement. The surface area of Zone 2 is the denominator used to calculate the GAR score.



Multiple Zones in One Lot Where One Lot Does Not Have a GAR Requirement

If developing a record lot which contains more than one zone and one zone does not have a GAR requirement, the applicant is required to meet the minimum score for the zone with the GAR requirement. The denominator for the score sheet is the area within the zone with the GAR requirement, not the entire lot. The landscape elements (LE) used to meet the GAR score may be selected from anywhere within the property.



All of the landscape elements within the property may be used to meet the Zone 2 GAR requirements.



Zone 2 credited landscape elements

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# GAR Plan Development: Project Boundaries

#### Multiple Zones in One Lot

If developing a record lot which contains more than one zone, the applicant is required to meet the minimum score for each zone. The applicant must provide a separate score sheet for each zone which has a GAR requirement. The denominator for each score sheet is the area within each zone, not the entire lot. The landscape elements (LE) used to meet each score are not required to be within that zone area, but may be selected from anywhere within the subject property.





#### Multiple Zones in One Lot

If developing a record lot which contains more than one zone, the applicant is required to meet the minimum score for each zone. The applicant must provide a separate score sheet for each zone which has a GAR requirement. The denominator for each score sheet is the area within each zone, not the entire lot. The landscape elements (LE) used to meet each score are not required to be within that zone area, but may be selected from anywhere within the subject property.





#### Multiple Zones in One Lot

If developing a record lot which contains more than one zone, the applicant is required to meet the minimum score for each zone. The applicant must provide a separate score sheet for each zone which has a GAR requirement. The denominator for each score sheet is the area within each zone, not the entire lot. The landscape elements (LE) used to meet each score are not required to be within that zone area, but may be selected from anywhere within the subject property.

Zone 1 Landscape Elements



Landscape elements L1, L2, and L3 are being used to meet the Zone 1 GAR score. Note that L2 is not located within Zone 1.



Zone 1 credited landscape elements



#### Multiple Zones in One Lot

If developing a record lot which contains more than one zone, the applicant is required to meet the minimum score for each zone. The applicant must provide a separate score sheet for each zone which has a GAR requirement. The denominator for each score sheet is the area within each zone, not the entire lot. The landscape elements (LE) used to meet each score are not required to be within that zone area, but may be selected from anywhere within the subject property.





Landscape elements L4 and L5 are being used to meet the Zone 2 GAR score. Note that L4 is not located within Zone 2.



Zone 2 credited landscape elements

### **GAR Plan Development**

- Do you know the project boundaries?
- Have you hired a Landscape Expert?
- Do you know the score for your zone?
- Design considerations,
  - Stormwater obligations.
  - Energy goals.
  - Green building standards.



## GAR Plan Development: Who is a Landscape Expert?

- Certified Landscape Expert is:
  - Maryland or Virginia Licensed Landscape Architect
  - International Society of Arboriculture (ISA)
     Certified Arborist
  - Maryland Certified Professional Horticulturist
  - Landscape Contractors Assoc. MD-DC-VA certified
     Landscape Technician

### **GAR Plan Development**

- Do you know the project boundaries?
- Have you hired a Landscape Expert?
- Do you know the score for your zone?
- Design considerations,
  - Stormwater obligations.
  - Energy goals.
  - Green building standards.

### **GAR Plan Development**

Zone District	Green Area Ratio
RA-1, RA-2, RA-6, RA-7, RA-8 RC-1; WR-2, WR-3, WR-4, WR-5, WR-7, WR-8	0.40
RA-3, RA-4, RA-5, RA-9, RA-10 MU-1, MU-2, MU-3, MU-4, MU-5, MU-6, MU-12, MU-13, MU-14, MU- 15, MU-16, MU-17, MU-18, MU-19, MU-23, MU-24, MU-25, MU-26, MU-27, NC-1, NC-2, NC-3, NC-4, NC-5, NC-7, NC-9, NC-10, NC-11, NC-14, NC-16, NC-17 SEFC-2, SEFC-3, CG-1, CG-2, RC-2, RC-3 ARTS-1, ARTS-2, D-2, CG-5	0.30
MU-7, MU-8, MU-28 NC-6, NC-8, NC-12, NC-13, NC-15, ARTS-3	0.25
MU-9, MU-10, MU-20, MU-21, MU-22, MU-29 D-3, D-4 , D-5, D-1-R, D-4-R, D-5-R, D-6, D-6-R, D-7, D-8 SEFC-1, CG-4, ARTS-4, CG-3	0.20
<ul> <li>PDR (all lots unless otherwise noted):</li> <li>Lot with principal building that is one (1) story in height</li> <li>Lot with principal building that is two (2) stories in height</li> </ul>	0.30 0.10 0.20

#### $\bigcirc$

#### Helpful reference for property summary: propertyquest.dc.gov/

PQ 1200 first st ne		Ownership and Taxes			
		Tax lot	0672 0856		
Basic Information		Premises	1200 1ST ST NE		
1200 1ST STREET NE		Owner	VEF-VN CAPITOL PLAZA I LLC		
SSL (Square, Suffix & Lot)	0672 0856		5530 WISCONSIN AVE STE 1000		
Lot type	tax lot		CHEVY CHASE, MD 20815-4330		
Ward	Ward 6	Use	Commercial-Office-Large		
ANC	ANC 6C	Land area	34405 square feet		
SMD	SMD 6C06	Tax class	Commercial, industrial		
Neighborhood Cluster	Cluster 25	Tax rate	n/a		
Police District Fifth Police District		Current assessment (2016)			
Police Service Area PSA 501		land	\$16 101 540		
Voting Precinct	Presingt 83	improvemente	\$147.076.840		
Zoning	D-5	Improvements	\$147,070,040		
Downtown subarea	NoMa	total	\$163,178,380		
2010 census tract	106	Proposed assessme	ent (2017)		
2010 census block group	2	land	\$16,101,540		
2010 census block	2023	improvements	\$136,528,090		
No historic resources noted.		total	\$152,629,630		



