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# GREEN BUILDING EDUCATION

FINAL REPORT

8 May 2011

This publication was produced for review by the United States Agency for International Development. It was prepared by Bahar Armaghani, LEED AP, LEED Faculty, Global Sustainable Solutions, LLC.

# GREEN BUILDING EDUCATION

## FINAL REPORT

USAID JORDAN ECONOMIC DEVELOPMENT PROGRAM

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DELOITTE CONSULTING LLP

USAID/ECONOMIC GROWTH OFFICE (EG)

8 MAY 2011

AUTHOR: BAHAR ARMAGHANI, LEED AP, LEED FACULTY

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### *DISCLAIMER:*

*The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.*

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# EXECUTIVE SUMMARY

This report was prepared in response to a TOR to deliver series of educational/training programs including a public workshop for the A&E Business Council, a workshop at the University of Jordan on greening of buildings, a visit to the Jordan University of Science and Technology during which EcoHouse issues were discussed, and the facilitation of LEED Instructor training (ToT) for Jordan Green Building Council from April 22-27/28, 2011 in Amman, Jordan.

The report addresses the continued educational/training campaign to further advance the knowledge and understanding of the environmental, energy and water challenges that Jordan faces.

Jordan has taken initiatives to address these challenges. For the past few years advancements have been made for more sustainable development with specific water, energy and environmental conservation in mind. These in turn contributed to the development of a sector that will create jobs and achieve prosperity, while at the same time enhancing Jordan's overall position in the global market. In addition, these advancements will position Jordan to export expertise in area of clean technology to surrounding countries in the region.

The activities under this mission were initiated through support from the USAID Jordan Economic Development Program in order to enhance the capabilities of Jordanians (practitioners, students, and trainers/instructors) in the field of environmentally-compliant construction techniques.

# WORKSHOPS

The Green Buildings training workshops were conducted from April 23-25, 2011. The following is an overview the workshops:

## GREENING EXISTING BUILDINGS

The objectives of this workshop were:

- Understanding and communicating the benefits and rationale of greening existing buildings
- Identifying tools available for greening existing buildings
- Understanding prospects of greening existing buildings
- Develop best management practices for;

The workshop covered the following topics: Building site and exterior, energy and water conservation, IAQ, waste management, purchasing, and green cleaning

- Develop a road map for greening existing buildings: The following topics were covered: Education and awareness, assessment, development of a road map, program development, implementation and performance period, sharing experiences, and lessons learned
- The workshop was jointly organized by the A&E Business Council and the Jordan Green Building Council. Thirty-four public and private sector representatives attended. The workshop addressed the topics of climate change and building impacts; why greening of existing buildings is important; low hanging fruit; capital investment needed to green buildings, and incentives both governmental and none governmental.

A case study from an existing building (provided by RSS) was presented and discussed in the workshop with the objective of greening it.

## RESULTS

The workshop's outcomes were the following:

- Distributed a workshop manual to all attendees
- Distributed RSS building information manual to all attendees
- Received positive feedback from attendees during the workshop. A survey conducted and A&E Business Council to compile results and distribute the Public and private individual's interaction and discussion

- Attendees learned from each other about the approaches to greening Jordan
- Unveiling of some governmental initiatives to the attendees
- Increased interest in awareness on environmental, energy, and water conservation in existing buildings that makes the majority stock of the build environment

## **HIGHER EDUCATION WORKSHOPS (25/04/2011)**

### **OBJECTIVES OF THE WORKSHOPS**

- Introducing student population to sustainable campus/ community
- Identifying the role of students in the sustainability of Jordan and the region
- Realizing what effects they, their campus, and community have on the environment
- Starting green campuses and communities
- Student's role in impacting policy makers in making change in support of greening Jordan and the region
- Working together for campus and community sustainability
- Establishing leadership role of university as the flagship of community
- Leading the change on campus and community for environmental. energy and water conservation
- Understanding environmental, energy and water shortage issues globally
- Energizing students to get involved in greening Jordan and the region

Two workshops related to green campuses were delivered to the University of Jordan and of Jordan University of Science and Technology. The title of the university of Jordan workshop was "Road Map to Green Campus." It covered best practices for waste management, CO2 emissions, food service, infrastructure, community outreach, and even curriculum. In addition, at Jordan University of Science and Technology the Eco-House project submittals reviewed and provided input for the design, construction, operation, and specific material selection.

### **THE OUTCOMES ACHIEVED:**

- 250 Students attended the half a day workshop
- Increased students interest in greening campus and taking initiatives
- Interactive approach with Q/A with the students
- Fueled the interest in green development, design and construction
- Inspired students to get involved in making a change related to their daily habits and to influence their peers and family members to do so

- Both university faculty and administration showed interest in green campus, and adding sustainable courses to their curriculum
- Both university administration showed interest in collaboration with other institution
- Collaboration between both universities and University of Florida established programs, students and faculty exchange
- A seed was planted between the west and the middle east for educational collaboration

***In addition to the workshop, the consultant lead the effort officially to establish collaboration between University of Florida and University of Jordan and Jordan University of Science and Technology. Meeting with the Vice President and Dean of College of Engineering conducted and MOU exchanged. This collaboration, exchange of science and Technology, provides an opportunity for students and faculty to exchange knowledge***

# **JORDAN GREEN BUILDING COUNCIL (JGBC) LEED INSTRUCTOR TRAINING**

## **THE OBJECTIVES TRAINING**

- Developing local instructors to deliver the LEED training
- Understanding adult learning techniques
- Supporting green building movement in Jordan and surrounding countries
- Providing training to other surrounding countries in the region
- Making green building workshops more affordable to the public

The Jordan GBC obtained approval from the United States Green Building Council to train 12 LEED instructors in Jordan. The Jordan GBC issued a call for application for these positions, LEED Instructors. They went through screening the applicants per the established requirements. The LEED instructor training was delivered from April 24-26, 2011. Nine participants attended the training... seven attendees from Jordan, one from Egypt and one from Lebanon. After two days of training and evaluation of the attendees by their peers, themselves and the consultant, the participants were rated and their scores forwarded to the USGBC.

## **OUTCOMES**

- Completed LEED Instructor training for nine participants
- Taught the importance of adult learning, its strategies and success
- Created an understanding of the importance of transparency in peer evaluation and constructive feedback
- Led practice teaching workshops
- Practiced co-teaching/facilitation by the attendees
- Provided immediate one on one feedback to the participants
- Completed scoring the participants and submitted the results to the USGBC 7



# APPENDICES

## APPENDIX 1: PHOTOS OF THE EVENTS

### Greening Existing Buildings



## LEED Instructor Training



## **APPENDIX 2: THE TRAINING MATERIALS**

### **A. PRESENTATION**

Attached on the CD

## B. CASE STUDY

# Greening Existing Buildings Exercise Middle East Scientific Institute for Security



## **Project Summary**

The Middle Eastern Scientific Institute of Security (MESIS) is an independent Jordanian non-governmental organization based in Amman, Jordan and is associated with the Royal Scientific Society; The MESIS building is located within the campus of RSS with shared infrastructure. The landscape irrigation for the building is not available as it is managed by the Royal Scientific Society Campus. The facility is old and includes many annexes. The building will undergo an upgrade to its facility.

The occupation in this building is 9 hours a day (8:30 – 4:30), 5 days / week, Working Days/ year: 250 days /year (96 Sat & Friday, and 14 holidays) , Occupation days/ year:  $(9 * 250)/24 = 93.75$  days/year.

The main entrance of the building is south facing, The building consists of two floors with an area approximately 600m sq, the first floor includes a reception area, two meeting rooms, and two bathrooms with a total of 6 WC's and four wash basins.

The second floor consists of one bathroom with a total of 2 WC's and one wash basin, and six offices some of them have central heating, some electric heater, others with AC units. There are two meeting rooms in addition to a large display area and a staircase which is used as a storage area. There is a kitchen including a refrigerator, water cooler and heater, an electric water heater, and one kitchen sink. There is no ventilation or opening in the kitchen

Since the building existed it has not had its own electric meter, however this month the facility owners have installed a meter for the building, find in table 1. Below the readings for the building since the meter was installed.

### **Include Electricity consumption:**

Date	8:30 am Kw/hr	3pm Kw/hr	3:15 pm Kw/hr	Comments
4/10/2011		0		First day metered was installed
4/11/2011		82.8		
4/12/2011	93.75	151.3		
4/13/2011	169.2	212.8		
4/14/2011			316.2	
				Weekend
4/17/2011	401.5			
4/18/2011	535.7			
4/19/2011	664.3			
4/20/2011	795			

# **Greening and Existing Building Exercise**

## **Part 1: Assessment (1 Hour)**

Analyze and assess opportunities and constraints for the existing building. The below items should be the framework for Part 2, the design and implementation of the proposal. For Part 1 think about this exercise holistically: considering issues such as cost, feasibility, existing facility maintenance, etc.

## **Part 2: Design and Implementation (3 hours)**

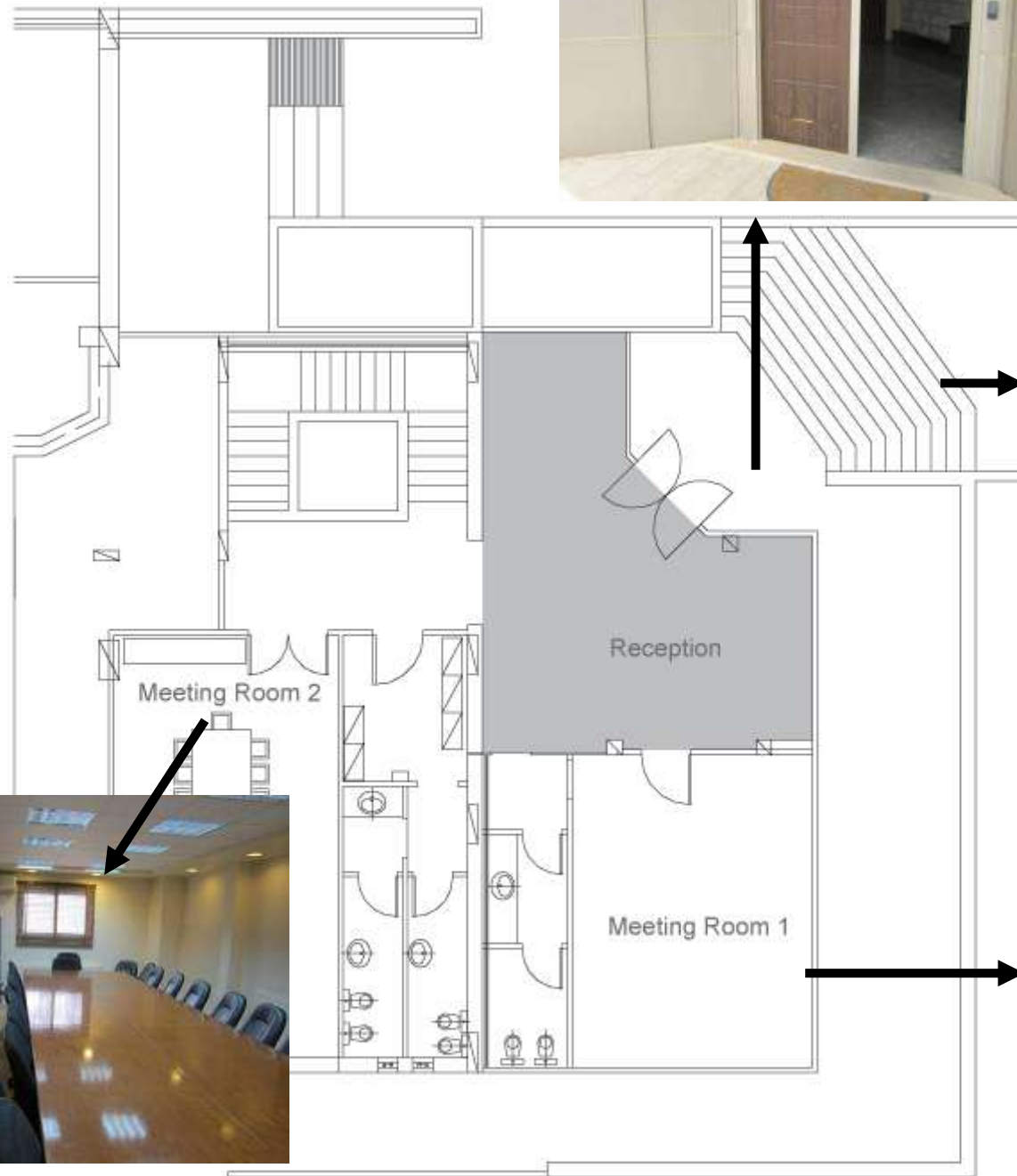
Address the opportunities and challenges from your assessment and propose new design and operation strategies to green this building. Feel free to use drawings, sketches, bullet point lists, or any other medium to explain your design. Each group will have 10 minutes to present its proposal.

## **Part 3: Presentation (50 Minutes)**

Each group will have 10 minutes at the end to present the results.

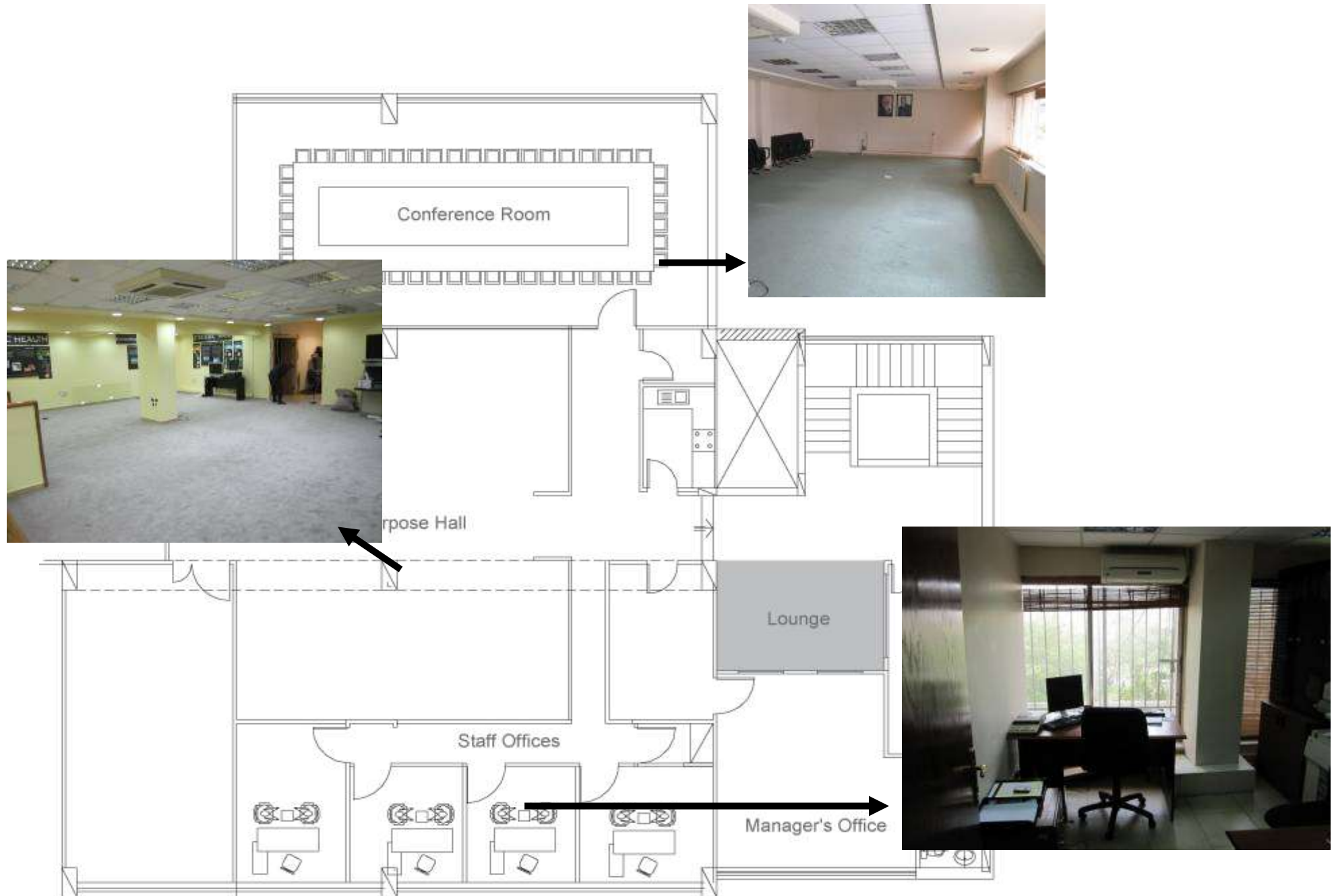
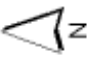


## Floor plans – Ground Floor





## Floor plans – First Floor



**Exterior Images**

**East wall**



**East wall**



**South wall**



USAID Jordan Economic Development Program

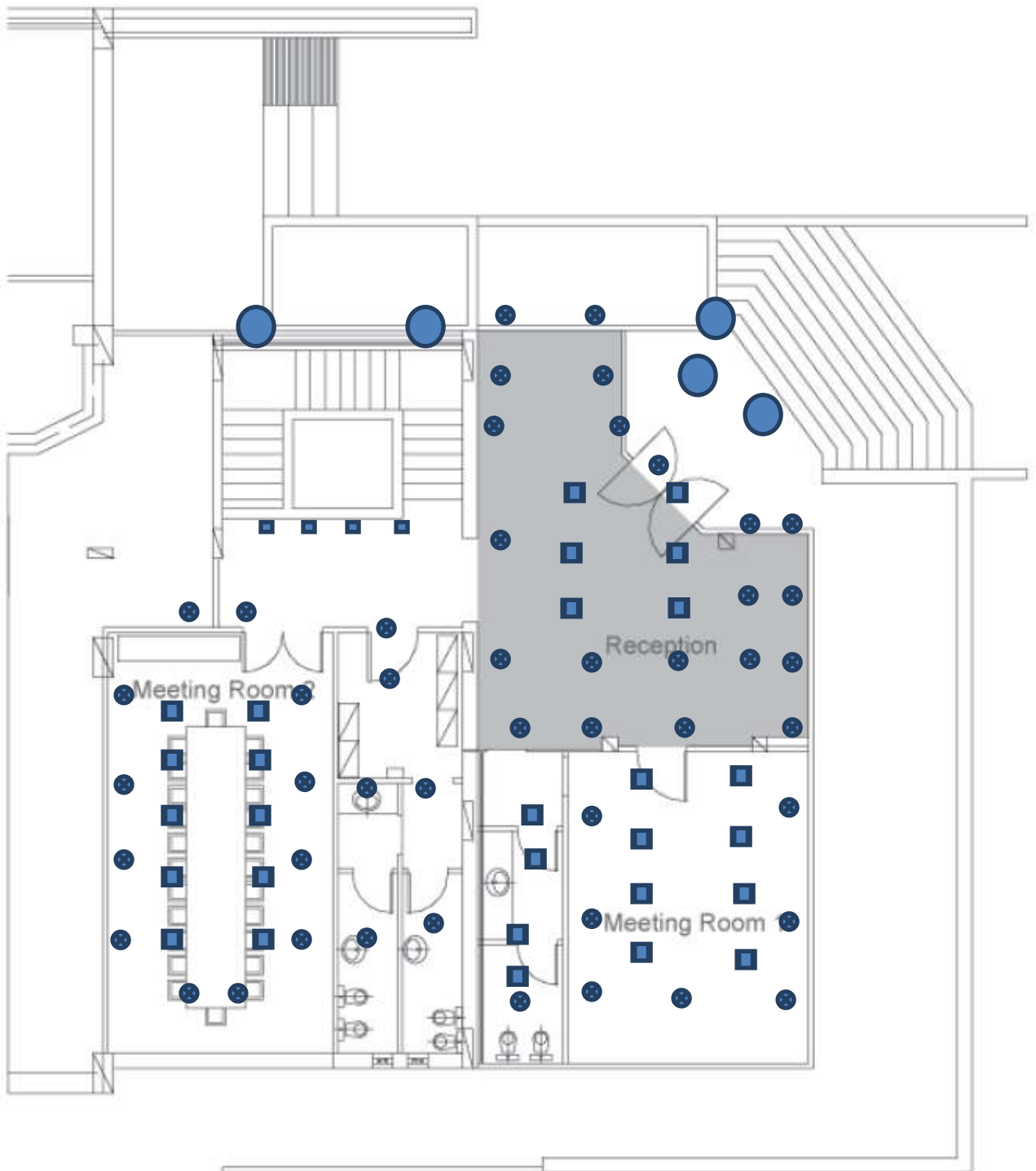
**West wall**

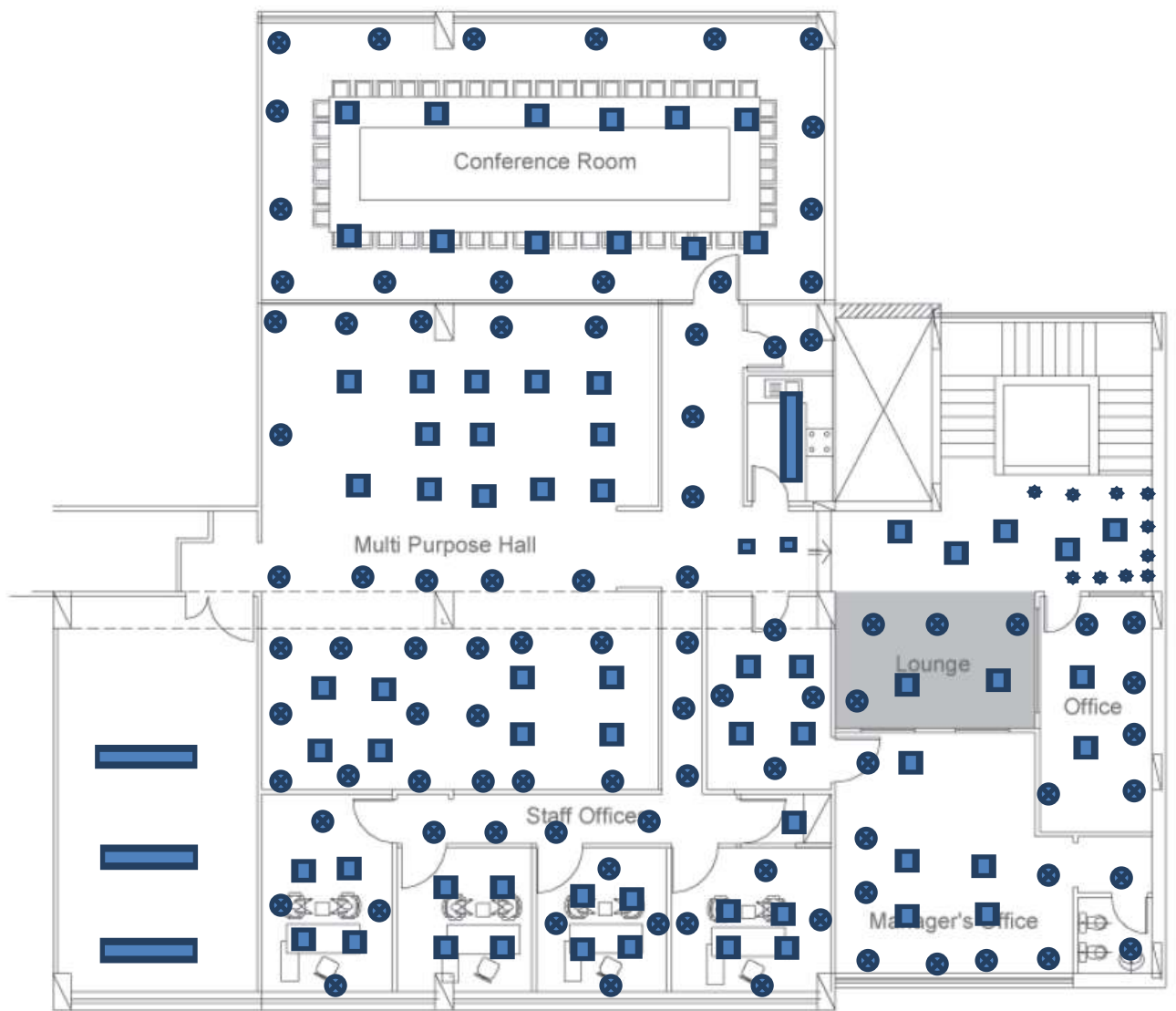














## Lights Types/ Models:

Model	Amount	Photo
Ladder light circle Fluorescent	5	
Big Spot light 18W x 2 lamps	153	
Fluorescent bar lights 40cm x 4 lamps	94	
Shaded lamp	6	
Small spot light for gallery area	10	
Fluorescent bar lights 80cm x 2 lamps	1	

## Lighting Distribution





## AC split units

Model	Amount	Picture
<b>Frost 4 ton</b>	6	
<b>Dyken 4 ton</b>	1	
<b>Carrier 1 ton</b>	1	
<b>Frost 1 ton</b>	2	
<b>Frost 2 ton</b>	4	
<b>Frost 2.5 ton</b>	1	
<b>Petra 2 ton</b>	1	

**Items to consider: This is just a guide but feel free to consider other items related to design or operation of the building**

- Sustainable sites
  - Building Exterior and Hardscape
  - Alternative transportation
  - Open space opportunities
  - Stormwater
- Water Efficiency
  - Opportunities for indoor water use reduction
- Energy & Atmosphere
  - Building Envelope (incl. windows & insulation)
  - Lighting
  - Heating & Cooling
  - Office equipment & appliances
  - Renewable energy-
- Materials and Resources
  - Waste Management
  - Material Selection & Sources
  - Possible material reuse
- Indoor Environmental Quality
  - Daylight-
  - Views
  - Ventilation
  - Smoking policy
  - Occupant comfort
  - Cleaning and maintenance



## C. GREENING AND EXISTING BUILDING EXERCISE

### Part 1: Assessment (1 Hour)

Analyze and assess opportunities and constraints for the existing building. The below items should be the framework for Part 2, the design and implementation of the proposal. For Part 1 think about this exercise holistically: considering issues such as cost, feasibility, existing facility maintenance...

### Part 2: Design and Implementation (3 hours)

Address the opportunities and challenges from your assessment and propose new design and operation strategies to green this building. Feel free to use drawings, sketches, bullet point lists, or any other medium to explain your design. Each group will have 10 minutes to present its proposal.

**Items to consider: This is just a guide but feel free to consider other items related to design or operation of the building**

- Sustainable sites
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  - Possible material reuse
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  - Smoking policy
  - Occupant comfort
  - Cleaning and maintenance

### Part 3: Presentation (50 Minutes)

Each group will have 10 minutes at the end to present the results.



**Royal Scientific Society**  
**Water Efficiency Economic Assessment Policy**  
**April, 2011**

**PURPOSE**

The purpose of this policy is to ensure that a water efficiency economic assessment is performed at <The Project Building> for any future water fixture upgrades at the building and that water use reduction strategies are explored at this time.

**SECTION 1: POLICY SCOPE**

This plan applies to all indoor potable water fixtures and fittings within <The Project Building> at <Address>.

**SECTION 2: POLICY GOALS**

This policy mandates an economic assessment of conversion to high-performance plumbing fixtures and fittings as part of any future indoor plumbing renovations. Any replacement fixtures will meet or exceed the following UPC/IPC Standards and <The Project Building> will strive to meet the following EPA WaterSense Standards wherever possible:

<b>Fixture</b>	<b>UPC/IPC Standards</b>	<b>EPA WaterSense Standards</b>
Water Closet	1.6 GPF	1.28 GPF
Urinal	1.0 GPF	0.5 GPF
Public Lavatory Faucet	0.5 GPM	
Private Lavatory Faucet	2.2 GPM	1.5 GPM
Kitchen/Janitorial Sink	2.2 GPM	
Shower	2.5 GPM	

**SECTION 3: PERFORMANCE METRIC AND TARGETS**

Water efficiency economic assessment shall be performed as part of any future indoor plumbing renovations, balancing economic analysis with water efficiency goals. Based on the USGBC LEED for Existing Buildings: O&M (LEED-EB:O&M) water efficiency criteria and guidelines for performance measurement, <The Project Building> has set the following goals:

1. <10%> <15%> <20%> <25%> <30%> reduction in indoor plumbing fixture and fitting potable water use from the LEED for Existing Buildings: O&M baseline\*.

\*For a plumbing system substantially completed after January 1, 2004 throughout the building, the baseline is 120% of the water usage that would result if all fixtures and fittings met the UPC/IPC Standards cited above. For a plumbing system substantially completed prior to 1994 throughout the building, the baseline is 160% of the water usage that would result if all fixtures and fittings met the UPC/IPC Standards cited above.

**SECTION 4: RESPONSIBLE PARTY**

The <Job Title> shall implement this policy within <The Project Building> in coordination with other appropriate personnel, including but not limited to, <The Project Building>'s General Manager and any procurement staff. The <Job Title> shall ensure that this policy is distributed to all relevant personnel, with the aim of promoting and maintaining the goals of this policy.

## **SECTION 5: PERFORMANCE EVALUATION**

The best management practices described in this plan will be evaluated annually for compliance and the outcome submitted to senior management.

## **SECTION 6: PROCEDURES AND STRATEGIES**

Any water efficiency economic assessment will take into account the following first costs and operational savings:

1. Equipment costs
2. Installation labor
3. Water utility savings
4. Sewage utility savings
5. Potential Maintenance Costs
6. Hot water energy savings

## **SECTION 7: TIME PERIOD**

This policy shall take effect on <Date> and shall continue indefinitely or until amended and/or replaced by a subsequent policy.

## **RELEVANT DEFINITIONS**

**Nonpotable Water** is water that is not suitable for human consumption without treatment that meets or exceeds EPA drinking water standards.

**Plumbing fixtures and fittings** are receptacles, devices, or appliances that are either permanently or temporarily connected to the building's water distribution system and receive liquid or liquid-borne wastes and discharge wastewater, liquid-borne waste materials, or sewage either directly or indirectly to the drainage system of the premises. This includes water closets, urinals, lavatories, sinks, showers and drinking fountains.

**Potable Water** is water that is suitable for drinking and is supplied from wells or municipal water systems.

**Substantial completion** is defined as either initial building construction or the last plumbing renovation of all or part of the building that included a 100% retrofit of all plumbing fixtures and fittings as part of the renovation.

**<Building Name >**

**Building Exterior and Hardscape Management Plan Template**

**LEED for Existing Buildings: Operations and Maintenance**

<Month, Year>

\*\*\*HOW TO USE THIS TEMPLATE\*\*\*

The following template provides a structure for developing a Building Exterior and Hardscape Management Plan compliant with LEED for Existing Buildings: Operations and Maintenance (LEED-EBOM) requirements. When completed properly, this document can be submitted as evidence of compliance with SSc2.

The process for customizing this template for a specific property includes:

1. Reviewing best practices and sample language indicated in green for applicability to the project building, and revising as necessary
2. Inputting basic project-specific data where indicated in red (e.g., building name, name of responsible parties, etc.)
3. Verifying that, subsequent to changes, the key elements remain in the document, including the sections addressing:
  - Scope
  - Goals
  - Responsible Parties
  - Quality Assurance Control Process
  - Paints and Sealants
  - Snow Removal
  - Hardscape Maintenance
  - Building Exterior Cleaning
  - Maintenance Equipment

Edits of black text should be limited, and all changes should be carefully assessed to ensure that LEED requirements are still met, including addressing issues specific to the prerequisite or credit and adhering to the USGBC Policy, Plan and Program Model (downloadable from the USGBC website: [EBOM Project Resources](#)).

## **SECTION 1: SCOPE**

This plan provides guidelines for maintaining the performance of the building exterior and hardscape at the <Building Name> located at <Address>. This plan covers the entire building exterior and hardscape at the project site.

## **SECTION 2: GOALS**

- To minimize the impact of site management practices on the local ecosystem

- To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particle contaminants.

The Plan addresses environmental best practices for:

- Maintenance equipment
- Snow and ice removal
- Cleaning of building exterior
- Paints and sealants used on the building exterior
- Cleaning of sidewalks, pavement and other hardscapes.

### **SECTION 3: RESPONSIBLE PARTIES**

<Name of Responsible Party>, the <Job Title >, with support from <Name of Supporting Staff Member>, <Title of Supporting Staff Member>, is responsible for developing and managing the implementation of the Building Exterior and Hardscape Management Plan. Contractors involved with various elements of the Plan shall carry out their tasks according to their contracts and report all relevant activities to the aforementioned parties. On occasion, several contractors may be engaged simultaneously in various elements of the plan at the building and grounds. To ensure an effective and coordinated effort, the building staff responsible for overseeing the Plan shall review all proposed activities before implementation.

<INCLUDE CONTRACTOR-SPECIFIC INFORMATION IN THE TABLE BELOW FOR ALL CONTRACTORS SUPPLYING SERVICES. ADJUST ACCORDINGLY IF ALL SERVICES ARE PERFORMED IN-HOUSE.>

Building exterior and hardscape management strategies for the entire property shall include actions performed by the following contractors:

Function	Company Name	Primary Contact	Phone
e.g., Window Washing	Joe's Window Washing	Joe Smith	111.111.1111

### **SECTION 4: QUALITY CONTROL PROCESS**

The responsible party(ies) shall periodically evaluate the success of the Plan. This evaluation may include producing and providing a report on an annual basis to senior management. Whenever possible, the annual report shall include an evaluation of the performance, safety, cost and environmental and public health benefits achieved as a result of its implementation.

Prior to implementation, service providers involved in the building exterior and hardscape management program shall submit all proposed activities to the responsible parties listed in Section 3, either through detailed contractual language or addenda that establish protocols and products that will be used onsite. Contract language shall reflect the service providers' duties as they relate to this Plan. Environmental best practices described below are incorporated into vendor contracts and SOP language as appropriate. Upon reviewing proposed activities, the responsible parties shall determine if the activities meet the criteria of the Plan and shall approve or deny action.

The responsible parties listed in Section 3, shall regularly communicate with all service providers, and conduct regular site inspections and evaluations to ensure that the Plan is in place and functioning as intended. In addition to ongoing quality control measures, the responsible parties will review all practices and products prior to contract renewal (typically annually) to identify opportunities for improvement and expansion of environmentally friendly practices.

## **SECTION 5: MAINTENANCE EQUIPMENT**

Generally, manual methods of grounds management, electric equipment, or equipment with noise and emission controls shall be used in lieu of fossil-fuel-powered machinery, whenever possible, to reduce soil compaction, and noise and air pollution produced by gas-powered equipment.

### **PERFORMANCE METRICS**

The practices listed below shall be implemented to the extent noted in the table. When less than complete adoption occurs, the performance metrics indicated will be used to gauge performance against the implementation target.

<INCLUDE SITE-SPECIFIC PRACTICES, PERFORMANCE METRICS, AND IMPLEMENTATION TARGETS. SEE SAMPLE LANGUAGE BELOW.>

<b>Maintenance Equipment</b>	<b>Performance Metric</b>	<b>Implementation Target</b>
Uses electric power	Percentage of applicable pieces of equipment	<INCLUDE SITE-SPECIFIC TARGETS, NO LOWER THAN 20%>
Mulching mower	Percentage of mower equipment	<INCLUDE SITE-SPECIFIC TARGETS, NO LOWER THAN 20%>
Uses low-smoke oil	Percentage of applicable pieces of equipment	<INCLUDE SITE-SPECIFIC TARGETS, NO LOWER THAN 20%>
Manual spring cleanup	n/a	Complete adoption

Manual weekly weeding	n/a	Complete adoption
Manual pruning	n/a	Complete adoption

## PRACTICES TO OPTIMIZE SITE MAINTENANCE EQUIPMENT

<INCLUDE ALL SITE-SPECIFIC, BEST MANAGEMENT PRACTICES, AND REVISE THE FOLLOWING LIST TO ACCURATELY REFLECT THE ACTIVITIES ADOPTED AT THE BUILDING AND SITE.>

- When power equipment must be used, electric equipment (battery or corded), instead of conventional gas-powered equipment, shall be used wherever practical. This measure will reduce the fossil fuel use and greenhouse gas emissions produced by conventional equipment.
- Mulching mowers shall be used on turf areas and shall return clippings back into the lawn to recycle nutrients.
- Turf areas shall be hand-weeded.
- Low-smoke oil shall be used in all maintenance equipment.
- For equipment with two-cycle engines, models with advanced design features—such as direct fuel- injection engines and exhaust power valves—shall be used to reduce emissions, improve fuel efficiency, and decrease oil consumption compared to conventional two-cycle engines.
- During the annual site cleanup in the spring, maintenance personnel shall manually prune winter-killed plants; sweep parking lot curbs, turf areas, and corners by hand; and rake turf areas to remove debris as necessary. Manual landscape maintenance reduces the need for powered machinery and the demand for fossil fuels.
- Weekly, the shrub and tree beds shall be hand-weeded.
- Shrubs and ornamental trees shall be manually pruned.
- All mowers shall receive new blades annually, and belts, bearings, and bushings shall be inspected on a yearly basis and changed as needed. Regular maintenance enhances the efficiency of equipment, thereby conserving energy and fuel and minimizing entire equipment replacements.
- Weekly, the contractor shall change the oil and filters on all equipment. All used oil shall be recycled.