			De	evelopment Standa	rds				
	Floor Area Ratio (max.) <sup>1, 2</sup>	Height (ft.) <sup>2</sup>	Penthouse Height (ft.)/Stories	Lot Occupancy (percentage) <sup>3</sup>	Rear Setback (ft.)	Side Setback (1	:.)	Green Area Ratio	Zoning Regulation Reference
		130 (fronts on right-of-way of at least 110 ft.)	20						
	None	120 (fronts on right-of-way of at least 100 ft. but less than 130 ft.)		2.5 in. per 1 ft. of vertical distance from the mean finished grade at	lf provided, a				
D-5	6.5 (non- residential)	110 (fronts on right-of-way of at least 90 ft. but less than 120 ft.) 90 (historic landmark or contributing building within a historic district)	1 plus mezzanine; Second story permitted for penthouse mechanical space	100	the middle of the rear of the structure to the highest point of the main roof or parapet, but not less than 12 ft.	for each 1 ft. o height of buildi but no less that ft.	f ng 5	0.20	Subtitle I, Chapter 5

### **GAR Plan Development**

Zone District	Green Area Ratio
RA-1, RA-2, RA-6, RA-7, RA-8 RC-1; WR-2, WR-3, WR-4, WR-5, WR-7, WR-8	0.40
RA-3, RA-4, RA-5, RA-9, RA-10 MU-1, MU-2, MU-3, MU-4, MU-5, MU-6, MU-12, MU-13, MU-14, MU- 15, MU-16, MU-17, MU-18, MU-19, MU-23, MU-24, MU-25, MU-26, MU-27, NC-1, NC-2, NC-3, NC-4, NC-5, NC-7, NC-9, NC-10, NC-11, NC-14, NC-16, NC-17 SEFC-2, SEFC-3, CG-1, CG-2, RC-2, RC-3 ARTS-1, ARTS-2, D-2, CG-5	0.30
MU-7, MU-8, MU-28 NC-6, NC-8, NC-12, NC-13, NC-15, ARTS-3	0.25
MU-9, MU-10, MU-20, MU-21, MU-22, MU-29 D-3, D-4 , D-5, D-1-R, D-4-R, D-5-R, D-6, D-6-R, D-7, D-8 SEFC-1. CG-4. ARTS-4. CG-3	0.20
<ul> <li>PDR (all lots unless otherwise noted):</li> <li>Lot with principal building that is one (1) story in height</li> <li>Lot with principal building that is two (2) stories in height</li> </ul>	0.30 0.10 0.20

### **GAR Plan Development**

- Do you know the project boundaries?
- Have you hired a Landscape Expert?
- Do you know the score for your zone?
- Design considerations,
  - Stormwater obligations.
  - Energy goals.
  - Green building standards.



## **Permitting Process**

### **Process - Development to Submittal**

Project Applicant determines GAR applicability

Plan development

Request BZA special exception (as necessary)

CLE signs off on plans for approval

Plans submitted to DCRA and uploaded to stormwater database – follow reviewer's submittal instructions!

### **Plan Submittals**

- Synergy with stormwater and ESC plan submittals
- doee.dc.gov/swtraining



#### **Intake Process**



#### **DOEE Review within DCRA Permit Process**

• DOEE is part of the DCRA permit review process; however, most reviews are done in the stormwater database

#### DOEE Stormwater Database (https://doee.dc.gov/swdb)

Provide site and plan information for DOEE review of DCRA permit applications for:

- Stormwater Management (SWMPs)
- Soil Erosion and Sediment Control (ESC)
- Green Area Ratio (GAR)

#### **DOEE Plan Review**



#### **DOEE Plan Review**






Doumont Tuno	Doumont Poquiromont	Fees by Land Disturbance Type or Building Footprint			
Payment Type	Payment Requirement	≤10,000 ft <sup>2</sup> >10,000 f			
Initial*	Due upon filing for building permit	\$620.52	\$917.29		
Final	Due before building permit is issued	\$134.90	\$215.83		
Supplemental	For reviews after first resubmission	\$539.58			

-\*Initial fee includes 1 hour pre-development meeting. Additional meetings are charged an hourly rate of \$75.54.

-DOEE Stormwater Management Regulations - Chapter 5, DCMR Title 21 § 501.10 - Fees adjusted annually for inflation - fees above effective January 31, 2020

## **Plan Revisions After Approval**

An additional review is required if:

Reduce plant quantity

Change location of landscape element

Species substitution

Decrease in GAR score



## Construction

### Process – Approval to C of O

DOEE reviews and approves the GAR Plan

CLE oversees installation of GAR landscape elements

CLE / DOEE inspect site and sign Landscape Checklist

OZA receives Landscape Checklist and issues C of O

Property Owner maintains GAR landscape elements

### GAR Landscape Checklist

### Construction

Landscape Expert confirms

installation as per plan

DOFF

Inspection

Landscape Checklist





GOVERNMENT OF THE DISTRICT OF COLUMBIA DISTRICT DEPARTMENT OF ENVIRONMENT WATERSHED PROTECTION DIVISION/INSPECTION & ENFORCEMENT BRANCH

#### Green Area Ratio - Landscape Checklist

declare as follows:

Full Name of Certified Landscape Expert (Printed)

I arm a Certified Landscape Expert, as defined in DCMR Title 11, Chapter 34, responsible for confirming installation of the approved landscape plan for development located at:

Building Pe	rmit Number	DDOE Plan Number
Ward	Lot	Square

34. This includes the number size, and approximate location of plantings and other approved landscape elements.

Any changes or species substitutions (if applicable) have been approved by DDOE.

A completed Landscape Maintenance Plan has been submitted to the property owner.

I declare under penalty of perjury under the laws of the District of Columbia that the following is true and correct.

Signature of Certified Landscape Expert

Certification/Registration Number Date

NOTE: If any landscape elements have been changed during installation, DO NOT SIGN OR SUBMIT this checklist until a revised landscape plan has been approved by the District Department of Environment. If you provide false information in this document, you will subject yourself to criminal liability.

[TO BE COMPLETED BY DDOE INSPECTOR]

Document received by: Inspector Signature Printed Name Date OWNER/AGENT (YELLOW) DDOE (WHITE) LANDSCAPE EXPERT (GOLDENROD) INSPECTOR (PINK)



## GAR Landscape Checklist \*Online!



# **Temporary Certificate of Occupancy**

- Apply to Office of Zoning Administrator
- Renewed twice, each time for 4 months.
- Considered by the DOEE inspector under the following conditions:

Weather

Seasonal restrictions

Site construction

### **Post-Construction Maintenance**

Property owner responsible after granted Certificate of Occupancy

Follow landscape maintenance plan provided by Certified Landscape Expert

Must maintain GAR score

GAR plan submittal to DCRA not required after Landscape Checklist signed-off

# Green Area Ratio (GAR) Online Training Part IV: Submission Requirements and Landscape Elements



Photo credit: Oculus, Inc.



# Submission Requirements

# **General Submission Requirements**

### **Minimum Submittal Requirements:**

- Completed GAR Scoresheet
- Completed GAR Worksheet, if landscape elements are divided between multiple pages
- GAR plan with landscape elements called out
- Graphic scale, north arrow, and dimensions
- New plat if combining multiple record lots into one
- Completed CLE Signature Template
- Construction sequence for each landscape element
- No invasive plant species permitted to be installed anywhere in GAR projects
- Maintenance plan for all proposed landscape elements
- Integrated Pest Management Plan for projects located within the Anacostia Waterfront Development Zone

### **Score Sheet and Worksheet**

					Gre	en Area Ratio	o Scoreshee
* *	* Address	\$	Sq	uare		Lot	Zone District
	Other	·	Lot area (sf)	Minimum Score		Multiplier	GAR Score
		Lot size (enter this value first) *				SCORE:	#DIV/0!
	Landscap	e Elements		Square Feet	Factor		Tot
A	Landscaped	areas (select one of the following for eac	h area)				
1	Landscape	d areas with a soil depth < 24"		square feet	0.30		
2	Landscape	d areas with a soil depth ≥ 24"		square Jeer	0.60		
3	Bioretenti	on facilities		square feet	0.40		-
в	Plantings (c	credit for plants in landscaped areas from S	Section A)			Native Bonus	
1	Groundcov	vers, or other plants < 2' height	# of pipets	square feet	0.20	square feet	
2	Plants≥2' - calculate	height at maturity ed at 9-sf per plant	a or prones	•	0.30	a of planes	
3	New trees - calculate	with less than 40-foot canopy spread ed at 50 sq ft per tree	If of trees	0	0.50	# of trees	-
4	New trees - calculate	with 40-foot or greater canopy spread ed at 250 sq ft per tree	II of trees	D 0	0.60	# of trees	
5	Preservation - calculation	on of existing tree 6" to 12" DBH ed at 250 sq ft per tree	# of trees	•	0.70	# of trees	
6	Preservation - calculate	on of existing tree 12" to 18" DBH ed at 600 sq ft per tree	If of trees	•	0.70	# of trees	
7	Preservation - calculate	on of existing trees 18" to 24" DBH ed at 1300 sq ft per tree	# of trees	•	0.70	# of trees	
8	Preservation - calculate	on of existing trees 24" DBH or greater ed at 2000 sq ft per tree	# of trees	•	0.80	# of trees	
9	Vegetated	wall, plantings on a vertical surface		square feet	0.60	square feet	
с	Vegetated	or "green" roofs					
1	Over at lea	ast 2" and less than 8" of growth medium		square feet	0.60	square feet	
2	Over at lea	ast 8" of growth medium			0.80		
D	Permeable	Paving***					
1	Permeable	e paving over 6" to 24" of soil or gravel		square feet	0.40		
2	Permeable	e paving over at least 24" of soil or gravel		square Jeet	0.50		-
E	Other						
1	Enhanced to	ree growth systems***		square feet	0.40		
2	Renewable	energy generation		square feet	0.50		
3	Approved w	vater features		square feet	0.20		-
F	Bonuses		sub-total of sq ft	= 0			
1	Native pla	nt species		square feet 0	0.10		
2	Landscaping	g in food cultivation		square feet	0.10		-
		*****		square feet			
3	narvested s	tormwater irrigation		Green Area Ratio n	0.10 umerator		
*** Perm	eable paving and	structural soil together may not qualify for more than one Total square footage	e third of the Green A	Area Ratio score.	e growth		