## APPROVED EQUIPMENT LIST

The equipment listed below is approved for use onsite. Equipment beyond that listed here must be submittal for approval prior to use onsite.

<INCLUDE SITE-SPECIFIC EQUIPMENT.>

Equipment Type	Manufacturer/Model	Sustainability Criteria Met
e.g., Weed trimmer	e.g., ASA/Weed Trim Right x24L	e.g., Corded electric trimmer reduces onsite emissions of air pollutants compared to gasoline trimmers

## **SECTION 6: SNOW REMOVAL**

Some chemicals used for snow and ice removal, such as calcium chloride and sodium chloride, can be toxic to vegetation and local aquatic ecosystems. **<Building Name>** shall implement snow and ice removal practices that minimize the amount of chemicals used and prevent ecological damage.

### **PERFORMANCE METRICS**

The practices listed below shall be implemented to the extent noted in the table. Where less than complete adoption occurs, the performance metrics indicated will be used to gauge performance against the implementation target.

**<INCLUDE SITE-SPECIFIC PRACTICES, PERFORMANCE METRICS AND IMPLEMENTATION TARGETS. SEE SAMPLE LANGUAGE BELOW.>**

<b>Site Management Products/Materials</b>	<b>Performance Metric</b>	<b>Implementation Target</b>
Non—calcium chloride or sodium chloride deicing Chemicals	n/a	Complete adoption
Anti-icing measures	n/a	Complete adoption

### **PRACTICES TO OPTIMIZE SNOW REMOVAL**

**<INCLUDE ALL SITE-SPECIFIC BEST MANAGEMENT PRACTICES AND REVISE THE FOLLOWING LIST TO ACCURATELY REFLECT THE ACTIVITIES ADOPTED AT THE BUILDING AND SITE.>**

- Deicing chemicals shall be used on parking lots and roadways only as necessary. To protect vegetation and receiving waterways, the minimum amount of deicer that is effective shall be used. Application rates shall be tailored to match actual conditions based on pavement temperature, precipitation, and beginning concentrations of the deicer.
- Environmentally preferred deicing products shall be used for routine applications. Pre-approved products include those primarily comprised of:
  - potassium acetate
  - potassium chloride
  - magnesium chloride.

- Deicing agents other than those listed above shall be submitted for review and approval by <Responsible Party> prior to use.
- Sodium chloride and calcium chloride deicing products *shall not* be used unless <Building Name> grants written permission prior to application.
- Sidewalks and parking lots shall always be plowed prior to the application of deicing agents—to limit the amount of chemicals needed and reduce the potential for harmful runoff.
- When possible, anti-icing measures (preemptively applying deicer before a storm) shall be performed, thereby significantly reducing the overall need for deicing chemicals.

#### APPROVED PRODUCT LIST

The products listed below are approved for use onsite. Products beyond those listed here must be submitted for approval prior to use onsite.

<INCLUDE SITE-SPECIFIC PRODUCTS.>

Product Type	Manufacturer/Product Name	Sustainability Criteria Met
e.g., MgCl deicer	e.g., LINUS CO./Enviro-IceKill	e.g., Less corrosive than conventional deicers

#### SECTION 7: HARDSCAPE MAINTENANCE

Hardscape maintenance shall be performed in a manner that minimizes the environmental impact of power equipment and cleaning chemicals.

#### PERFORMANCE METRICS

The practices listed below shall be implemented to the extent noted in the table. Where less than complete adoption occurs, the performance metrics indicated will be used to gauge performance against the implementation target.

<INCLUDE SITE-SPECIFIC PRACTICES, PERFORMANCE METRICS, AND IMPLEMENTATION TARGETS. SEE SAMPLE LANGUAGE BELOW.>

Site Management Products/Materials	Performance Metric	Implementation Target
Power washing equipment with water reclamation	<n/a>	Complete adoption
EQc3.4–3.6: Compliant	Percent of applicable chemicals	<INCLUDE SITE-SPECIFIC



Chemicals	purchased based on cost	TARGETS, NO LOWER THAN 20%>
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## PRACTICES TO OPTIMIZE HARDSCAPE MAINTENANCE

<INCLUDE ALL SITE-SPECIFIC, BEST MANAGEMENT PRACTICES, AND ADD TO THE FOLLOWING LIST TO ACCURATELY REFLECT THE ACTIVITIES ADOPTED AT THE BUILDING AND SITE.>

- Hardscape cleaning is primarily performed with electric power sweepers and manual tools to maintain the walkways, pavement, and other hardscapes. The limited use of gas-powered equipment conserves fossil fuels and minimizes greenhouse gas emissions.
- Chemical use for hardscape maintenance shall be minimal and, when necessary, should be based on products or practices that conserve water and utilize biodegradable, low-impact cleaning products. Environmentally safe cleaners prevent harmful chemical runoff and water pollution.
- When applicable, the minimum amount of cleaning product that is effective shall be used on the hardscape and shall meet the requirements of IEQc3.4–3.6: Green Cleaning, Sustainable Cleaning Products and Materials.

## APPROVED PRODUCTS/EQUIPMENT LIST

The products listed below are approved for use onsite. Products beyond those listed here must be submitted for approval prior to use onsite.

<INCLUDE SITE-SPECIFIC PRODUCTS AND EQUIPMENT.>

Product Type	Manufacturer/Product Name	Sustainability Criteria Met
<xxxxxx>	<xxxxxx>	<xxxxxx>

## SECTION 8: BUILDING EXTERIOR CLEANING

Exterior building cleaning and maintenance activities shall be performed to minimize the environmental impact of chemical pollutants. Toxic exterior maintenance products shall be eliminated and replaced with eco-friendly cleaners.

## PERFORMANCE METRICS

The practices listed below shall be implemented to the extent noted in the table. When less than complete adoption occurs, the performance metrics indicated will be used to gauge performance against the implementation target.

<INCLUDE SITE-SPECIFIC PRODUCTS AND EQUIPMENT, PERFORMANCE METRICS, AND IMPLEMENTATION TARGETS. SEE SAMPLE LANGUAGE BELOW.>

Building Cleaning and Maintenance Activity	Performance Metric	Implementation Target
Environmentally preferable building exterior cleaners	n/a	Complete adoption

#### PRACTICES TO OPTIMIZE BUILDING EXTERIOR CLEANING

<INCLUDE ALL ADDITIONAL, SITE-SPECIFIC, BUILDING EXTERIOR CLEANING, BEST MANAGEMENT PRACTICES.>

- Suppliers shall provide Material Safety Data Sheets (MSDS) and Technical Bulletins for all exterior maintenance products. In case of emergency, each MSDS shall be easily accessible for reference.
- Prior to use onsite, all products shall be submitted to <Building Name> for review and approval.
- Window washing shall be performed with a Green Seal–certified glass and window cleaning product or an Environmental Choice Ecologo–certified dishwashing liquid soap. Other cleaning products used onsite shall qualify as “low environmental impact” products and shall comply with applicable Green Seal or Environmental Choice standards.
- Product types not covered by Green Seal or Environmental Choice shall comply with the California Code of Regulations maximum allowable VOC levels for the appropriate cleaning product category. This requirement will limit the opportunities for environmental exposure to harmful chemicals.
- Cleaning and maintenance personnel shall be properly trained in the use, maintenance, and disposal of exterior cleaning chemicals and equipment.

#### APPROVED MATERIALS/EQUIPMENT LIST

The products listed below are approved for use onsite. Products beyond those listed here must be submitted for approval prior to use onsite.

<INCLUDE SITE-SPECIFIC PRODUCTS AND EQUIPMENT.>

Product Type	Manufacturer/Product Name	Sustainability Criteria Met
<xxxxxx>	<xxxxxx>	<xxxxxx>

## **SECTION 9: PAINTS AND SEALANTS**

All exterior paints and sealants shall be low-VOC, environmentally friendly products.

### **PERFORMANCE METRICS**

This Plan shall govern all components of exterior painting and sealing at the project building. The practices identified in this Plan shall be wholly adopted and used in 100% of building exterior painting and sealing activities at <Building Name>.

<INCLUDE SITE-SPECIFIC PRODUCTS, PERFORMANCE METRICS, AND IMPLEMENTATION TARGETS. SEE SAMPLE LANGUAGE BELOW.>

Painting or Sealing Products	Performance Metric	Implementation Target
SCAQMD Rule #1168 and GS-11 Compliant Paints and Sealants	Percentage of applicable products purchased, based on cost	Complete adoption

### **PRACTICES TO OPTIMIZE THE USE OF ENVIRONMENTALLY PREFERRED PAINTS AND SEALANTS**

- Paints and sealants must comply with the VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168 and GS-11, listed in the table below.
- <Building Name> shall incorporate VOC limits for paints and sealants in contractor bid documents to ensure that external entities working onsite follow the requirements.

Architectural Applications	VOC Limit [g/L less water]	Specialty Applications	VOC Limit [g/L less water]
Indoor carpet adhesives	50	PVC welding	510
Carpet pad adhesives	50	CPVC welding	490
Wood flooring Adhesives	100	ABS welding	325
Rubber floor adhesives	60	Plastic cement welding	250
Subfloor adhesives	50	Adhesive primer for plastic	550
Ceramic tile adhesives	65	Contact adhesive	80
VCT and asphalt adhesives	50	Special purpose contact adhesive	250
Drywall and panel adhesives	50	Structural wood member adhesive	140
Cove base adhesives	50	Sheet applied rubber lining	850

Multipurpose construction adhesives	70	operations	
Structural glazing adhesives	100	Top and trim adhesive	250
Substrate Specific Applications	VOC Limit [g/L less water]	Sealants	VOC Limit [g/L less water]
Metal-to-metal	30	Architectural	250
Plastic foams	50	Non-membrane roof	300
Porous materials (except wood)	50	Roadway	250
Wood	30	Single-ply roof membrane	450
Fiberglass	80	Other	420
Sealant Primers	VOC Limit [g/L less water]		
Architectural non-porous	250		
Architectural porous	775		
Other	750		
Paints	VOC Limit [g/L]		
Exterior nonflat	200		
Exterior flat	100		

#### APPROVED MATERIALS/EQUIPMENT LIST

The products listed below are approved for use onsite. Products beyond those listed here must be submitted for approval prior to use onsite.

<INCLUDE SITE-SPECIFIC PRODUCTS AND EQUIPMENT.>

Product Type	Manufacturer/Product Name	Sustainability Criteria Met
<xxxxxx>	<xxxxxx>	<xxxxxx>

#### **SECTION 10: ENVIRONMENTAL BENEFITS OF IMPLEMENTED BEST PRACTICES**

<INCLUDE ALL SITE-SPECIFIC BEST MANAGEMENT PRACTICES AND REVISE THE FOLLOWING TO ACCURATELY REFLECT THE ACTIVITIES ADOPTED AT THE BUILDING AND SITE>

Topics	Best Management Practices	Environmental Benefit Compared to Standard Practice
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## MAINTENANCE EQUIPMENT

<Modify the following language according to site-specific practices regarding outdoor maintenance equipment.>

When power machinery must be used, the contractor shall use electric equipment (battery or corded) wherever practical instead of conventional gas powered equipment.

This measure reduces the fossil fuel use and green house gas emissions produced by conventional equipment.

Mulching mowers shall be used on turf areas and shall return clippings back into the lawn and turf areas shall be hand weeded for crabgrass, dandelion and plantain broadleaf weeds.

Using mowers that return clippings into the lawn returns nutrients to the soil, minimizing the need for fertilizer. Hand-weeding reduces the use of herbicides and power equipment that emit harmful chemicals into the air and water.

Low-smoke oil shall be used in all maintenance equipment.

This measure minimizes the air pollution released by power equipment.

For equipment with two-cycle engines, the contractor shall use models with advanced design features, such as direct fuel injection engines and exhaust power valves.

This measure reduces emissions, improves fuel efficiency and decreases oil consumption compared to conventional two-cycle engines.

During the annual site cleanup in the spring, maintenance personnel shall manually prune winter killed plants; sweep parking lot curbs, turf areas and corners by hand; and rake turf areas to remove debris as necessary.

Manual landscape maintenance reduces the need for pesticides, powered machinery and the demand for fossil fuels.

Weekly, the shrub and tree beds shall be hand-weeded.

Manual landscape maintenance reduces the need for herbicides, powered machinery and the demand for fossil fuels.

Shrubs and ornamental trees shall be manually pruned.

Manual landscape maintenance reduces the need for herbicides, powered machinery and the demand for fossil fuels.

All mowers shall receive new blades annually and belts, bearings and bushings shall be inspected on a yearly basis and changed as needed.

Regular maintenance enhances the efficiency of equipment, thereby conserving energy and fuel and minimizing the need for entire equipment replacements.

Weekly, the contractor shall change the oil every 3,000 miles on gas trucks and every 5,000 miles on diesel trucks and filters on all equipment. All used oil shall be recycled.

Regular oil changes and filter replacements reduce emissions. Recycling oil minimizes the use of fossil fuels.

SNOW REMOVAL	<p>&lt;Modify the following language according to site-specific practices regarding snow and ice removal. If your project building does not employ chemicals to remove snow and ice, remove language regarding deicing products.&gt;</p> <p>Snow will be removed manually from walkways using shovels.</p>	Manual snow removal reduces the need for chemicals, powered machinery and the demand for fossil fuels.
	<p>Environmentally preferred deicing products shall be used for routine applications. Pre-approved products include those primarily comprised of:</p> <ul style="list-style-type: none"> <li>• potassium acetate</li> <li>• potassium chloride</li> <li>• magnesium chloride</li> </ul> <p>Deicing agents other than those listed above shall be submitted for review and approval by &lt;Name or Title of Responsible Party&gt; prior to use.</p> <p>Sodium chloride and calcium chloride deicing products SHALL NOT be used unless &lt;Name or Title of Responsible Party&gt; grants written permission prior to application. Permission to use sodium chloride and/or calcium chloride would only be granted by &lt;Building Name&gt; personnel in the event of an emergency. An emergency situation for the purposes of applying sodium chloride and/or calcium chloride, would be defined as a prolonged period of extreme weather events (i.e. combination of snow and ice causing extreme cycles of thawing and freezing), sustained temperatures below -25F°, and/or a situation where environmentally preferred deicing products have been ineffective and have created a surface where injury to building occupants on the surface in question is eminent.</p>	Standard chemicals used for snow and ice removal, such as calcium chloride and sodium chloride, are toxic to vegetation and local aquatic ecosystems. Minimizing that application of deicers and using environmentally preferred products prevents ecological damage to plants and receiving water bodies.
	Deicing chemicals shall be used on parking lots and roadways only as necessary. Application rates shall be tailored to match	Applying the minimum amount of deicer that is effective protects vegetation and receiving waterways.

	actual conditions based on pavement temperature, precipitation, and beginning concentrations of the deicer.	
	Sidewalks and parking lots shall always be plowed prior to the application of deicing agents.	This practice limits the amount of chemicals needed and reduces the potential for harmful runoff.
	When possible, the contractor shall perform anti-icing measures – preemptively applying deicer before a storm	This practice significantly reducing the overall need for deicing chemicals, minimizing the risk of harmful chemical runoff into ground water and local waterways.
<b>HARDSCAPE MAINTENANCE</b>	<Modify the following sample language according to site-specific practices regarding hardscape maintenance.>  <Building Name>'s hardscape cleaning vendor uses only a power sweeper and manual tools to maintain the walkways, pavement and other hardscapes.	The limited use of powered equipment conserves fossil fuels and minimizes greenhouse gas emissions.
	Chemicals are rarely used on site and when necessary, the vendor shall conserve water and utilize biodegradable and low-impact cleaning products whenever possible.	Environmentally-safe cleaners prevent harmful chemical runoff and water pollution. Water conserving equipment reduces the strain on finite water supplies.
	When applicable, the minimum amount of cleaning products that is effective shall be used on the hardscape and shall meet the requirements of Indoor Environmental Quality Credit 3.3: Green Cleaning, Sustainable Cleaning Products and materials.	Limiting the amount of chemicals used on site protects vegetation and receiving waterways. Additionally, environmentally-safe cleaners prevent harmful chemical runoff and water pollution.
<b>BUILDING EXTERIOR CLEANING</b>	<Modify the following sample language according to site-specific practices regarding building exterior cleaning.>  Prior to use on the site, all products shall be submitted to <Name or Title of Responsible Party> for review and approval.  The window washing vendor, shall use <Name of Window Cleaning Product>, a Green Seal certified product. Other cleaning products used on site shall qualify as low environmental impact products and shall comply with applicable Green Seal or Environmental Choice standards.	These requirements will limit the opportunities for environmental exposure to harmful chemicals.