GRI Wor	REEN AREA RATIO ROMENT														
					Q	uantity of (	GAR Featur	es per Subr	nitted She	et		-			
		L100, L110, L121	L101	L200/L201 /L210	L202	L221	L300	L404-L405	L410	L501	L502	L600	L700/L701	CIV	TOTAL**
A1	square feet														0
A2	square feet														0
A3	square feet														0
B1	square feet		171												171
B2	Total for B2		14		213		175	190			171				763
B3	# of trees				19			20					Í		39
B4	# of trees														0
B5	# of trees														0
B6	square feet														0
B7	square feet														0
B8	square feet														0
B9	square feet					146			79						225
C1	square feet						1422					3429			4851
C2	square feet			2875.5			1772	5445		5215			668		15975.5
D1	square feet														0
D2	square feet														0
E1	square feet														0
E2	square feet														0
E3	square feet														0
HI	square feet of native		27		626		325	1421			423				2822
на	square feet				020		525	1421			420				0
H3	square feet													18741	18741
* See (	Green Area Ratio Scores	heet for cat	egory defin	nitions						1					10/41
** Ente	Enter totals on the Green Area Ratio Scoresheet														

### Landscape Maintenance Plan

#### SOILS AND AMENDMENTS

#### Seasonal application

Mulch – Apply yearly or as necessary to replace decomposed mulch. Compost – Apply compost yearly at 1–2 inch depth. Coarse textured sand and clay soils require greater compost addition than loamy soils. The organic matter content of the chosen compost will determine the depth applied

Fertilizer – If choosing to apply fertilizer, perform a soil test for nutrient levels only after incorporating compost into topsoil. This will avoid over-application of nutrients, as compost itself will increase the nutrient content.

#### Material source

Compost should be well-decomposed material, stable, free of weeds, contaminants and foul odors. Compost may be derived from yard waste (decomposed leaves, grass clippings, branches) or food waste.

Mulch can be derived from organic sources such as shredded bark, or leaf mulch.

#### BIORETENTION

#### Frequency Maintenance Tasks

Upon establishment

For the first 6 months following construction, the practice and CDA should be inspected at least twice after storm events that exceed 1/2 inch of rainfall. Conduct any needed repairs or stabilization.

Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and make sure they are immediately stabilized with grass cover.

One-time, spot fertilization may be needed for initial plantings.

Watering is needed once a week during the first 2 months, and then as needed during first growing season (April-October), depending on rainfall.

Remove and replace dead plants. Up to 10% of the plant stock may die off in the first year, so construction contracts should include a care and replacement warranty to ensure that vegetation is properly established

#### At least 4 times per year

Mow grass filter strips and bioretention with turf cover Check curb cuts and inlets for accumulated grit, leaves, and debris that may block inflow

Twice during growing season Spot weed and mulch

#### Annually

Conduct a maintenance inspection Supplement mulch in devoid areas to 3" depth Prune trees and shrubs

#### LANDSCAPE AREAS ALL PLANTINGS

Provide supplemental watering if rainfall is less than 1 inch per week during the first two growing seasons.

Conduct weeding as necessary to reduce competition between weeds and new plantings for nutrients, soil moisture, and sunlight. Replace mulch as necessary to reduce competition for available moisture and nutrients.

Monitor the plantings for disease or stress and modify cultural practice as necessary. Employ an integrated pest management (IPM) approach if possible.

Remove dead plant material and replant in the next appropriate growing season.

TREES AND SHRUBS

For trees, install slow leak watering bags or tree buckets during the first two growing seasons and water as necessary to supplement precipitation if less than 1 inch per week.

Inspect trees for signs of dead, diseased, or crossing branches and prune accordingly. Remove hazard limbs especially from established trees. Never remove more than 20% of the tree canopy

during pruning activities in any year.

Spread mulch to 2-4 inch depth.

Maintain the health of the tree by limiting all grade changes and other soil disturbance underneath the tree's Critical Root Zone. PERENNIALS AND GROUNDCOVERS

In the early spring, deadhead top-growth from perennials and warm-season grasses.

Periodically divide perennials as necessary to encourage rejuvenated growth.

Spread mulch at a maximum 2-inch depth. TURFGRASS

Test soil for pH and apply lime only as necessary.

Maintain turfgrass at an increased height to reduce weed germination. Never mow more than one third of the grass height. Leaving grass clippings in-place after mowing requires less fertilizer application.

Regularly monitor and over-seed bare spots to prevent weed establishment.

In late fall, core aerate and topdress with organic matter.

#### VEGETATED WALLS

#### Living Facades

Periodically inspect roof gutters and drains for clogging with vegetation or debris.

Cable systems may require re-tensioning or inspection of the

When using harvested stormwater irrigation, valves and fertilizer injectors should be checked for function, and the irrigation pipes checked for leaks. Schedule frequent irrigation inspections. Drip irrigation emitters should be checked during operation to ensure water is being delivered to all panels. Winterize irrigation systems as per the irrigation specification. Schedule regular plant maintenance during establishment and ongoing growth. Inspect the vegetated wall for signs of disease, inadequate irrigation, and erosion.

### HARVESTED STORMWATER IRRIGATION Cistern

The cistern must be cleaned yearly. To clean, use a submersible pump to remove the water. Brush walls with a hard bristle brush or use a high pressure cleaner.

Purpose of the maintenance is to remove the sediment that inevitably deposits on the cistern's floor and which may give rise to parasitic fermentation and odor. The rate at which the sediment accumulates depends on the region's atmospheric pollution (for dust), the roof type, and the quality of the set-up upstream from the cistern's storage compartment. A fine mesh filter placed between the roof gutter's main downspout and the sedimentation basin will substantially delay the accumulation of sediment in the barrel or cistern. Additionally, a sedimentation basin equipped with an appropriate trapped overflow that prevents the passage of floating impurities can work. Filters need to be cleaned monthly. Cisterns and rain barrels should be dewatered often to ensure available volume on the onset of rain events.

#### Irrigation

Conduct frequent inspections to verify integrity of irrigation system.

Periodically review the pressure regulators, filters, controller, sensors, valves, sprinkler heads and other system components to verify they meet original design criteria for efficient operation and uniform water distribution.

### **AWDZ IPM Maintenance Plan**

#### Appendix S Integrated Pest Management

#### S.1 Integrated Pest Management

This appendix is in support of the District of Columbia's legislation B19-745, The Anacostia Waterfront Environmental Standards Amendment Act of 2012. This legislation requires regulated projects in the AWDZ governed by this legislation to receive a DOEE approved Integrated Pest Management Plan (see Figure S.1 for a sample plan).

Integrated Pest Management (IPM) is an approach that applies biological, cultural, mechanical, and chemical controls to manage pests at acceptable levels. The following are general guidelines to encourage a more considered use of fertilizers, herbicides, and pesticides.

#### S.2 Components of an Integrated Pest Management Plan

- Identification. Identify the pest and understand its life cycle. Correctly identify the pest to determine an appropriate control strategy. For assistance with pest identification, contact the Maryland Home & Garden Information Center at Maryland Cooperative Extension.
- 2. When to Take Action. Insects are an integral part of the local ecology; thus, their presence alone is not reason for taking action. First, monitor pest numbers and determine if preventative maintenance measures can be employed to remediate the situation. Take action only when alternative preventative methods are no longer feasible and when pest activity threatens the long-term health of the plant.
- 3. Prevention in Design:
  - (a) Choose the right plant for the right location.
  - (b) Assess species' suitability to site soils, moisture, wind, and sun exposure. Well-selected species require less maintenance.
  - (c) Select plant species and cultivars resistant to disease.
  - (d) Select a diverse plant palate to ensure ongoing survival of remaining plant material.
  - (e) Inspect delivered plant material at the nursery and again prior to installation. Material delivered from the nursery may carry pathogens or insects. Reject any material that is diseased.
- 4. Prevention in Maintenance and Construction. Proper cultural management practices can reduce plant stress and thus decrease their susceptibility to pests. Prior to applying pesticide or herbicides, consider your current landscape management practices. Soils are the foundation for healthy plants; it is important to provide the proper moisture, fertility, organic matter, and drainage.
  - (a) Soil Testing. Submit a soil sample to a soil testing laboratory for analysis. The results will determine the appropriate soil amendments to be applied.

#### Appendix S Integrated Pest Management

#### S.3 Sample Form for an Integrated Pest Management Plan



GOVERNMENT OF THE DISTRICT OF COLUMBIA DEPARTMENT OF ENERGY AND ENVIRONMENT INSPECTION AND ENFORCEMENT DIVISION CONSTRUCTION AND MAINTENANCE BRANCH Integrated Pest Management Plan

This document/submission will serve as your integrated pest management (PM) plan. It must be printed and distributed to the owner of the property and to any person or company who is given responsibility for on-site pest management, landscaping, or facility maintenance (i.e. honewaverse, property managers, maintenance companies). Per the Stourwater Management Plan (SWMP) that this IPM plan supports, the owner of the property and their agents relegally required to comply with this plan.

IPM is a continuous system of controlling pests (weeds, diseases, insects, or others) where pests are identified, action thresholds are considered, all possible control options are evaluated, and selected control(s) is implemented. Control options (biological, cultural, manual, mechanical, and chemical method) are used to prevent or cremedy unacceptable pest activity or damage. Choice of control option(s) is based on effectiveness, environmental impact, site characteristics, worker/public health and safety, and economics. IPM takes advantage of all appropriate pest management options.

Project Name: Street Number Street Name Zip Code: Email Address: Project Developer Information (Name & Title): Contact: Company Address Phone: Fax: JUSTIFICATION FOR IPM PLAN Ordinance Requirement Yes No 0 0 This development is a publically owned, privately developed property within the boundaries of the Anacostia Watershed Development Zone. C C The property requires a Certificate of Occupancy and falls within the regulations of Green Area Ratio. 1

Figure S.1 Sample form for an Integrated Pest Management Plan.