	Product types not covered by Green Seal or Environmental Choice shall comply with the California Code of Regulations maximum allowable VOC levels for the appropriate cleaning product category.	
	Cleaning and maintenance personnel shall be properly trained in the use, maintenance and disposal of exterior cleaning chemicals and equipment.	This measure ensures that In case of emergency, the MSDSs will be easily accessible for reference. This reduces the risk of harmful exposure to chemicals.
<b>PAINTS AND SEALANTS</b>	<p>&lt;Modify the following language according to site-specific practices regarding paints and sealants used on the building exterior and hardscape.&gt;</p> <p>Only low-VOC paints and sealants shall be applied to the building exterior. Paints and sealants must comply with the VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168.</p>	This measure will limit the opportunities for environmental exposure to harmful chemicals. VOCs contribute to the formation smog as well as directly affecting the respiratory health of people. Selecting low-VOC products reduces or eliminates air pollutants.

**<Building Name >**  
**Integrated Pest Management Plan Template**  
**LEED for Existing Buildings: Operations & Maintenance**  
**<Month, Year>**

**\*\*\*HOW TO USE THIS TEMPLATE\*\*\***

The below template provides a structure for developing an Integrated Pest Management (IPM) Plan compliant with LEED for Existing Buildings: Operations & Maintenance (LEED-EBOM) requirements. When completed properly, this document can be submitted as evidence of compliance with EQc3.9 and partial compliance with SSc3.

The process for customizing this template for a specific property includes:

1. Reviewing best practices/example language indicated in green for applicability to the project building and revising as necessary.
2. Inputting basic project-specific data where indicated in red (e.g., building name, name of responsible parties, etc.).
3. Verifying that subsequent to changes, the key elements remain in the document, including the sections addressing:
  - Scope
  - Goals
  - Responsible Parties
  - Performance Metric



- Quality Assurance Control Process
- IPM Strategies and Practices

Edits of black text should be limited and all changes should be carefully assessed to ensure that LEED requirements are still met, including addressing issues specific to this prerequisite/credit and adhering to the USGBC's Policy, Plan and Program Model (downloadable from the USGBC web site: [EBOM Project Resources](#)).

## **SECTION 1: SCOPE**

This plan provides guidelines for protecting and enhancing the natural diversity of the <Building Name>'s site, while also supporting high-performance building operations and developing synergies between the building and its environmental context. The project is located at <Address>. The Integrated Pest Management (IPM) Plan covers the entire building and associated grounds.

## **SECTION 2: GOALS**

To minimize the impact of site management practices on the local ecosystem, and to reduce exposure of occupants, staff and maintenance personnel to potentially hazardous chemical, biological and particle contaminants.

The Plan addresses environmental best practices for:

- Outdoor integrated pest management
- Indoor integrated pest management

## **SECTION 3: RESPONSIBLE PARTIES**

<Name of Responsible Party>, the <Title of Responsible Party>, with support from <Name of Supporting Staff Member>, <Title of Supporting Staff Member>, is responsible for developing and managing the implementation of the IPM Plan. Contracts with pest and landscape management vendors shall include extensive language describing their role in the building's Plan. Contractors involved with various elements of the Plan shall carry out their tasks according to their contracts, and report all relevant activities to the aforementioned parties. On occasion, several contractors may be engaged simultaneously in various elements of the Plan at the building and grounds. To ensure an effective and coordinated effort, the building staff responsible for overseeing the Plan shall review all proposed activities before implementation.

<INCLUDE CONTRACTOR-SPECIFIC INFORMATION IN THE TABLE BELOW FOR ALL CONTRACTORS SUPPLYING SERVICES. ADJUST ACCORDINGLY IF ALL SERVICES ARE PERFORMED IN-HOUSE>

IPM strategies for the entire property include actions performed by the following contractors:

Function	Company Name	Primary Contact	Phone
e.g., Pest Control	Joe's Pest Control	Joe Smith	111.111.1111

## **SECTION 4: QUALITY ASSURANCE CONTROL PROCESS**

The party(s) responsible shall periodically evaluate the success of the Plan. This evaluation may include producing and providing a report on an annual basis to senior management. Whenever possible, the annual reports shall include an evaluation of the performance, safety, cost and environmental/public health benefits achieved as a result of its implementation.

Prior to implementation, service providers involved in the building's Plan shall submit all proposed pest management activities to the responsible parties, listed in Section 3. Upon reviewing proposed activities, the responsible parties shall determine if they meet the criteria of the Plan and approve or deny action.

The responsible parties, listed in Section 3, shall regularly communicate with all service providers, and conduct regular site inspections and evaluations to ensure that the Plan is in place and functioning as intended. In addition to ongoing quality control measures, <Name of Responsible Party> will review all practices and products prior to contract renewal (typically annually) to identify opportunities for improvement and expansion of environmentally-friendly practices.

## **SECTION 5: PERFORMANCE METRIC**

This IPM Plan shall govern all components of pest management at the project building and site. The practices identified in this Plan shall be wholly adopted and used in 100 percent of the pest management scenarios at <Building Name>.

## **SECTION 6: IPM STRATEGIES AND PRACTICES**

### **Integrated Methods**

Integrated methods that make use of monitoring and non-toxic preventative measures (e.g., site inspection and maintenance, cultural controls, pest inspection and population monitoring) will be used to proactively manage and minimize pest issues. In the event that monitoring activities reveal a need for the use of pest controls, appropriate control options will be evaluated, and the least-toxic option likely to be effective will be employed.

### **Least-toxic Pesticides**

Least-toxic pesticides are defined by the City of San Francisco's Hazard Tier 3 criteria (least hazardous): [www.up3project.org/documents/2007rpplbyaicomplete.pdf](http://www.up3project.org/documents/2007rpplbyaicomplete.pdf).

Least-toxic pesticide status also applies to any pesticide product, other than rodent bait, that is applied in a self-contained, enclosed bait station placed in an inaccessible location, or applied in a gel that is neither visible nor accessible.

### **Emergency Conditions**

In the event of an emergency, pesticides may be applied on the grounds without complying with the earlier stipulations for use of integrated and least-toxic methods.

Emergencies are defined as <DEFINE WHAT CONSTITUTES AN EMERGENCY PEST PROBLEM, e.g., infestations of certain pest species, specific situations that directly effect occupant health, etc.>.

### **Universal Notification**

<Building Name> has adopted a universal notification system if a pesticide, other than a least-toxic pesticide as defined above, must be applied on site. This strategy requires <Building Name> and its vendors to notify building occupants at least 72 hours in advance of a pesticide application under normal circumstances and no more than 24 hours after an emergency application through posted signs or other means of reaching 100 percent of occupants. This notification system enables occupants and staff, and especially high-risk occupants such as children, pregnant women and the elderly, to modify their plans based on pesticide use at the building.

Notification must include the following:

- Pesticide product name
- Active ingredient
- Product label signal word (e.g., “caution”, “danger”)
- Time and location of application
- Contact information for persons seeking more information

### Recordkeeping

Recordkeeping is required to demonstrate ongoing compliance with the IPM plan. All applications of pesticides (include least-toxic options) shall be logged. The pesticide application log shall include the following information:

- Universal Notification to Occupants
  - Date
  - Time
  - Method
- Pesticide Application Date and Time
- Application Manager
- Location
- Target Pest
- Pesticide Trade Name
- Pesticide Active Ingredient
- EPA Registration Number
- Least-toxic status (Y/N)

### Cleaning Practices

In the event that cleaning products are used as a component of IPM, they shall meet LEED-EBOM criteria for sustainable cleaning products.

### Animal & Vegetation Pest Control IPM Best Practices

Environmental best practices described below are incorporated into vendor contracts / SOP language as appropriate.

<INCLUDE ALL SITE-SPECIFIC BEST MANAGEMENT PRACTICES AND REVISE THE FOLLOWING TO ACCURATELY REFLECT THE ACTIVITIES ADOPTED AT THE BUILDING AND SITE>

### CHEMICAL STORAGE PRACTICES

<b>Storage Areas</b>	<ul style="list-style-type: none"> <li>Storage areas must be dry, frost-free, well-ventilated and secure.</li> <li>Storage areas must be situated away from other buildings, especially residential buildings or areas where food or flammable materials are stored.</li> <li>Storage must be built to resist foreseeable accidents, including leakage and spillage, fires and the weather. Ensure there is no risk of spills polluting ground water and local bodies of water. Floors must be impervious to liquids, anti-slip, chemical-resistant, washable and with a means of diverting spills. Drains must lead to sumps or tanks large enough to contain any foreseeable leaks.</li> <li>Shelving must be appropriate for the size of the containers stored in them. Flammable pesticides must be separated from other pesticides. Consideration must be given to possible reactions between chemicals coming in contact with each other.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Labels</b>	<ul style="list-style-type: none"> <li>Make sure all pest control chemicals are clearly labeled and that the manufacturer's instructions for use are kept with them.</li> <li>Chemicals must never be placed in unmarked containers.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Product Information</b>	<ul style="list-style-type: none"> <li>Effective first-aid provisions must be available together with data sheets on all the products in the storage room and the chemical safety precautions.</li> <li>Emergency telephone numbers must be listed in a key location in the storage facility. These numbers and other emergency facilities must be checked and updated as necessary.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Signage</b>	<ul style="list-style-type: none"> <li>Display warning signs without attracting unwanted attention.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

#### CHEMICAL PREPARATION & HANDLING PRACTICES

<b>Choosing Chemicals</b>	<ul style="list-style-type: none"> <li>Identify which pesticides and herbicides are being used and the exact problems they are intended to resolve. The more that is known about the problem, the less chance there is of making a mistake. The words organic, natural and biodegradable in this context do not guarantee that they are safe.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Mixing Chemicals</b>	<ul style="list-style-type: none"> <li>Accurate measurements must be made during both mixing and application phases. Use the most suitable chemical, in the minimum necessary amount, to achieve the desired results.</li> <li>A safe area must be available for mixing pesticides. This must be done on a concrete pad, with a separate sump or tank to contain any leakage.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Health Precautions</b>	<ul style="list-style-type: none"> <li>Operators must be provided with and adequately trained in the use of the necessary equipment and protective clothing.</li> <li>Proper health surveillance must be available to all those working with pesticides and herbicides.</li> <li>Neighbors and others in the area must be warned of the spraying program in advance of and during applications.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Chemical Transport</b>	<ul style="list-style-type: none"> <li>Only the appropriate quantity of pesticide and herbicide must be removed from the pesticide store for immediate use.</li> <li>Do not transport chemicals in vehicles used for carrying people or food.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

#### CHEMICAL APPLICATION PRACTICES

<b>User Qualifications</b>	<ul style="list-style-type: none"> <li>In many instances it will be necessary to call on outside expertise to advice on pest-management problems, particularly in the creation of customized integrated pest management problems, which may require detailed knowledge of the biology and ecology of a particular species.</li> <li>If pesticides are required, the IPM specialist shall communicate with &lt;Building Name&gt; to determine the best product and application in accordance with approval requirements.</li> <li>A specialist must supervise and control the preparation and use of chemical applications.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
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<b>Species Considerations</b>	<ul style="list-style-type: none"> <li>Time the treatment to coincide with the presence of the pest.</li> <li>Use a selective chemical that has the least effect on non-target species and treat only the area affected.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>User Safety</b>	<ul style="list-style-type: none"> <li>Users must wear protective clothing and headgear, and change clothing and wash thoroughly with soap and water after applying pest control chemicals.</li> <li>Ensure that anyone handling toxic chemicals never works alone and that the work area is well-ventilated.</li> <li>Wear a respirator for outdoor spraying or dusting of organic phosphorus compounds</li> <li>Eating, drinking and smoking must be prohibited when using or handling chemicals</li> <li>Users must be familiar with the effects on the body of the chemicals they are likely to be using, and how the chemicals may enter the body.</li> <li>Users must be aware of the signs and symptoms of acute poisoning related to chemicals they are using. They must stop work if they are feeling ill and seek medical advice.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Limited Access</b>	<ul style="list-style-type: none"> <li>The area of application must be clearly marked, and unnecessary access prevented while spraying is in progress.</li> <li>Building occupants must be informed of any pest-control management systems. When application or spraying is in progress, they must be warned of this activity and kept away from the area in which it is taking place.</li> <li>Control the reentry of people into the treated area.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Equipment</b>	<ul style="list-style-type: none"> <li>Equipment must be frequently checked and properly maintained, both for health and safety reasons and to minimize spray drift.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Weather/Time Restrictions</b>	<ul style="list-style-type: none"> <li>Spraying must not be carried out in unsuitable weather. Anyone operating sprayers must have access to a wind-speed meter and only spray when the wind speed is negligible.</li> <li>Hours of work must be controlled so that building occupants are not exposed.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

<b>CHEMICAL DISPOSAL PRACTICES</b>	
<b>Conditions of Disposal</b>	<p>As most pesticides and herbicides are extremely toxic, proper disposal of unused chemicals is paramount to maintaining the health of building occupants and the safety of the environment. Disposal methods will depend on:</p> <ul style="list-style-type: none"> <li>Quantity of waste for disposal</li> <li>Chemical and biological degradability of the active ingredients</li> <li>Toxic properties</li> <li>Concentration</li> <li>Physical form of the waste</li> <li>Disposal options available</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>General Guidelines</b>	<ul style="list-style-type: none"> <li>Always follow the manufacturer's and/or supplier's instructions even when disposing of empty containers.</li> <li>Landfilling or incinerating pesticides and herbicides is not an environmentally sound option.</li> <li>Segregate pesticide/herbicide wastes from general building wastes.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Containers/Labels</b>	<ul style="list-style-type: none"> <li>Never transfer pesticides to unlabelled or mislabeled containers. Keep the chemicals in clearly labeled containers even when disposing of them.</li> <li>Do not reuse pesticide/herbicide containers.</li> <li>Puncture containers after they have been used to prevent reuse.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Authorization</b>	<ul style="list-style-type: none"> <li>Use an authorized waste-disposal contractor.</li> <li>Use an authorized disposal site.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

BASIC VEGETATION PEST CONTROL PRACTICES	
<b>Maintenance</b>	<ul style="list-style-type: none"> <li>Keep the building grounds well-maintained at all times.</li> <li>Maintenance personnel shall apply mulch to plant beds, warding off weeds and other pests.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Plantings</b>	<ul style="list-style-type: none"> <li>Plant at the right time and in the right places. Seedlings must not be planted too early, nor located in unsuitable conditions.</li> <li>Avoid monocultures by mixing plant species in planters and gardens.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Manual Controls</b>	<ul style="list-style-type: none"> <li>Landscaping shall be hand weeded and chemical control shall be kept to a minimum. This measure prevents human and environmental exposure to hazardous chemicals.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Chemical Controls</b>	<ul style="list-style-type: none"> <li>When chemical use is necessary, replace hazardous substances with least-toxic chemicals as defined by the 2007 San Francisco Reduced-Risk Pesticide List</li> </ul>
<b>Inspection Schedule and Location</b>	<ul style="list-style-type: none"> <li>The landscape contractor shall visit the site at regular intervals to monitor and apply pest controls operations.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

BASIC ANIMAL PEST CONTROL PRACTICES	
<b>Site/Building Cleanliness</b>	<ul style="list-style-type: none"> <li>Keep garbage containers clean, free of odors and covered at all times. Sanitation measures reduce habitat and food sources for pests.</li> <li>Keep areas around garbage containers free of spillage or garbage to prevent the collection of trash or debris on the ground around or underneath the containers.</li> <li>Keep grounds free of high weeds, trash, old equipment and debris, as these conditions create ideal harborage for rodents.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Structural Integrity</b>	<ul style="list-style-type: none"> <li>Maintain the building exterior in good repair with no holes or openings larger than ¼ inch including, but is not limited to, windows, doors, fans, vents, etc. Structural repairs prevent pests from entering the building.</li> <li>Address any deficiencies in the building exterior with corrective measures, i.e., cementing, screening, caulking, installing stripping on door bases, etc.</li> <li>Maintain door sweeps on all applicable doors to produce a good seal to the ground.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Inspection Schedule and Location</b>	<ul style="list-style-type: none"> <li>Visual inspections shall be performed at least 2 times per month, with treatment if necessary. After each visit, the pest contractor shall provide a printed service report that includes written observations, recommendations and details of IPM activities.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

SPECIES-SPECIFIC ANIMAL CONTROL STRATEGIES
<INCLUDE ALL SPECIES PRESENT ON BUILDING GROUNDS>

<b>Ants</b>	<ul style="list-style-type: none"> <li>▪ In areas where ants are present, wipe the areas down with soapy water in order to prevent the formation of major scent trails. If there already is an established trail, wipe backwards from the food source to the entrance of the trail.</li> <li>▪ Block all entry points to the building – ants will give up trying to find a way through after 1-2 days. Temporary blockades can be made using sticky substances such as petroleum jelly or chili powder, cinnamon, and boric acid.</li> <li>▪ Always keep opened foodstuffs in sealed containers or store them in the refrigerator or freezer. Clean out kitchen cabinets, drawers and shelves to remove crumbs and stains. Keep sinks and worktops clean and dry.</li> <li>▪ Baits are best put in the path of an ant trail and then removed after the ant activity stops, before they lure ants from another colony to the area.</li> <li>▪ Prune branches close to the building and removed fences or anything that might create a bridge for the ants to cross.</li> <li>▪ Low toxicity compounds to control ants include boric acid and diatomaceous earth (DE), a chalk-like powder consisting of the fossilized remains of diatoms, a type of hard-shelled algae.</li> <li>▪ &lt;Include site-specific ant controls&gt;</li> </ul>
<b>Aphids</b>	<ul style="list-style-type: none"> <li>▪ Manage sap-sucking pest mites and whiteflies by releasing predatory mites, ladybugs and lacewings onto the grounds several times over a period of weeks.</li> <li>▪ Consider using parasitic wasps to control scales on trees, shrubs and flowers</li> <li>▪ If it is difficult to obtain supplies of beneficial insects for release into the garden, then it is possible to purchase a branded lure that simulates the scent of aphids and attracts ladybugs and lacewings to the area</li> <li>▪ &lt;Include site-specific aphid controls&gt;</li> </ul>
<b>Bed Bugs</b>	<ul style="list-style-type: none"> <li>▪ If a bed bug infestation is detected, the most effective course of action is to enlist professional help to inspect the entire building for the presence of bed bugs and treat the affected areas.</li> <li>▪ &lt;Include site-specific bed bug controls&gt;</li> </ul>
<b>Caterpillars</b>	<ul style="list-style-type: none"> <li>▪ Bacterial insecticides derived from natural ingredients are available to control caterpillars.</li> <li>▪ &lt;Include site-specific caterpillar controls&gt;</li> </ul>
<b>Cockroaches</b>	<ul style="list-style-type: none"> <li>▪ Cockroaches contaminate food with their excrement and secrete and unpleasant odor that can permeate the indoor environment.</li> <li>▪ There are five main species of cockroaches and effective control depends on identifying them correctly.</li> <li>▪ Integrated pest management measures for controlling cockroaches include effective hygiene and exclusion practices, sticky traps lined with pheromones, boric acid, and insect growth regulators.</li> <li>▪ All food handling areas should be cleaned frequently.</li> <li>▪ Cockroach control is best done by a professional on a contract basis, through the application of least-toxic pesticides.</li> <li>▪ Control is necessary on a regular basis because of the mobility, reproduction, longevity, and behavior of cockroaches.</li> <li>▪ Ensure that you know what pesticides are being used by the professional contractor and do not assume they are using an environmentally appropriate chemical.</li> <li>▪ &lt;Include site-specific cockroach controls&gt;</li> </ul>
<b>Dust Mites</b>	<ul style="list-style-type: none"> <li>▪ Fabrics, bedding and carpets attract and generate dust and dust mites. To keep dust mites at bay, keep building well-ventilated and dry.</li> <li>▪ &lt;Include site-specific dust mite controls&gt;</li> </ul>