PROJECT INFORMATION



## Landscape Elements

GAR LANDSCAPE ELEMENTS	MULTIPLIER
Landscaped area (select one of the following for each area)	
Landscaped areas with a soil depth of less than 24"	0.3
Landscaped areas with a soil depth of 24" or more	0.6
Bioretention facilities	0.4
Plantings	
Ground covers, or other plants less than 2' tall at maturity	0.2
Plants at least 2' tall at maturity	0.3
Tree canopy for all new trees with mature canopy spread of 40' or less	0.5
Tree canopy for all new trees with mature canopy spread of 40' or greater	0.6
Tree canopy for preservation of existing trees 6" to 24" in diameter	0.7
Tree canopy for preservation of existing trees 24" diameter or larger	0.8
Vegetated wall, plantings on a vertical surface	0.6
Vegetated roofs	
Extensive vegetated roof over at least 2" but less than 8" of growth medium	0.6
Intensive vegetated roof over at least 8" of growth medium	0.8
Permeable paving	
Permeable paving over at least 6" and less than 2' of soil or gravel	0.4
Permeable paving over at least 2' of soil or gravel	0.5
Other	
Enhanced tree growth systems	0.4
Renewable energy generation (area of)	0.5
Water features (using at least 50% recycled water)	0.2
Bonuses	
Native plant species	0.1
Landscaping in food cultivation	0.1
Harvested stormwater irrigation	0.1

# Credits A1-A2: Landscape Soils

A1: Soils < 2-foot depth	A2: Soils ≥ 2-foot depth		
(Multiplier: 0.3)	(Multiplier: 0.6)		
Credits planted areas without trees or vegetated walls	Credits planted areas with trees, vegetated walls, and/or soils preserved from compaction		

### **Minimum Submittal Requirements:**

- Soil depth and area shown on plans
- Soil protection measures and existing vegetation if claiming preservation credit
- Topsoil and soil improvement specifications
- Soil handling notes
- All planting areas next to vehicle access areas must show how vegetation is protected from vehicles (bollards, curbs, etc.)



### Credits A1-A2: Landscape Soils







## **Credit A3: Bioretention**

wultiplier: 0.4
-----------------

Credit the area of filter bed (side slopes to be credited under "landscape soils")

Utility easements apply

Must follow SWM Guidebook feasibility, pretreatment, design, construction, and maintenance criteria, as well as DC Water guidelines.

Must submit geotechnical report to verify infiltration rates\* and groundwater table levels.

\*Infiltration tests required if not using underdrains.

### **Minimum Submittal Requirements:**

- Soil depth and area shown on plans
- Dimensioned details showing media depths
- Filter media specifications
- Construction sequence, following SWM guidelines



NOTE: If underlying soil inflitration rate <0.5//hr, the underdrain and inflitration sump option may be used. The inflitration sump option must be designed to inflitrate the design storm volume in less than 72 hours.

### **Credit A3: Bioretention**





### Credits B1-B2: Groundcovers and Plants ≥ 2-Foot Height

B1: Groundcovers (Multiplier: 0.2)	B2: Plants ≥ 2-foot height (Multiplier: 0.3)				
All plants < 2 feet in height	Shrubs, herbaceous, and grass quantity credited on a one-for-one basis as shown on plan – 9 sf per plant				
Credited by mature sf	Trees with less than 400 cf of soil volume or are less than minimum size are credited under B2				
Annuals, bulbs, or plantings that require annual replanting not eligible,					



# unless used for food cultivation purposes Minimum Submittal Requirements:

- Plant location and spacing
- Plant schedule containing: common and scientific name, container size, quantity, credit, native status, spacing
- Planting and other details illustrating soil depth, staking, planting hole
- Planting construction notes





### Credits B3-B4: New Tree Plantings

B3: Trees < 40-foot canopy spread* (Multiplier: 0.5)	B4: Trees ≥ 40-foot canopy spread* (Multiplier: 0.6)			
Quantity credited on a one-for-one basis as shown on plan – 50 esf per tree	Quantity credited on a one-for-one basin as shown on plan – 250 esf per tree			
Credit by canopy spread	Same			
<ul> <li>Minimum tree size:</li> <li>Single trunk – 1.5 inch caliper</li> <li>Multi-stem – 8-foot height</li> </ul>	Same			
<ul> <li>Minimum soil volume requirements</li> <li>Minimum 400-600 cf soil volume**</li> <li>Measured within 16-foot radius</li> </ul>	<ul> <li>Minimum soil volume requirements</li> <li>Minimum 1,000-1,500 cf soil volume</li> <li>Measured within 27-foot radius</li> </ul>			

\*Based on *average* canopy spread.

\*\*Maximum depth used for calculations is 3 feet.

\*\*\*Transplanted trees receive credit based on the classifications above.

### **Minimum Submittal Requirements:**

- Same as Credits B1-B2, plus:
- Soil volume areas and calculations

### Credit B3: Trees with <40' Canopy Spread



### Credit B4: Trees with ≥40' Canopy Spread



### **Rootable Soil Volume for Trees**



### Rootable Soil Volume for Trees – With Permeable Pavement



### Rootable Soil Volume for Trees – With Structural Soil





### **Property Line**





### **Property Line**



### Credits B5-B8: Tree Preservation

Credit for tree canopy for preserved tree, trunk at DBH:	Equivalent Square Footage	Multiplier
At least 6 in, less than 12 in	250	0.7
At least 12 in, less than 18 in	600	0.7
At least 18 in, less than 24 in	1,300	0.7
At least 24 in	2,000	0.8



### **Minimum Submittal Requirements:**

- Tree survey of all preserved trees showing location, scientific and common name, trunk DBH, condition, and critical root zone (CRZ)
- Tree preservation plan for all construction phases
- Civil site plans showing extent of site work
- CRZ must not be disturbed

# Critical Root Zone (CRZ)



The CRZ is defined as the radius from the center of the existing tree at 1.5 feet per inch of trunk diameter at breast height (DBH). Any disturbance related to construction activity, including material or equipment stockpiling, is not allowed. Example: an existing tree with a trunk DBH of 20 inches will have a CRZ of 30 feet.