<p><b>Flies</b></p>	<ul style="list-style-type: none"> <li>Flies reproduce more readily in waste and manure, which is where control should begin. In warm weather conditions, the reproduction cycle – from egg, to larva, to pupa, to adult winged fly – requires approximately one week.</li> <li>Collection of waste and residues should be carried out at least twice a week.</li> <li>Keep refuse areas clean to avoid providing flies with breeding grounds</li> <li>Ensure dustbin lids fit tightly and the interiors of bins are cleaned regularly to keep surfaces free of food material.</li> <li>Use fine mesh window and door screens as a barrier against entry by any flying insect.</li> <li>Ultra-violet (UV) fly killing equipment is very effective so long as it is situated correctly.</li> <li>UV equipment disguised as uplighters in dining and lobby areas are discreet and highly effective because they attract and eliminate flies quickly and silently.</li> <li>In food preparation areas, UV equipment should only be used once all possible precautions have been taken to keep flying insects out.</li> <li>Position the UV equipment close to an entry point, at right angles to the nearest competing light source such as a window. In many catering establishments, poorly-situated UV equipment poses a greater food hygiene hazard than lacking pest repellants altogether. This is because when placed next to the food preparation area, they draw flies to the food which they are likely to contaminate before being killed.</li> <li>Natural chemical treatments include pyrethrum extracted from the Chrysanthemum cinerariaefolium plant that can be used in kitchens and restaurants.</li> <li>&lt;Include site-specific fly controls&gt;</li> </ul>
<p><b>Mosquitoes</b></p>	<ul style="list-style-type: none"> <li>The best control method for mosquitoes is to eradicate their habitat.</li> <li>Because they like moisture and lay their eggs in standing water, it is important not to leave flower pots, buckets, plastic sheeting or other open containers outside collecting water. Ensure that any rainwater collectors are fitted with lids.</li> <li>Clear debris from gutters and drains to ensure there is no standing water after rain and drain unused pools or fountains so that the water cannot become stagnant.</li> <li>Drain or fill depressions, mud flats, and other areas that might hold water.</li> <li>Repair leaking taps and air-conditioning units so that puddles cannot form and ensure that septic tanks and sewage systems are properly maintained and in good working order.</li> <li>Avoid over-irrigating lawns and gardens, and keep weeds and grass (where the insects rest) well-clipped.</li> <li>If you have a pond or lake on the building grounds, fill it with mosquito-eating fish such as top-feeding minnows or goldfish – they will eat the mosquito larvae before they mature into adults.</li> <li>Some buildings have successfully reduced the number of mosquitoes and other insects by attracting bats to their property. A simply-built bat house will usually accommodate up to 100 bats.</li> <li>To prevent mosquitoes from coming indoors, fit fine-mesh screens to porches, doors and windows.</li> <li>If these measures are insufficient, area repellents such as citronella candles, coils or sprays will repel mosquitoes from porches, patios and other unscreened outdoor areas, although they only work well when the air is still.</li> <li>&lt;Include site-specific mosquito controls&gt;</li> </ul>
<p><b>Fabric/Clothing Moths</b></p>	<ul style="list-style-type: none"> <li>Moth larvae feed on a wide variety of natural and synthetic materials. They can be found in kitchens, food storage areas, clothing, carpets, blankets and upholstery.</li> <li>Fabrics should be washed and then put in bags and placed in a freezer. When taken out to thaw, shake the fabrics vigorously to remove dead larvae.</li> <li>Clean the areas where fabrics have been stored with vinegar and water.</li> <li>Store fabrics in cedar chests or closets. Place cedar chips or blocks or lavender sachets in drawers.</li> <li>For acute moth problems, re-usable traps can be baited with a controlled-release pheromone system to lure moths into the trap and disrupt their mating cycle.</li> <li>Mothballs not only have an unpleasant odor, but they are also poisonous; avoid them if possible. Insect foggers are not recommended as they can pose a health threat and are not always effective.</li> <li>&lt;Include site-specific fabric/clothing moth control&gt;</li> </ul>



<b>Pantry Moths</b>	<ul style="list-style-type: none"> <li>▪ Clean affected areas by vacuuming all surfaces, walls, shelves, cabinets and floors. Scrub hard surfaces rigorously with hot water and detergent, especially in corners and around the edges of removable shelves. Clean all surfaces that come into contact with food.</li> <li>▪ Rinse the affected areas with white vinegar, either in a spray or by wiping with a cloth.</li> <li>▪ Throw away all grain-based food items as well as nuts, raisins, flour and tea, even if it is in sealed containers.</li> <li>▪ Remaining food items and containers should be thoroughly cleaned with a detergent and water solution and wiped down with a vinegar rinse before being put back. Use air-tight containers made of hard plastic, glass or metal and not plastic bags.</li> <li>▪ Kill any moths with a fly swatter or moth traps.</li> <li>▪ After a severe infestation, freezing any new grain products and storing grain products in refrigerators or freezers can prevent reinfestation.</li> <li>▪ Peppermint gum, bay leaves, peppercorns and cloves may also help deter pantry moths.</li> <li>▪ &lt;Include site-specific pantry moth controls&gt;</li> </ul>
<b>Rodents</b>	<ul style="list-style-type: none"> <li>▪ Rodent control should start with a survey to determine the source of the problem and the conditions that encourage the infestation. Following the survey, implement a program to kill the rodents, removing their sources of food and water, eliminating their place of refuge and making it rodent-proof, and educating and obtaining the cooperation of employees. If the food supply is removed before you eradicate them, the rodents will migrate to other areas, making elimination more difficult.</li> <li>▪ Openings in building foundations and walls should be closed or screened with wire mesh that has holes not more than 1.25 cm (0.5 in) wide. Where pipes enter masonry, force heavy hardware cloth or steel wool into the opening, then fill it with concrete.</li> <li>▪ Continuous surveillance is necessary, and places where rodents have been gnawing to gain entry to a building should be sealed with metal flashing.</li> <li>▪ Doors are particularly vulnerable to rodent entry so ensure that external doors and windows close tightly with no gaps at the bottom.</li> <li>▪ Materials stored in the open, in sheds or in building should be stacked at least 30 cm (1 ft.) above the ground.</li> <li>▪ Stringent waste disposal practices should be observed – secure all waste in closed containers and not just plastic bags.</li> <li>▪ Wash dustbin areas regularly. Make sure composting bins are designed to prevent rodents from entering.</li> <li>▪ Traditional mouse and rat traps, or snap traps, kill instantly. If trapping efforts fail, it is usually due to too few traps being used.</li> <li>▪ Bait should be sticky to ensure that the mouse triggers the trap mechanism even if it only lightly touches the bait. Mice prefer peanut butter or chocolate to cheese. Bacon, oatmeal or apples can also be used as bait.</li> <li>▪ An alternative to snap traps is a battery-operated trap that generates a high-voltage once the rat or mouse is inside. The design is relative safe and can be used in areas where children, pets or wildlife may be present.</li> <li>▪ &lt;Include site-specific rodent controls&gt;</li> </ul>
<b>Slugs and Snails</b>	<ul style="list-style-type: none"> <li>▪ There are various non-chemical solutions to eliminated slugs and snails, including putting salt or sharp shingle around vulnerable plants, drowning them in beer or simply throwing them over a fence. Elemental copper bands also repel snails and slugs.</li> <li>▪ &lt;Include site-specific slug and snail controls&gt;</li> </ul>
<b>Wasps and Hornets</b>	<ul style="list-style-type: none"> <li>▪ A simple trap can be made by putting beer or a solution of jam or honey and water in an open jar around the grounds. If this does not work, there are branded traps available containing specially formulated attractant baits.</li> <li>▪ &lt;Include site-specific wasp and hornet controls&gt;</li> </ul>
<b>&lt;Other Pest Species &gt;</b>	<ul style="list-style-type: none"> <li>▪ &lt;Include information about control measures for species found on the project site that were not previously addressed&gt;</li> </ul>

**<Building Name>**

# Integrated Pest Management, Erosion Control, and Landscape Management Plan **Template** LEED for Existing Buildings: Operations & Maintenance

**<Month, Year>**

## \*\*\*HOW TO USE THIS TEMPLATE\*\*\*

The template below provides a structure for developing an Integrated Pest Management (IPM), Erosion Control, and Landscape Management Plan compliant with LEED for Existing Buildings: Operations & Maintenance (LEED-EBOM) requirements. When properly completed, this document can be submitted as evidence of compliance with SSc3.

The process for customizing this template for a specific property includes:

4. Reviewing best practices/example language indicated in **green** for applicability to the project building and revising as necessary.
5. Inputting project-specific data where indicated in **red** (e.g., building name, name of responsible parties, etc.).
6. Verifying that, subsequent to changes, the key elements remain in the document, including the sections addressing:
  - Scope
  - Goals
  - Responsible Parties
  - Quality Assurance Control Process
  - IPM Strategies and Practices
  - Erosion and Sedimentation Control
  - Landscape Waste
  - Fertilizer Use

Edits of black text should be limited and all changes should be carefully assessed to ensure that LEED requirements are still met, including addressing issues specific to this prerequisite/credit and adhering to the USGBC's Policy, Plan and Program Model (downloadable from the USGBC web site: [EBOM Project Resources](#)).

## **SECTION 1: SCOPE**

This plan provides guidelines for protecting and enhancing the natural diversity of the **<Building Name >**'s site, while also supporting high-performance building operations and developing synergies between the building and its environmental context. The project is located at **<Address>**. The Integrated Pest Management (IPM), Erosion Control, and Landscape Management Plan covers the entire building and associated grounds.

## **SECTION 2: GOALS**

Goals include minimizing the impact of site management practices on the local ecosystem and reducing exposure of occupants, staff, and maintenance personnel to potentially hazardous chemical, biological, and particle contaminants.

The Plan addresses environmental best practices for:

- Outdoor IPM
- Erosion and sedimentation control
- Landscape waste
- Fertilizer use

### **SECTION 3: RESPONSIBLE PARTIES**

<Name of Responsible Party>, the <Title of Responsible Party>, with support from <Name of Supporting Staff Member>, <Title of Supporting Staff Member>, is responsible for developing and managing the implementation of the IPM, Erosion Control, and Landscape Management Plan. Contracts with pest and landscape management vendors and construction contractors shall include extensive language describing their role in implementing the building's plan. Contractors involved with various elements of the plan shall carry out their tasks according to their contracts and report all relevant activities to the aforementioned parties. On occasion, several contractors may be engaged simultaneously in various elements of the plan. To ensure an effective and coordinated effort, the building staff responsible for overseeing the plan shall review all proposed activities before implementation.

<INCLUDE CONTRACTOR-SPECIFIC INFORMATION IN THE TABLE BELOW FOR ALL CONTRACTORS SUPPLYING SERVICES. ADJUST ACCORDINGLY IF ALL SERVICES ARE PERFORMED IN-HOUSE>

IPM, erosion and sedimentation, and landscape management strategies for the entire property include actions performed by the following contractors:

Function	Company Name	Primary Contact	Phone
e.g., Pest Control	Joe's Pest Control	Joe Smith	111.111.1111

### **SECTION 4: QUALITY ASSURANCE CONTROL PROCESS**

The party(s) responsible shall periodically evaluate the success of the plan. This evaluation may include producing and providing a report on an annual basis to senior management. Whenever possible, the annual reports shall include an evaluation of the performance, safety, cost, and environmental/public health benefits achieved as a result of its implementation.

Prior to implementation, service providers involved in the building's plan shall submit all information about proposed practices to the responsible parties listed in Section 3, either through detailed contractual language or addenda that establish protocols and products that will be used onsite. Upon reviewing proposed activities, the responsible parties shall determine compliance with the plan and approve or deny action.

The responsible parties listed in Section 3 shall regularly communicate with all service providers and conduct regular site inspections and evaluations to ensure that the plan is in place and functioning as intended. In addition to ongoing quality control measures, the responsible parties will review all practices and products prior to contract renewal (typically annually) to identify opportunities for improvement and expansion of environmentally friendly practices.

### **SECTION 5: IPM STRATEGIES AND PRACTICES**

Please see the separate IPM plan for details regarding IPM-related best management practices, least-toxic pesticides, emergency conditions, universal notification, recordkeeping, and sanitation.

## **SECTION 6: EROSION AND SEDIMENTATION CONTROL**

<Building Name>'s goal is to protect water and air quality through prevention of soil erosion and sedimentation. Meeting erosion and sedimentation (E&S) objectives includes the establishment of E&S control plans during any infrastructure repairs or other construction activities that result in ground disturbance, as well as ongoing maintenance of the facility's site to prevent soil erosion and sediment transfer.

### **PERFORMANCE METRIC**

This plan shall govern all components of E&S control at the project building and site. The practices identified in this plan shall be wholly adopted and used in 100% of the construction and routine site maintenance/operations scenarios at <Building Name >

### **PRACTICES TO OPTIMIZE EROSION AND SEDIMENTATION CONTROL**

<INCLUDE ALL SITE-SPECIFIC BEST MANAGEMENT PRACTICES AND REVISE THE FOLLOWING TO ACCURATELY REFLECT THE ACTIVITIES ADOPTED AT THE BUILDING AND SITE>

#### **During Construction Activities**

The prevention and control of E&S during construction is based on the Site Erosion and Sedimentation Control component of the construction specifications. This requires a plan with work methods and devices in compliance with the 2003 EPA Construction General Permit (<http://cfpub.epa.gov/npdes/stormwater/cgp.cfm>), or another local jurisdiction, if more stringent. The specification shall be included in construction documents for all projects involving site work or grading.

#### **During Routine Site Maintenance and Operations**

The site has existing controls for erosion and sedimentation control and stormwater management consisting of:

- <list existing control, e.g., ground cover, retention areas>
- <list existing control, e.g., ground cover, retention areas>

When deteriorated conditions compromise the efficacy of the existing controls, the methods listed in the construction specification apply to the operations and maintenance work.

During significant weather events or due to seasonal detritus, soil and organic debris can build up in stormwater drainage systems; routine inspections and maintenance facilitate a fast response to erosion issues and limit the harmful environmental impacts of erosion and sedimentation. A regular inspection of existing controls shall be performed and logged to ensure that deficiencies are identified and remedied. This includes <monthly> inspection of the controls listed above, as well as the following:

- Assessment of slope stability after major rainfall events for site areas with steep slopes
- Inspection for standing water and drainage problems following major rainfall events
- Semiannual inspection and cleaning of roof drains
- Inspection of storm sewers during major rainfall for evidence of sedimentation
- <List addition inspection activities>

## **SECTION 7: LANDSCAPE WASTE**

< Building Name> retains the majority of landscape waste onsite, both to minimize the amount of waste sent to landfills and to create soil-enriching compost. Landscaping debris that cannot be recycled/composted onsite shall be directed to offsite composting facilities.

#### PERFORMANCE METRIC

This plan shall govern all components of landscape waste at the project building and site. The practices identified in this plan shall be wholly adopted and used in 100% of landscape management activities at <Building Name>.

#### PRACTICES TO MINIMIZE/DIVERT LANDSCAPE WASTE

<INCLUDE ALL SITE-SPECIFIC BEST MANAGEMENT PRACTICES AND REVISE THE FOLLOWING LIST TO ACCURATELY REFLECT THE ACTIVITIES ADOPTED AT THE BUILDING AND SITE>

- <Name of Landscape Contractor> shall collect landscape waste, including, but not limited to, leaves, cut vines, and pruned branches for composting piles and shall use the compost to mulch existing plantings to reduce watering and fertilizing.
- Mulching mowers shall be used on turf areas, returning clippings back into the lawn to recycle nutrients.
- <Include additional site-specific practices to minimize/divert landscape waste>

### **SECTION 8: FERTILIZER USE**

Fertilizer use shall be kept to a minimum to prevent eutrophication of local ponds and streams. Only organic fertilizers shall be applied on the grounds. <Name of Landscape Contractor or In-house personnel> shall assume responsibility for administering organic fertilizer on the building grounds.

#### PERFORMANCE METRIC

The practices listed below shall be implemented to the extent noted in the following table. Where less-than-complete adoption occurs, the performance metrics indicated will be used to gauge performance against the implementation target. The performance metrics and implementation targets for each element are listed in the following table.

<INCLUDE SITE-SPECIFIC PRACTICES, PERFORMANCE METRICS, AND IMPLEMENTATION TARGETS. SAMPLE LANGUAGE BELOW>

Site Management Products/Materials	Performance Metric	Implementation Target
Organic Fertilizer	Percent of Applicable Chemicals	<INCLUDE SITE-SPECIFIC TARGETS>
Manual Weekly Weeding	n/a	Complete Adoption
Tree Wrapping	n/a	Complete Adoption
Soil and Ground Cover Testing	n/a	Complete Adoption
Native and Adaptive Plantings	Percent of Applicable Landscape Areas	<INCLUDE SITE-SPECIFIC TARGETS>
Organic Mulching	n/a	Complete Adoption

#### PRACTICES TO OPTIMIZE FERTILIZER USE

<INCLUDE ALL SITE-SPECIFIC BEST MANAGEMENT PRACTICES AND REVISE THE FOLLOWING TO ACCURATELY REFLECT THE ACTIVITIES ADOPTED AT THE BUILDING AND SITE>

### Organic Fertilizer – Turf

- The soil in the four turf areas shall be tested using the REAM water soluble method which indicates what elements are in the soil and available to plants.
- Once in September, May and late-June, the turf areas shall receive applications of 4-4-2 OMRI (Organic Materials Review Institute: [www.omri.org](http://www.omri.org)) listed organic fertilizer at a rate of 15lbs. per 1000 sq. ft.
- In February, “Hummamend,” an organic fertilizer, shall be applied once at a rate of 5lbs. per 1000 sq. ft.
- Compost tea, a brew of beneficial microorganisms, humic acid, and molasses shall be applied to turf grass three times per year to increase the microbiological activity in the soil.
- Recycling grass clippings back into the soil by way of mulching mowers shall return nearly two pounds of nitrogen to every thousand square feet of lawn annually.

### Organic Fertilizer – Planting Beds

- The soil and ground cover in shrub and ornamental tree beds shall be tested for available nutrients.
- The landscaping contractor shall apply “Nature Safe” 8-5-5 OMRI (Organic Materials Review Institute: [www.omri.org](http://www.omri.org)) listed organic fertilizer to all shrubs and trees once in the spring or fall.
- Soil surfaces shall be treated with fish hydrolysate, a liquid organic fertilizer, and additional liquid organic compounds to promote tree health and vigor.
- Shrub and tree beds shall be treated with 80cy of “shredded bark mulch” once annually.
- Flower beds shall be fertilized with 14-14-14 once per month during the growing season.

### Plantings

Whenever practical, native or adaptive plant species that are well-suited for the local climate and require minimal irrigation, fertilization, and maintenance, shall be integrated into the site landscape when new plantings are installed or reseeding occurs. The table below identifies site appropriate native/adaptive species approved for installation onsite during re-landscaping projects.

<INCLUDE LOCATION-SPECIFIC NATIVE OR ADAPTIVE PLANTINGS.>

Botanical Name	Common Name
<Botanical Name>	<Common Name>

### Resources for Location Climate Appropriate Plant Species

- Lady Bird Johnson Wildflower Center Native Plant Database: <http://www.wildflower.org/plants/>
- Plant Native: <http://www.plantnative.org>

## **<Building Name>** **Sustainable Purchasing Policy Template** **LEED for Existing Buildings: Operations and Maintenance** **<Month, Year>**

### **SECTION 1: POLICY SCOPE**

This policy applies to the sustainable purchasing at <Building Name>'s site located at <Address>; and that are within the building and site management's control.

This policy applies to sustainable purchasing of the following types of products:

- Ongoing Consumables.

\*\*\* Choose at least one of the following to include \*\*\*

- Durable goods
- Building materials used in facility alterations and additions
- Mercury-containing lamps

Food and beverages are not included in the scope of this policy.

## **SECTION 2: POLICY GOALS**

To purchase ongoing consumables in a manner that will:

- protect the environment and public health
- conserve natural resources
- minimize waste, including landfilling and incineration, and reduce toxicity

## **SECTION 3: PERFORMANCE METRIC**

### **Sustainable Purchasing of Ongoing Consumables**

The term “ongoing consumables” refers to low-cost-per-unit materials that are regularly used and replaced through the course of daily business operations. These products may include, but are not limited to: printing and copying paper, notebooks, envelopes, business cards, sticky notes, paper clips, toner cartridges, and batteries. <Building Name>’s goal is that at least <40%> <60%> <80%> of the cost of goods purchased will comply with one or more of the following criteria:

- Contains at least 10% post-consumer and/or 20% post-industrial material
- Contains at least 50% rapidly renewable material (e.g., bamboo, cotton, cork, wool)
- Contains at least 50% materials harvested and extracted and processed within 500 miles of the facility
- Consists of at least 50% Forest Stewardship Council (FSC)-certified paper products
- Rechargeable batteries

<Building Name> acknowledges the value of purchasing sustainable products and requires that vendor(s) support that effort when appropriate and/or possible. <Building Name> requests that vendor(s) notify them of recycled content and reduced packaging options or alternative products that would comply with the above specifications. Nothing contained in this policy shall be construed as requiring <Building Name> to procure products that do not perform adequately for their intended use, exclude adequate competition, or are not available at a reasonable price in a reasonable period of time.

### **Sustainable Purchasing of Durable Goods**

The term “durable goods” refers to higher-cost-per-unit materials that are replaced infrequently and/or may require capital outlays to purchase. These products may include, but are not limited to: office equipment (such as computers, monitors, printers, copiers, fax machines), appliances (refrigerators, dishwashers, water coolers), external power adaptors, televisions, and furniture. The purchasing criteria for these products fall into the following two categories.

#### **Electronics and Appliances**

<Building Name>’s goal is that at least 40% of the cost of goods purchased will comply with one or more of the following criteria:

- Energy Star labeled products, when available
- Electronic Product Environmental Assessment Tools (EPEAT) rated products (at least bronze level)
- The equipment replaces conventional gas-powered equipment, i.e. maintenance equipment and vehicles

#### **Furniture**

<Building Name>’s goal is that at least 40% of the cost of goods purchased will comply with one or more of the following criteria:

- Contains at least 10% post-consumer and/or 20% post-industrial material
- Contains at least 70% salvaged material from off-site or outside the organization
- Contains at least 70% salvaged material from on-site through an internal materials and equipment reuse program
- Contains at least 50% rapidly renewable material (bamboo, cotton, cork, wool)
- Contains at least 50% materials harvested, extracted and processed within 500 miles of the facility/site



- Consists of at least 50% Forest Stewardship Council (FSC) certified wood

<Building Name> acknowledges the value of purchasing sustainable products and requires that vendor(s) support that effort when appropriate and/or possible. <Building Name> requests that vendor(s) notify them of Energy Star and sustainable furniture opportunities that would comply with the above specifications, as well as reduced packaging options.

#### **Sustainable Purchasing: Facility Alterations and Additions**

This policy covers materials that are permanently or semi-permanently attached to the building itself in the course of facility renovations, demolitions, refits and new construction additions. These products may include, but are not limited to: building components and structures (wall studs, insulation, doors, windows), panels, attached finishes (drywall, trim, ceiling panels), carpet and other flooring materials, adhesives, paints and coatings. <Building Name>'s goal is that at least 50% of the cost of goods purchased will comply with one or more of the following criteria:

- Contains at least 10% post-consumer and/or 20% post-industrial material
- Contains at least 70% salvaged material from off-site or outside the organization
- Contains at least 70% salvaged material from on-site through an internal materials and equipment reuse program
- Contains at least 50% rapidly renewable material (bamboo, cotton, cork, wool)
- Contains at least 50% materials harvested/extracted and processed within 500 miles of the facility/site
- Consists of at least 50% Forest Stewardship Council (FSC) certified wood
- Adhesives and sealants comply with SCAQMD rules governing allowable VOC content
- Paints and coatings comply with Green Seal's GS-11 requirements governing VOC emission levels
- Finished flooring is FloorScore-certified and constitutes a minimum of 25% of the finished floor area
- Carpet and carpet cushion meets the requirements of the Carpet and Rug Institute (CRI) Green Label Plus carpet testing program
- Composite panels and agrifiber products contain no added urea-formaldehyde resins

<Building Name> acknowledges the value of purchasing sustainable products and requires that vendor(s) support that effort when appropriate and/or possible. <Building Name> requests that vendor(s) notify them of potential opportunities that would comply with the above specifications, as well as reduced packaging options.

#### **Sustainable Purchasing: Toxic Material Source Reduction – Reduced Mercury in Lamps**

<Building Name> seeks to reduce the amount of mercury brought into all sites through purchase of lamps for the buildings and associated grounds. <Building Name>'s goal is that at least 90% of the number of lamps purchased will meet the following overall mercury-content target:

- No more than <90> <70> picograms of mercury per lumen-hour

<Building Name> representatives acknowledge the value of purchasing low-mercury lamps and require that vendors support that effort when appropriate and/or possible. <Building Name> requests that vendor(s) notify them of specific lamps and other opportunities that would comply with the above specifications, as well as reduced packaging options.

### **SECTION 4: PERFORMANCE EVALUATION**

<Building Name> and/or vendor will record and track purchases on a monthly basis. <Building Name> personnel and/or vendor responsible for purchasing will report <Building Name>'s purchases to the appropriate <Building Name> representative using the provided Materials Purchasing Worksheet. Vendor is required to track and report <Building Name>'s purchases monthly. Vendor will use <Building Name> Materials Purchasing Worksheet or a <Building Name> approved alternative reporting method. Vendor is prepared to report the manner by which each product purchase meets the following purchasing criteria. Whenever possible, <Building Name> personnel should include an evaluation of the environmental and public health benefits achieved through sustainable purchasing of the goods described under Section (3).

### **SECTION 5: RESPONSIBLE PARTY**

The <Title of Responsible Party> shall implement this policy within <Building Name> in coordination with other appropriate organization personnel, including but not limited to, <Building Name>'s Purchasing Officer, <Building Name> employees, parties purchasing materials on <Building Name>'s behalf and/or companies contracted to provide goods to <Building Name>.

Contact Information for Responsible Party:	
Name:	



Job Title:	
Phone:	
Email:	
Date of assignment:	

## **SECTION 6: PROCEDURES AND STRATEGIES**

This policy covers purchases that are within the building and site management's control. <Building Name> personnel may use any qualifying vendor to procure the products described in Section (3), and are encouraged to also consider the following areas of interest:

### Packaging

<Building Name> desires to reduce waste generated through daily operations and recognizes that such reduction begins with the material that enters each facility/site. <Building Name> will request that all items purchased be packaged and delivered with minimal packaging material. <Building Name> reserves the right to request that vendors alter the packaging of goods delivered, when appropriate and/or possible.

### Recycled Content

<Building Name> requests that all vendors provide recycled content options for goods when available. If a product is available with recycled content, vendor will disclose that option to the appropriate <Building Name> representative. <If a product is available with recycled content, but <Building Name> does not specifically request as such, the vendor will default to order the product with recycled content, unless it exceeds the cost of the conventional product by 10% or greater.>

Recycled content targets may be overridden at the discretion of <Building Name> representatives if certain products with recycled content present themselves as cost-prohibitive.

## **SECTION 7: TIME PERIOD**

This policy shall take effect on <Date> and shall continue indefinitely or until amended and/or replaced by a subsequent sustainable purchasing policy.

## **BUILDING CHARACTERISTICS**

Building ID: \_\_\_\_\_ Date of Audit: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip/Post: \_\_\_\_\_

Lat. \_\_\_\_\_ Long. \_\_\_\_\_ HDD \_\_\_\_\_ CDD \_\_\_\_\_ (Base 65°F) \_\_\_\_\_ (Year of Data)

Gross Floor Area, <sup>1</sup> \_\_\_\_\_ ft<sup>2</sup> Total Conditioned Area<sup>1</sup> \_\_\_\_\_ ft<sup>2</sup>

Conditioned Area, <sup>1</sup> heated only \_\_\_\_\_ ft<sup>2</sup> Conditioned Area, <sup>1</sup> cooled only \_\_\_\_\_ ft<sup>2</sup>

Conditioned Area, <sup>1</sup> heated & cooled \_\_\_\_\_ ft<sup>2</sup>

Number of conditioned floors: Above grade \_\_\_\_\_ Below grade \_\_\_\_\_

Year of Construction<sup>2</sup>: \_\_\_\_\_

Primary Building Type<sup>2</sup>: \_\_\_\_\_

Brief Building Description: \_\_\_\_\_

## ENERGY PERFORMANCE SUMMARY \_\_\_\_\_ (YEAR)

This is a summary of energy account worksheets on succeeding pages.

ENERGY TYPE	TOTAL ANNUAL USE	UNITS	CONVERSION MULTIPLIER To Thousands Btu See Page 17	THOUSANDS BTU (kBtu)	TOTAL ANNUAL COST (\$)
ELECTRICITY		kWh	$\frac{kBtu}{kWh}$		
PURCHASED STEAM		Klb	$\frac{kBtu}{klb}$		
PURCHASED HOT WATER		kBtu	----		
PURCHASED CHILLED WATER		kTon	$\frac{kBtu}{Ton}$		

## ENERGY AND COST INDICES

Energy Utilization Index ( $A \div \text{Gross Floor Area}$ ) \_\_\_\_\_ kBtu/ft<sup>2</sup>/yr

Cost Index ( $B \div \text{Gross Floor Area}$ ) \_\_\_\_\_ \$/ft<sup>2</sup>/yr

Total Water Use (C) \_\_\_\_\_ kGal/yr                      or                      ft<sup>3</sup>/yr                      \$/yr

Cost Index, Including Water ( $B + C \div (\text{Gross Floor Area})$ ) \_\_\_\_\_ \$/ft<sup>2</sup>/yr

## ANALYSIS OF METERED ELECTRICAL DEMAND

Maximum Demand \_\_\_\_\_ kW or \_\_\_\_\_ kVA \_\_\_\_\_ (month)

Maximum Demand \_\_\_\_\_ kW  $\times 1000 \div$  Gross Floor Area = \_\_\_\_\_ W/ft<sup>2</sup>

Minimum Demand \_\_\_\_\_ kW or \_\_\_\_\_ kVA \_\_\_\_\_ (month)

Minimum Demand \_\_\_\_\_ kW  $\times 1000 \div$  Gross Floor Area = \_\_\_\_\_ W/ft<sup>2</sup>

## COMPARISON WITH SIMILAR BUILDING(S)

BLDG #	EUI kBtu/ft <sup>2</sup> /yr	Annual Cost \$/ft <sup>2</sup> /yr	Max Demand W/ft <sup>2</sup>	Min. Demand W/ft <sup>2</sup>

Discussion of comparative data:

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Further analysis recommended? Y/N \_\_\_\_\_

Explain

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1. Source of Data: \_\_\_\_\_

## PRELIMINARY BUILDING USE <sup>1</sup>

Average Hours/Week \_\_\_\_\_ Average Weeks/Year \_\_\_\_\_

Average Number of Occupants During Normal Occupied Period \_\_\_\_\_

After Hours Cleaning (y/n) \_\_\_\_\_

## OVERALL BUILDING SCHEDULE

Schedule during months of \_\_\_\_\_

Days	M	T	W	Th	F	Sat	Sun	Hol.
------	---	---	---	----	---	-----	-----	------

Hours Open								
Hours Closed								
Peak no. of occupants								
Avg. no. of occupants when open								

Schedule during months of \_\_\_\_\_

Days	M	T	W	Th	F	Sat	Sun	Hol.
Hours Open								
Hours Closed								
Peak no. of occupants								
Avg. no. of occupants when open								

## PRELIMINARY ENERGY ALLOCATION TO END USES

End Use	Energy Type (from energy performance summary)	
	Primary	Secondary (more than 5% of end use)
Heating	lb steam	
Cooling	kWh	kTon CHW
Fans	kWh	
Lights	kWh	

Utility Company \_\_\_\_\_ Account # \_\_\_\_\_ Rate Number \_\_\_\_\_  
Energy Type \_\_\_\_\_ Consumption Units<sup>1</sup> \_\_\_\_\_  
Electric Measured Demand Units<sup>2</sup> \_\_\_\_\_

1. CCF, therms, kWh, gal, etc.
2. kW, kVA, etc.
3. Costs should include taxes, fees, contract charges, etc.

SPACE NUMBER <sup>1</sup>	A	B	C	D	UNACCOUNTED
FUNCTION TYPE <sup>2</sup>					
CONDITIONED AREA, ft <sup>2</sup>					
SPACE USAGE <sup>3</sup> h/wk					
wks/yr					

PRINCIPAL LIGHTING TYPE					
PRINCIPAL TERMINAL HVAC TYPE					

### **REVISIONS TO ORIGINAL BUILDING FUNCTIONS**

Discuss/describe revisions to the original functions of the building pertaining to current energy efficiency or longevity.

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## BUILDING SHELL CHARACTERISTICS

Total exposed above-grade wall area (ft<sup>2</sup>) \_\_\_\_\_ Insulated? Y/N  
Glazing area (% of exposed wall area) \_\_\_\_\_ Single/Double?  
Roof area (ft<sup>2</sup>) \_\_\_\_\_ Insulated? Y/N  
Floor surface area exposed to outdoor conditions (ft<sup>2</sup>) \_\_\_\_\_ Insulated? Y/N  
Above-grade wall area common with other conditioned building (ft<sup>2</sup>) \_\_\_\_\_

## OPERATION and MAINTENANCE

Discuss/describe operation and maintenance procedures pertaining to building energy efficiency.

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## UNOCCUPIED SETBACK

(check all that apply)

### Shutdown of:

AHUs by Time Schedule \_\_\_\_\_

Exhaust Fans by Time Schedule \_\_\_\_\_

### Chillers:

By Time Schedule \_\_\_\_\_

By Outside Air Temperature \_\_\_\_\_

### Boilers

By Time Schedule \_\_\_\_\_

By Outside Air Temperature \_\_\_\_\_

## ENVELOPE CHARACTERISTICS

Building ID \_\_\_\_\_

Date of Audit    Month \_\_\_\_\_ Year \_\_\_\_\_

Construction Code	R-Value	Glass Shading Coefficient	Area (ft <sup>2</sup> )

(Include miniature building floor plan, showing orientation)

## CONSTRUCTION TYPE CODES



Walls

Roofs

Doors

Windows

## LIGHTING SYSTEM CHARACTERISTICS

**Describe in detail, include typical ceiling plans. Utilize space function format.**

- Typical W/ft<sup>2</sup>
- Design of controls
- Typical W/ft<sup>2</sup> installed, by type of light source
- Light levels, footcandles, 3 feet above floor, without daylight
- % of lamps not functioning
- Operating schedules
- Operating and maintenance problems

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## HVAC SYSTEM CHARACTERISTICS

Describe in detail, including floor plans and sketches.	
<ul style="list-style-type: none"> <li>Fuel Source</li> <li>Fuel Conversion Equipment</li> <li>Distribution Method</li> <li>Terminal Type</li> <li>Equipment Capacity</li> </ul>	<ul style="list-style-type: none"> <li>Control Description and Setting</li> <li>Operating Periods</li> <li>Space Temperature Setting and Setback</li> <li>Operating and Maintenance Problems</li> </ul>

Heating System

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Cooling System

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Exhaust System(s)

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## INVENTORY OF MAJOR HVAC EQUIPMENT

This table format is intended as a guide. The information collected on systems need not be restricted to the format

or categories below.