Critical Root Zone to be protected during construction (also eligible for A2 credit when undisturbed)
### $\bigcirc$

### Property Line



#### Multiplier: 0.6

Credited by vertical coverage

Soil volume - 1 cf / 10 sf of credited wall coverage

Max 30-foot height for green facades

### **Minimum Submittal Requirements:**

- Same as Credits B1-B2, plus:
- Max growing height, growth habit
- Dimensioned façades and sections showing support structure
- Must be minimum of 5 feet from facing wall or property lines where the adjacent property has a zero-lot line allowance
- Irrigation plan or supplemental irrigation
- Harvested stormwater irrigation, if proposed, serves vegetated wall



#### Multiplier: 0.6

Credited by vertical coverage

Soil volume - 1 cf / 10 sf of credited wall coverage

Max 30-foot height for green facades



### Sample of proposed GAR plant list

Scientific Name	Common Name	Max. Height	Attachment	Sun / Shade	Native	Notes
		(ft.)				
Actinidia polygama	Silver Vine	10-15	Twining	Sun / partial		
Aristolochia macrophylla (A. durior)	Dutchman's Pipe	20-30	Twining	Sun / partial	х	
Bignonia capreolata	Crossvine	30-50	Clinging/Twining	Sun / partial	х	
Campsis radicans	Common Trumpetcreeper	30-40	Clinging	Sun / partial	х	







Credited green facade



1. Vegetated walls facing adjacent lots with zero lot-line development potential (building can be constructed up to the lot line) shall be at least 5 feet from a side or rear lot line.

2. Vegetated walls shall be at least 5 or more feet from adjacent, facing structures to allow adequate light penetration.

3. The vegetated wall setback does not apply to lot lines abutting streets or alleys.



### $\bigcirc$

### Property Line



# Credits C1-C2: Vegetated Roofs

C1: Soils 2-8 inch depth (Multiplier: 0.6)	C2: Soils ≥ 8 inch depth (Multiplier: 0.8)	
Credited by surface area		
Depth = soil media only*		
Container plantings (except bioretention) over structure credited		
Plant type by soil media depth and irrigation provided		
Permanent irrigation needs dependent upon specified plant type and % coverage		
Multiplier accounts for soil media + groundcover vegetation –		

Plants > 2-foot credited separately

Must follow SWM Guidebook feasibility, design, construction, and maintenance criteria, as well as applicable building codes

Must achieve 80% coverage within 2 years

\*Soil media 1 inch or greater and less than 2 inches may receive credit if supplied with an additional water retention layer with a depth of at least 1 inch.



# Credits C1-C2: Vegetated Roofs

### **Minimum Submittal Requirements:**

- Soil media depth and area shown on plans
- Details and product specifications



- Plant species, size, spacing, type of root system
- Irrigation plan or supplemental irrigation source
- Existing buildings must provide a statement signed by a structural engineer confirming the roof can support a vegetated roof
- Roof drainage and overflow plan
- Access points for maintenance
- Mechanical equipment and roof penetration locations
- Construction sequence, following SWM guidelines

## Credits C1-C2: Vegetated Roofs: Vegetated Roof Plant Coverage Guidelines

Vegetated roof coverage for plant species			Credited categories		
Soil media	No permanent irrigation	Permanent irrigation	Native	Groundcover	Plant ≥ 2'
depth			(H1.)	(B1.)	(B2.)
2–4" soil	Succulents	Succulents	30% max.		
	Non-succulents (≤10% cover)	Non-succulents (≤10% cover)			
					No
4–8" soil	Succulents-Grasses-	Succulents-Grasses-	50% max.		
	Herbaceous	Herbaceous			
	Non-succulents (≤30% cover)			No	
8–12" soil	Succulents-Grasses-	Succulents-Grasses-		(Included in	
	Herbaceous	Herbaceous - Small shrubs		vegetated root)	
12–24" soil	Grasses-Herbaceous	Succulents-Grasses-	1000/		
		Herbaceous-Shrubs	100% max.		Yes
	Succulents (≤10% cover)	Succulants Grassos			
24 + 5011		Herbaceous-Shrubs-Trees			

## Credits C1-C2: Vegetated Roofs: vegetated roof Plant Coverage Guidelines

### **Conditions:**

- Growing media consists of 70%–80% inorganic material and a maximum of 30% organic matter by volume. Growing media shall be capable of supplying all of the following in quantities sufficient to support plant growth: nutrient supply, water-holding capacity, drainage, root support, and ballast.
- Growing media less than 4 inches deep should have a water-retention layer 0.5 inches thick or greater unless otherwise provided with permanent irrigation. Growing media with a depth of 1 inch or greater and less than 2 inches may be credited if supplied with a water-retention layer 1 inch or greater. Only succulents may be specified and non-natives credited at less than 2-inch depth of growing media.
- Planting designs shall have a minimum of 5–7 species evenly mixed throughout the area to ensure suitability to varied rooftop microclimates. Non-succulent species in non-irrigated or shallow growing media should have demonstrated drought tolerance for vegetated roof conditions (refer to the GAR Plant List for species recommendations).
- Individual native species may compose no more than 20% of total vegetated roof coverage.