Designation	Location	Model/ Type	Size	Capacity	Serves	Operating Hours/Year	Remarks


## RECOMMENDED Potential ENERGY CONSERVATION MEASURES

Measure Description	Energy Type(s)	Estimated Units Saved	Estimated \$/Year Saved	Estimated Implementation Cost	Added Operational Cost	Simple Payback (Years)
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
Total if all measures implemented						

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**<Building Name >**  
**Integrated Pest Management Plan Template**  
**LEED for Existing Buildings: Operations & Maintenance**  
**<Month, Year>**

**\*\*\*HOW TO USE THIS TEMPLATE\*\*\***

The below template provides a structure for developing an Integrated Pest Management (IPM) Plan compliant with LEED for Existing Buildings: Operations & Maintenance (LEED-EBOM) requirements. When completed properly, this document can be submitted as evidence of compliance with EQc3.9 and partial compliance with SSc3.

The process for customizing this template for a specific property includes:

7. Reviewing best practices/example language indicated in green for applicability to the project building and revising as necessary.
8. Inputting basic project-specific data where indicated in red (e.g., building name, name of responsible parties, etc.).
9. Verifying that subsequent to changes, the key elements remain in the document, including the sections addressing:
  - Scope
  - Goals
  - Responsible Parties
  - Performance Metric
  - Quality Assurance Control Process
  - IPM Strategies and Practices

Edits of black text should be limited and all changes should be carefully assessed to ensure that LEED requirements are still met, including addressing issues specific to this prerequisite/credit and adhering to the USGBC's Policy, Plan and Program Model (downloadable from the USGBC web site: [EBOM Project Resources](#)).

## **SECTION 1: SCOPE**

This plan provides guidelines for protecting and enhancing the natural diversity of the <Building Name>'s site, while also supporting high-performance building operations and developing synergies between the building and its environmental context. The project is located at <Address>. The Integrated Pest Management (IPM) Plan covers the entire building and associated grounds.

## **SECTION 2: GOALS**

To minimize the impact of site management practices on the local ecosystem, and to reduce exposure of occupants, staff and maintenance personnel to potentially hazardous chemical, biological and particle contaminants.

The Plan addresses environmental best practices for:

- Outdoor integrated pest management
- Indoor integrated pest management

## **SECTION 3: RESPONSIBLE PARTIES**

<Name of Responsible Party>, the <Title of Responsible Party>, with support from <Name of Supporting Staff Member>, <Title of Supporting Staff Member>, is responsible for developing and managing the implementation of the IPM Plan. Contracts with pest and landscape management vendors shall include extensive language describing their role in the building's Plan. Contractors involved with various elements of the Plan shall carry out their tasks according to their contracts, and report all relevant activities to the aforementioned parties. On occasion, several contractors may be engaged simultaneously in various elements of the Plan at the building and grounds. To ensure an effective and coordinated effort, the building staff responsible for overseeing the Plan shall review all proposed activities before implementation.

<INCLUDE CONTRACTOR-SPECIFIC INFORMATION IN THE TABLE BELOW FOR ALL CONTRACTORS SUPPLYING SERVICES. ADJUST ACCORDINGLY IF ALL SERVICES ARE PERFORMED IN-HOUSE>

IPM strategies for the entire property include actions performed by the following contractors:

Function	Company Name	Primary Contact	Phone
e.g., Pest Control	Joe's Pest Control	Joe Smith	111.111.1111

## **SECTION 4: QUALITY ASSURANCE CONTROL PROCESS**

The party(s) responsible shall periodically evaluate the success of the Plan. This evaluation may include producing and providing a report on an annual basis to senior management. Whenever possible, the annual reports shall include an evaluation of the performance, safety, cost and environmental/public health benefits achieved as a result of its implementation.

Prior to implementation, service providers involved in the building's Plan shall submit all proposed pest management activities to the responsible parties, listed in Section 3. Upon reviewing proposed activities, the responsible parties shall determine if they meet the criteria of the Plan and approve or deny action.

The responsible parties, listed in Section 3, shall regularly communicate with all service providers, and conduct regular site inspections and evaluations to ensure that the Plan is in place and functioning as intended. In addition to ongoing quality control measures, <Name of Responsible Party> will review all practices and products prior to contract renewal (typically annually) to identify opportunities for improvement and expansion of environmentally-friendly practices.

## **SECTION 5: PERFORMANCE METRIC**

This IPM Plan shall govern all components of pest management at the project building and site. The practices identified in this Plan shall be wholly adopted and used in 100 percent of the pest management scenarios at <Building Name>.

## **SECTION 6: IPM STRATEGIES AND PRACTICES**

### **Integrated Methods**

Integrated methods that make use of monitoring and non-toxic preventative measures (e.g., site inspection and maintenance, cultural controls, pest inspection and population monitoring) will be used to proactively manage and minimize pest issues. In the event that monitoring activities reveal a need for the use of pest controls, appropriate control options will be evaluated, and the least-toxic option likely to be effective will be employed.

### **Least-toxic Pesticides**

Least-toxic pesticides are defined by the City of San Francisco's Hazard Tier 3 criteria (least hazardous): [www.up3project.org/documents/2007rpplbyaicomplete.pdf](http://www.up3project.org/documents/2007rpplbyaicomplete.pdf).

Least-toxic pesticide status also applies to any pesticide product, other than rodent bait, that is applied in a self-contained, enclosed bait station placed in an inaccessible location, or applied in a gel that is neither visible nor accessible.

### **Emergency Conditions**

In the event of an emergency, pesticides may be applied on the grounds without complying with the earlier stipulations for use of integrated and least-toxic methods.

Emergencies are defined as <DEFINE WHAT CONSTITUTES AN EMERGENCY PEST PROBLEM, e.g., infestations of certain pest species, specific situations that directly effect occupant health, etc.>.

### **Universal Notification**

<Building Name> has adopted a universal notification system if a pesticide, other than a least-toxic pesticide as defined above, must be applied on site. This strategy requires <Building Name> and its vendors to notify building occupants at least 72 hours in advance of a pesticide application under normal circumstances and no more than 24 hours after an emergency application through posted signs or other means of reaching 100 percent of occupants. This notification system enables occupants and staff, and especially high-risk occupants such as children, pregnant women and the elderly, to modify their plans based on pesticide use at the building.

Notification must include the following:

- Pesticide product name
- Active ingredient
- Product label signal word (e.g., "caution", "danger")
- Time and location of application
- Contact information for persons seeking more information

### **Recordkeeping**

Recordkeeping is required to demonstrate ongoing compliance with the IPM plan. All applications of pesticides (include least-toxic options) shall be logged. The pesticide application log shall include the following information:

- Universal Notification to Occupants
  - Date
  - Time
  - Method
- Pesticide Application Date and Time
- Application Manager
- Location
- Target Pest
- Pesticide Trade Name
- Pesticide Active Ingredient
- EPA Registration Number
- Least-toxic status (Y/N)

### **Cleaning Practices**

In the event that cleaning products are used as a component of IPM, they shall meet LEED-EBOM criteria for sustainable cleaning products.

### **Animal & Vegetation Pest Control IPM Best Practices**

Environmental best practices described below are incorporated into vendor contracts / SOP language as appropriate.

<INCLUDE ALL SITE-SPECIFIC BEST MANAGEMENT PRACTICES AND REVISE THE FOLLOWING TO ACCURATELY REFLECT THE ACTIVITIES ADOPTED AT THE BUILDING AND SITE>

### **CHEMICAL STORAGE PRACTICES**



<b>Storage Areas</b>	<ul style="list-style-type: none"> <li>Storage areas must be dry, frost-free, well-ventilated and secure.</li> <li>Storage areas must be situated away from other buildings, especially residential buildings or areas where food or flammable materials are stored.</li> <li>Storage must be built to resist foreseeable accidents, including leakage and spillage, fires and the weather. Ensure there is no risk of spills polluting ground water and local bodies of water. Floors must be impervious to liquids, anti-slip, chemical-resistant, washable and with a means of diverting spills. Drains must lead to sumps or tanks large enough to contain any foreseeable leaks.</li> <li>Shelving must be appropriate for the size of the containers stored in them. Flammable pesticides must be separated from other pesticides. Consideration must be given to possible reactions between chemicals coming in contact with each other.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Labels</b>	<ul style="list-style-type: none"> <li>Make sure all pest control chemicals are clearly labeled and that the manufacturer's instructions for use are kept with them.</li> <li>Chemicals must never be placed in unmarked containers.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Product Information</b>	<ul style="list-style-type: none"> <li>Effective first-aid provisions must be available together with data sheets on all the products in the storage room and the chemical safety precautions.</li> <li>Emergency telephone numbers must be listed in a key location in the storage facility. These numbers and other emergency facilities must be checked and updated as necessary.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Signage</b>	<ul style="list-style-type: none"> <li>Display warning signs without attracting unwanted attention.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

#### CHEMICAL PREPARATION & HANDLING PRACTICES

<b>Choosing Chemicals</b>	<ul style="list-style-type: none"> <li>Identify which pesticides and herbicides are being used and the exact problems they are intended to resolve. The more that is known about the problem, the less chance there is of making a mistake. The words organic, natural and biodegradable in this context do not guarantee that they are safe.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Mixing Chemicals</b>	<ul style="list-style-type: none"> <li>Accurate measurements must be made during both mixing and application phases. Use the most suitable chemical, in the minimum necessary amount, to achieve the desired results.</li> <li>A safe area must be available for mixing pesticides. This must be done on a concrete pad, with a separate sump or tank to contain any leakage.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Health Precautions</b>	<ul style="list-style-type: none"> <li>Operators must be provided with and adequately trained in the use of the necessary equipment and protective clothing.</li> <li>Proper health surveillance must be available to all those working with pesticides and herbicides.</li> <li>Neighbors and others in the area must be warned of the spraying program in advance of and during applications.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Chemical Transport</b>	<ul style="list-style-type: none"> <li>Only the appropriate quantity of pesticide and herbicide must be removed from the pesticide store for immediate use.</li> <li>Do not transport chemicals in vehicles used for carrying people or food.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

#### CHEMICAL APPLICATION PRACTICES

<b>User Qualifications</b>	<ul style="list-style-type: none"> <li>In many instances it will be necessary to call on outside expertise to advice on pest-management problems, particularly in the creation of customized integrated pest management problems, which may require detailed knowledge of the biology and ecology of a particular species.</li> <li>If pesticides are required, the IPM specialist shall communicate with &lt;Building Name&gt; to determine the best product and application in accordance with approval requirements.</li> <li>A specialist must supervise and control the preparation and use of chemical applications.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
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<b>Species Considerations</b>	<ul style="list-style-type: none"> <li>Time the treatment to coincide with the presence of the pest.</li> <li>Use a selective chemical that has the least effect on non-target species and treat only the area affected.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>User Safety</b>	<ul style="list-style-type: none"> <li>Users must wear protective clothing and headgear, and change clothing and wash thoroughly with soap and water after applying pest control chemicals.</li> <li>Ensure that anyone handling toxic chemicals never works alone and that the work area is well-ventilated.</li> <li>Wear a respirator for outdoor spraying or dusting of organic phosphorus compounds</li> <li>Eating, drinking and smoking must be prohibited when using or handling chemicals</li> <li>Users must be familiar with the effects on the body of the chemicals they are likely to be using, and how the chemicals may enter the body.</li> <li>Users must be aware of the signs and symptoms of acute poisoning related to chemicals they are using. They must stop work if they are feeling ill and seek medical advice.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Limited Access</b>	<ul style="list-style-type: none"> <li>The area of application must be clearly marked, and unnecessary access prevented while spraying is in progress.</li> <li>Building occupants must be informed of any pest-control management systems. When application or spraying is in progress, they must be warned of this activity and kept away from the area in which it is taking place.</li> <li>Control the reentry of people into the treated area.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Equipment</b>	<ul style="list-style-type: none"> <li>Equipment must be frequently checked and properly maintained, both for health and safety reasons and to minimize spray drift.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Weather/Time Restrictions</b>	<ul style="list-style-type: none"> <li>Spraying must not be carried out in unsuitable weather. Anyone operating sprayers must have access to a wind-speed meter and only spray when the wind speed is negligible.</li> <li>Hours of work must be controlled so that building occupants are not exposed.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

<b>CHEMICAL DISPOSAL PRACTICES</b>	
<b>Conditions of Disposal</b>	<p>As most pesticides and herbicides are extremely toxic, proper disposal of unused chemicals is paramount to maintaining the health of building occupants and the safety of the environment. Disposal methods will depend on:</p> <ul style="list-style-type: none"> <li>Quantity of waste for disposal</li> <li>Chemical and biological degradability of the active ingredients</li> <li>Toxic properties</li> <li>Concentration</li> <li>Physical form of the waste</li> <li>Disposal options available</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>General Guidelines</b>	<ul style="list-style-type: none"> <li>Always follow the manufacturer's and/or supplier's instructions even when disposing of empty containers.</li> <li>Landfilling or incinerating pesticides and herbicides is not an environmentally sound option.</li> <li>Segregate pesticide/herbicide wastes from general building wastes.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Containers/Labels</b>	<ul style="list-style-type: none"> <li>Never transfer pesticides to unlabelled or mislabeled containers. Keep the chemicals in clearly labeled containers even when disposing of them.</li> <li>Do not reuse pesticide/herbicide containers.</li> <li>Puncture containers after they have been used to prevent reuse.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Authorization</b>	<ul style="list-style-type: none"> <li>Use an authorized waste-disposal contractor.</li> <li>Use an authorized disposal site.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

BASIC VEGETATION PEST CONTROL PRACTICES	
<b>Maintenance</b>	<ul style="list-style-type: none"> <li>Keep the building grounds well-maintained at all times.</li> <li>Maintenance personnel shall apply mulch to plant beds, warding off weeds and other pests.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Plantings</b>	<ul style="list-style-type: none"> <li>Plant at the right time and in the right places. Seedlings must not be planted too early, nor located in unsuitable conditions.</li> <li>Avoid monocultures by mixing plant species in planters and gardens.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Manual Controls</b>	<ul style="list-style-type: none"> <li>Landscaping shall be hand weeded and chemical control shall be kept to a minimum. This measure prevents human and environmental exposure to hazardous chemicals.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Chemical Controls</b>	<ul style="list-style-type: none"> <li>When chemical use is necessary, replace hazardous substances with least-toxic chemicals as defined by the 2007 San Francisco Reduced-Risk Pesticide List</li> </ul>
<b>Inspection Schedule and Location</b>	<ul style="list-style-type: none"> <li>The landscape contractor shall visit the site at regular intervals to monitor and apply pest controls operations.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

BASIC ANIMAL PEST CONTROL PRACTICES	
<b>Site/Building Cleanliness</b>	<ul style="list-style-type: none"> <li>Keep garbage containers clean, free of odors and covered at all times. Sanitation measures reduce habitat and food sources for pests.</li> <li>Keep areas around garbage containers free of spillage or garbage to prevent the collection of trash or debris on the ground around or underneath the containers.</li> <li>Keep grounds free of high weeds, trash, old equipment and debris, as these conditions create ideal harborage for rodents.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Structural Integrity</b>	<ul style="list-style-type: none"> <li>Maintain the building exterior in good repair with no holes or openings larger than ¼ inch including, but is not limited to, windows, doors, fans, vents, etc. Structural repairs prevent pests from entering the building.</li> <li>Address any deficiencies in the building exterior with corrective measures, i.e., cementing, screening, caulking, installing stripping on door bases, etc.</li> <li>Maintain door sweeps on all applicable doors to produce a good seal to the ground.</li> <li>&lt;Include site-specific information&gt;</li> </ul>
<b>Inspection Schedule and Location</b>	<ul style="list-style-type: none"> <li>Visual inspections shall be performed at least 2 times per month, with treatment if necessary. After each visit, the pest contractor shall provide a printed service report that includes written observations, recommendations and details of IPM activities.</li> <li>&lt;Include site-specific information&gt;</li> </ul>