# Credits C1-C2: Vegetated Roofs









## Credits D1-D2: Permeable Pavement

D1: Reservoir depth 6-24 inches (Multiplier: 0.4)	D2: Reservoir depth ≥ 24 inches (Multiplier: 0.5)	
Area of pavers with reservoir layer beneath		
Cannot credit > 33% of GAR score (total for perm. pavement and enhanced tree growth)		
Credit based on reservoir plus sump (if applicable) depth		
Gravel and soil alone are not credite	d	
Permeable paving over structure ma hours, and a schematic plan showing the location and type of flow-contro	y receive credit, if it drains in 36-48 g the flow path of stormwater with I roof drains is provided	
Must follow SWM Guidebook feasibility, pretreatment, design, construction, and maintenance criteria, as well as DC Water guidelines		
Must submit geotechnical report to verify infiltration rates* and		

groundwater table levels.

\*Infiltration tests are required if not using underdrains



# Credits D1-D2: Permeable Pavement

### **Minimum Submittal Requirements:**

- Permeable pavement depth and area shown on plans
- Specify the type of permeable pavement to be installed
- Location of observation wells and underdrains (if underdrains required)
- Details showing material depths and types, type of permeable paving, underdrain (if applicable), observation wells
- Construction sequence, following SWM guidelines
- Drawdown calculations (if not using underdrains) must drain within 36-48 hours

















## Credit E1: Enhanced Tree Growth Systems

#### **Multiplier: 0.4**

Area of soil with structural capacity and located beneath pavers

Cannot credit > 33% of GAR score (total for perm. pavement and enhanced tree growth)

Depth of soil media - 2 feet minimum

Soil media may be credited to both permeable pavers and enhanced tree growth to provide stacked credit

Can contribute to soil volume requirements

Show provide minimum opening 2-3 times the size of mature trunk DBH

Follow SWM Guidebook engineered tree boxes for design guidance

### **Minimum Submittal Requirements:**

- Soil volume areas and calculations
- Specify if using suspended pavement, sandbased structural soil (SS), or aggregate SS



Credit: Cornell University









# Credit E2: Renewable Energy

#### Multiplier: 0.5

Solar photovoltaic and solar thermal

Credit provided to area of array

Vegetated roof below panels may receive full credit, must follow SWM 2017 Errata

Schematic plan for electrical or plumbing systems

Shall comply with applicable DCRA building codes

### **Minimum Submittal Requirements:**

- Supplemental solar permit number
- Reference note on GAR plans listing all electrical, plumbing, mechanical, or other relevant solar sheets
- Schematic solar diagram and solar specifications
- Shading analysis



# Solar Over Vegetated Roofs



Figure 3.3 Design requirements for structures constructed above green roofs.

Taken from DOEE's 2020 Stormwater Management Guidebook, Section 3.2



# Credit E3: Water Features

#### Multiplier: 0.2

Area of water feature to be under water  $\geq$  6 months per year

Harvested rainwater to provide  $\geq$  50% of water supply

Schematic plan for electrical or plumbing systems

Must follow SWM Guidebook for harvested rainwater, as well as applicable building codes

### **Minimum Submittal Requirements:**



- Demonstration that harvested stormwater provides at least 50% of annual irrigation
- Water budget indicating percentage of water demand met by rainwater, calculated on monthly and annual basis
- Construction sequence, following SWM guidelines



# **Bonus Element F1: Native Plants**

Bonus element (Multiplier: 0.1)	Bonus multiplier may be applied to the following elements
Native plants	New and existing plantings, tree preservation, vegetated wall, vegetated roof

### Minimum Submittal Requirements:

- Must first be credited under the landscape element(s) defined above
- Must be listed in the GAR Plant List or the U.S. Fish and Wildlife Service's Native Plants for Wildlife Conservation Landscaping: Chesapeake Bay Watershed Guide
- Or provide 2 references showing the plant is native to the DC region



# Native Species Lists

 U.S. Fish and Wildlife Service's Native Plants for Wildlife Conservation Landscaping: Chesapeake Bay Watershed Guide <u>http://www.nps.gov/plants/pubs/chesapeake</u> <u>http://nativeplantcenter.net/</u>

# **Invasive Species Lists**

- Plant Invaders of Mid-Atlantic Natural Areas
  - <u>http://www.nps.gov/plants/alien/pubs/midatlantic/</u>
- Mid-Atlantic Exotic Pest Plant Council Plant List
- National Park Service Center for Urban Ecology Exotic Plant Management Team
- Virginia Invasive Plant Species List
## **Bonus Element F2: Food Cultivation**

Bonus element (Multiplier: 0.1)	Bonus multiplier may be applied to the following elements
Food cultivation	New and existing plantings, vegetated wall, vegetated roof

### **Minimum Submittal Requirements:**

- Must first be credited under the landscape element(s) defined above
- Location, species, and areas designated for food cultivation
- Identify building access
- Identify type and location of water source
- Annual maintenance and crop cover plan



### Bonus Element F3: Harvested Rainwater Irrigation

Bonus element (Multiplier: 0.1)	Bonus multiplier must first be applied the following elements
Harvested rainwater	Landscape soils, new and existing plantings, vegetated wall, vegetated roof
irrigation	

### **Minimum Submittal Requirements:**

- Must first be credited under the landscape element(s) defined above
- Schematic irrigation and drainage plan showing: irrigated areas, delivery system (spray, drip), anticipated water demand, water budget calculated on monthly and annual basis, drainage plan
- Confirm cistern, filters, and pumps are size correctly
- Construction sequence, following SWM guidelines for harvest rainwater



#### Property Line



Not to scale



# Stay tuned for additional online GAR trainings coming soon! https://doee.dc.gov/GAR