SPECIES-SPECIFIC ANIMAL CONTROL STRATEGIES
<INCLUDE ALL SPECIES PRESENT ON BUILDING GROUNDS>

<b>Ants</b>	<ul style="list-style-type: none"> <li>▪ In areas where ants are present, wipe the areas down with soapy water in order to prevent the formation of major scent trails. If there already is an established trail, wipe backwards from the food source to the entrance of the trail.</li> <li>▪ Block all entry points to the building – ants will give up trying to find a way through after 1-2 days. Temporary blockades can be made using sticky substances such as petroleum jelly or chili powder, cinnamon, and boric acid.</li> <li>▪ Always keep opened foodstuffs in sealed containers or store them in the refrigerator or freezer. Clean out kitchen cabinets, drawers and shelves to remove crumbs and stains. Keep sinks and worktops clean and dry.</li> <li>▪ Baits are best put in the path of an ant trail and then removed after the ant activity stops, before they lure ants from another colony to the area.</li> <li>▪ Prune branches close to the building and removed fences or anything that might create a bridge for the ants to cross.</li> <li>▪ Low toxicity compounds to control ants include boric acid and diatomaceous earth (DE), a chalk-like powder consisting of the fossilized remains of diatoms, a type of hard-shelled algae.</li> <li>▪ &lt;Include site-specific ant controls&gt;</li> </ul>
<b>Aphids</b>	<ul style="list-style-type: none"> <li>▪ Manage sap-sucking pest mites and whiteflies by releasing predatory mites, ladybugs and lacewings onto the grounds several times over a period of weeks.</li> <li>▪ Consider using parasitic wasps to control scales on trees, shrubs and flowers</li> <li>▪ If it is difficult to obtain supplies of beneficial insects for release into the garden, then it is possible to purchase a branded lure that simulates the scent of aphids and attracts ladybugs and lacewings to the area</li> <li>▪ &lt;Include site-specific aphid controls&gt;</li> </ul>
<b>Bed Bugs</b>	<ul style="list-style-type: none"> <li>▪ If a bed bug infestation is detected, the most effective course of action is to enlist professional help to inspect the entire building for the presence of bed bugs and treat the affected areas.</li> <li>▪ &lt;Include site-specific bed bug controls&gt;</li> </ul>
<b>Caterpillars</b>	<ul style="list-style-type: none"> <li>▪ Bacterial insecticides derived from natural ingredients are available to control caterpillars.</li> <li>▪ &lt;Include site-specific caterpillar controls&gt;</li> </ul>
<b>Cockroaches</b>	<ul style="list-style-type: none"> <li>▪ Cockroaches contaminate food with their excrement and secrete and unpleasant odor that can permeate the indoor environment.</li> <li>▪ There are five main species of cockroaches and effective control depends on identifying them correctly.</li> <li>▪ Integrated pest management measures for controlling cockroaches include effective hygiene and exclusion practices, sticky traps lined with pheromones, boric acid, and insect growth regulators.</li> <li>▪ All food handling areas should be cleaned frequently.</li> <li>▪ Cockroach control is best done by a professional on a contract basis, through the application of least-toxic pesticides.</li> <li>▪ Control is necessary on a regular basis because of the mobility, reproduction, longevity, and behavior of cockroaches.</li> <li>▪ Ensure that you know what pesticides are being used by the professional contractor and do not assume they are using an environmentally appropriate chemical.</li> <li>▪ &lt;Include site-specific cockroach controls&gt;</li> </ul>
<b>Dust Mites</b>	<ul style="list-style-type: none"> <li>▪ Fabrics, bedding and carpets attract and generate dust and dust mites. To keep dust mites at bay, keep building well-ventilated and dry.</li> <li>▪ &lt;Include site-specific dust mite controls&gt;</li> </ul>

<p><b>Flies</b></p>	<ul style="list-style-type: none"> <li>Flies reproduce more readily in waste and manure, which is where control should begin. In warm weather conditions, the reproduction cycle – from egg, to larva, to pupa, to adult winged fly – requires approximately one week.</li> <li>Collection of waste and residues should be carried out at least twice a week.</li> <li>Keep refuse areas clean to avoid providing flies with breeding grounds</li> <li>Ensure dustbin lids fit tightly and the interiors of bins are cleaned regularly to keep surfaces free of food material.</li> <li>Use fine mesh window and door screens as a barrier against entry by any flying insect.</li> <li>Ultra-violet (UV) fly killing equipment is very effective so long as it is situated correctly.</li> <li>UV equipment disguised as uplighters in dining and lobby areas are discreet and highly effective because they attract and eliminate flies quickly and silently.</li> <li>In food preparation areas, UV equipment should only be used once all possible precautions have been taken to keep flying insects out.</li> <li>Position the UV equipment close to an entry point, at right angles to the nearest competing light source such as a window. In many catering establishments, poorly-situated UV equipment poses a greater food hygiene hazard than lacking pest repellants altogether. This is because when placed next to the food preparation area, they draw flies to the food which they are likely to contaminate before being killed.</li> <li>Natural chemical treatments include pyrethrum extracted from the Chrysanthemum cinerariaefolium plant that can be used in kitchens and restaurants.</li> <li>&lt;Include site-specific fly controls&gt;</li> </ul>
<p><b>Mosquitoes</b></p>	<ul style="list-style-type: none"> <li>The best control method for mosquitoes is to eradicate their habitat.</li> <li>Because they like moisture and lay their eggs in standing water, it is important not to leave flower pots, buckets, plastic sheeting or other open containers outside collecting water. Ensure that any rainwater collectors are fitted with lids.</li> <li>Clear debris from gutters and drains to ensure there is no standing water after rain and drain unused pools or fountains so that the water cannot become stagnant.</li> <li>Drain or fill depressions, mud flats, and other areas that might hold water.</li> <li>Repair leaking taps and air-conditioning units so that puddles cannot form and ensure that septic tanks and sewage systems are properly maintained and in good working order.</li> <li>Avoid over-irrigating lawns and gardens, and keep weeds and grass (where the insects rest) well-clipped.</li> <li>If you have a pond or lake on the building grounds, fill it with mosquito-eating fish such as top-feeding minnows or goldfish – they will eat the mosquito larvae before they mature into adults.</li> <li>Some buildings have successfully reduced the number of mosquitoes and other insects by attracting bats to their property. A simply-built bat house will usually accommodate up to 100 bats.</li> <li>To prevent mosquitoes from coming indoors, fit fine-mesh screens to porches, doors and windows.</li> <li>If these measures are insufficient, area repellents such as citronella candles, coils or sprays will repel mosquitoes from porches, patios and other unscreened outdoor areas, although they only work well when the air is still.</li> <li>&lt;Include site-specific mosquito controls&gt;</li> </ul>
<p><b>Fabric/Clothing Moths</b></p>	<ul style="list-style-type: none"> <li>Moth larvae feed on a wide variety of natural and synthetic materials. They can be found in kitchens, food storage areas, clothing, carpets, blankets and upholstery.</li> <li>Fabrics should be washed and then put in bags and placed in a freezer. When taken out to thaw, shake the fabrics vigorously to remove dead larvae.</li> <li>Clean the areas where fabrics have been stored with vinegar and water.</li> <li>Store fabrics in cedar chests or closets. Place cedar chips or blocks or lavender sachets in drawers.</li> <li>For acute moth problems, re-usable traps can be baited with a controlled-release pheromone system to lure moths into the trap and disrupt their mating cycle.</li> <li>Mothballs not only have an unpleasant odor, but they are also poisonous; avoid them if possible. Insect foggers are not recommended as they can pose a health threat and are not always effective.</li> <li>&lt;Include site-specific fabric/clothing moth control&gt;</li> </ul>

<b>Pantry Moths</b>	<ul style="list-style-type: none"> <li>▪ Clean affected areas by vacuuming all surfaces, walls, shelves, cabinets and floors. Scrub hard surfaces rigorously with hot water and detergent, especially in corners and around the edges of removable shelves. Clean all surfaces that come into contact with food.</li> <li>▪ Rinse the affected areas with white vinegar, either in a spray or by wiping with a cloth.</li> <li>▪ Throw away all grain-based food items as well as nuts, raisins, flour and tea, even if it is in sealed containers.</li> <li>▪ Remaining food items and containers should be thoroughly cleaned with a detergent and water solution and wiped down with a vinegar rinse before being put back. Use air-tight containers made of hard plastic, glass or metal and not plastic bags.</li> <li>▪ Kill any moths with a fly swatter or moth traps.</li> <li>▪ After a severe infestation, freezing any new grain products and storing grain products in refrigerators or freezers can prevent reinfestation.</li> <li>▪ Peppermint gum, bay leaves, peppercorns and cloves may also help deter pantry moths.</li> <li>▪ &lt;Include site-specific pantry moth controls&gt;</li> </ul>
<b>Rodents</b>	<ul style="list-style-type: none"> <li>▪ Rodent control should start with a survey to determine the source of the problem and the conditions that encourage the infestation. Following the survey, implement a program to kill the rodents, removing their sources of food and water, eliminating their place of refuge and making it rodent-proof, and educating and obtaining the cooperation of employees. If the food supply is removed before you eradicate them, the rodents will migrate to other areas, making elimination more difficult.</li> <li>▪ Openings in building foundations and walls should be closed or screened with wire mesh that has holes not more than 1.25 cm (0.5 in) wide. Where pipes enter masonry, force heavy hardware cloth or steel wool into the opening, then fill it with concrete.</li> <li>▪ Continuous surveillance is necessary, and places where rodents have been gnawing to gain entry to a building should be sealed with metal flashing.</li> <li>▪ Doors are particularly vulnerable to rodent entry so ensure that external doors and windows close tightly with no gaps at the bottom.</li> <li>▪ Materials stored in the open, in sheds or in building should be stacked at least 30 cm (1 ft.) above the ground.</li> <li>▪ Stringent waste disposal practices should be observed – secure all waste in closed containers and not just plastic bags.</li> <li>▪ Wash dustbin areas regularly. Make sure composting bins are designed to prevent rodents from entering.</li> <li>▪ Traditional mouse and rat traps, or snap traps, kill instantly. If trapping efforts fail, it is usually due to too few traps being used.</li> <li>▪ Bait should be sticky to ensure that the mouse triggers the trap mechanism even if it only lightly touches the bait. Mice prefer peanut butter or chocolate to cheese. Bacon, oatmeal or apples can also be used as bait.</li> <li>▪ An alternative to snap traps is a battery-operated trap that generates a high-voltage once the rat or mouse is inside. The design is relative safe and can be used in areas where children, pets or wildlife may be present.</li> <li>▪ &lt;Include site-specific rodent controls&gt;</li> </ul>
<b>Slugs and Snails</b>	<ul style="list-style-type: none"> <li>▪ There are various non-chemical solutions to eliminated slugs and snails, including putting salt or sharp shingle around vulnerable plants, drowning them in beer or simply throwing them over a fence. Elemental copper bands also repel snails and slugs.</li> <li>▪ &lt;Include site-specific slug and snail controls&gt;</li> </ul>
<b>Wasps and Hornets</b>	<ul style="list-style-type: none"> <li>▪ A simple trap can be made by putting beer or a solution of jam or honey and water in an open jar around the grounds. If this does not work, there are branded traps available containing specially formulated attractant baits.</li> <li>▪ &lt;Include site-specific wasp and hornet controls&gt;</li> </ul>
<b>&lt;Other Pest Species &gt;</b>	<ul style="list-style-type: none"> <li>▪ &lt;Include information about control measures for species found on the project site that were not previously addressed&gt;</li> </ul>

<Building Name>

# Sustainable Purchasing Policy **Template**

## LEED for Existing Buildings: Operations and Maintenance

### <Month, Year>

#### **SECTION 1: POLICY SCOPE**

This policy applies to the sustainable purchasing at <Building Name>'s site located at <Address>; and that are within the building and site management's control.

This policy applies to sustainable purchasing of the following types of products:

- Ongoing Consumables.

\*\*\* Choose at least one of the following to include \*\*\*

- Durable goods
- Building materials used in facility alterations and additions
- Mercury-containing lamps

Food and beverages are not included in the scope of this policy.

#### **SECTION 2: POLICY GOALS**

To purchase ongoing consumables in a manner that will:

- protect the environment and public health
- conserve natural resources
- minimize waste, including landfilling and incineration, and reduce toxicity

#### **SECTION 3: PERFORMANCE METRIC**

##### **Sustainable Purchasing of Ongoing Consumables**

The term "ongoing consumables" refers to low-cost-per-unit materials that are regularly used and replaced through the course of daily business operations. These products may include, but are not limited to: printing and copying paper, notebooks, envelopes, business cards, sticky notes, paper clips, toner cartridges, and batteries. <Building Name>'s goal is that at least <40%> <60%> <80%> of the cost of goods purchased will comply with one or more of the following criteria:

- Contains at least 10% post-consumer and/or 20% post-industrial material
- Contains at least 50% rapidly renewable material (e.g., bamboo, cotton, cork, wool)
- Contains at least 50% materials harvested and extracted and processed within 500 miles of the facility
- Consists of at least 50% Forest Stewardship Council (FSC)-certified paper products
- Rechargeable batteries

<Building Name> acknowledges the value of purchasing sustainable products and requires that vendor(s) support that effort when appropriate and/or possible. <Building Name> requests that vendor(s) notify them of recycled content and reduced packaging options or alternative products that would comply with the above specifications. Nothing contained in this policy shall be construed as requiring <Building Name> to procure products that do not perform adequately for their intended use, exclude adequate competition, or are not available at a reasonable price in a reasonable period of time.

##### **Sustainable Purchasing of Durable Goods**

The term "durable goods" refers to higher-cost-per-unit materials that are replaced infrequently and/or may require capital outlays to purchase. These products may include, but are not limited to: office equipment (such as computers, monitors, printers, copiers, fax machines), appliances (refrigerators, dishwashers, water coolers), external power adaptors, televisions, and furniture. The purchasing criteria for these products fall into the following two categories.

##### **Electronics and Appliances**

<Building Name>'s goal is that at least 40% of the cost of goods purchased will comply with one or more of the following criteria:

- Energy Star labeled products, when available
- Electronic Product Environmental Assessment Tools (EPEAT) rated products (at least bronze level)
- The equipment replaces conventional gas-powered equipment, i.e. maintenance equipment and vehicles



#### Furniture

<Building Name>'s goal is that at least 40% of the cost of goods purchased will comply with one or more of the following criteria:

- Contains at least 10% post-consumer and/or 20% post-industrial material
- Contains at least 70% salvaged material from off-site or outside the organization
- Contains at least 70% salvaged material from on-site through an internal materials and equipment reuse program
- Contains at least 50% rapidly renewable material (bamboo, cotton, cork, wool)
- Contains at least 50% materials harvested, extracted and processed within 500 miles of the facility/site
- Consists of at least 50% Forest Stewardship Council (FSC) certified wood

<Building Name> acknowledges the value of purchasing sustainable products and requires that vendor(s) support that effort when appropriate and/or possible. <Building Name> requests that vendor(s) notify them of Energy Star and sustainable furniture opportunities that would comply with the above specifications, as well as reduced packaging options.

#### Sustainable Purchasing: Facility Alterations and Additions

This policy covers materials that are permanently or semi-permanently attached to the building itself in the course of facility renovations, demolitions, refits and new construction additions. These products may include, but are not limited to: building components and structures (wall studs, insulation, doors, windows), panels, attached finishes (drywall, trim, ceiling panels), carpet and other flooring materials, adhesives, paints and coatings. <Building Name>'s goal is that at least 50% of the cost of goods purchased will comply with one or more of the following criteria:

- Contains at least 10% post-consumer and/or 20% post-industrial material
- Contains at least 70% salvaged material from off-site or outside the organization
- Contains at least 70% salvaged material from on-site through an internal materials and equipment reuse program
- Contains at least 50% rapidly renewable material (bamboo, cotton, cork, wool)
- Contains at least 50% materials harvested/extracted and processed within 500 miles of the facility/site
- Consists of at least 50% Forest Stewardship Council (FSC) certified wood
- Adhesives and sealants comply with SCAQMD rules governing allowable VOC content
- Paints and coatings comply with Green Seal's GS-11 requirements governing VOC emission levels
- Finished flooring is FloorScore-certified and constitutes a minimum of 25% of the finished floor area
- Carpet and carpet cushion meets the requirements of the Carpet and Rug Institute (CRI) Green Label Plus carpet testing program
- Composite panels and agrifiber products contain no added urea-formaldehyde resins

<Building Name> acknowledges the value of purchasing sustainable products and requires that vendor(s) support that effort when appropriate and/or possible. <Building Name> requests that vendor(s) notify them of potential opportunities that would comply with the above specifications, as well as reduced packaging options.

#### Sustainable Purchasing: Toxic Material Source Reduction – Reduced Mercury in Lamps

<Building Name> seeks to reduce the amount of mercury brought into all sites through purchase of lamps for the buildings and associated grounds. <Building Name>'s goal is that at least 90% of the number of lamps purchased will meet the following overall mercury-content target:

- No more than <90> <70> picograms of mercury per lumen-hour

<Building Name> representatives acknowledge the value of purchasing low-mercury lamps and require that vendors support that effort when appropriate and/or possible. <Building Name> requests that vendor(s) notify them of specific lamps and other opportunities that would comply with the above specifications, as well as reduced packaging options.

#### **SECTION 4: PERFORMANCE EVALUATION**

<Building Name> and/or vendor will record and track purchases on a monthly basis. <Building Name> personnel and/or vendor responsible for purchasing will report <Building Name>'s purchases to the appropriate <Building Name> representative using the provided Materials Purchasing Worksheet. Vendor is required to track and report <Building Name>'s purchases monthly. Vendor will use <Building Name> Materials Purchasing Worksheet or a <Building Name> approved alternative reporting method. Vendor is prepared to report the manner by which each product purchase meets the following purchasing criteria. Whenever possible, <Building Name> personnel should include an evaluation of the environmental and public health benefits achieved through sustainable purchasing of the goods described under Section (3).



## **SECTION 5: RESPONSIBLE PARTY**

The <Title of Responsible Party> shall implement this policy within <Building Name> in coordination with other appropriate organization personnel, including but not limited to, <Building Name>'s Purchasing Officer, <Building Name> employees, parties purchasing materials on <Building Name>'s behalf and/or companies contracted to provide goods to <Building Name>.

Contact Information for Responsible Party:	
Name:	
Job Title:	
Phone:	
Email:	
Date of assignment:	

## **SECTION 6: PROCEDURES AND STRATEGIES**

This policy covers purchases that are within the building and site management's control. <Building Name> personnel may use any qualifying vendor to procure the products described in Section (3), and are encouraged to also consider the following areas of interest:

### Packaging

<Building Name> desires to reduce waste generated through daily operations and recognizes that such reduction begins with the material that enters each facility/site. <Building Name> will request that all items purchased be packaged and delivered with minimal packaging material. <Building Name> reserves the right to request that vendors alter the packaging of goods delivered, when appropriate and/or possible.

### Recycled Content

<Building Name> requests that all vendors provide recycled content options for goods when available. If a product is available with recycled content, vendor will disclose that option to the appropriate <Building Name> representative. <If a product is available with recycled content, but <Building Name> does not specifically request as such, the vendor will default to order the product with recycled content, unless it exceeds the cost of the conventional product by 10% or greater.> Recycled content targets may be overridden at the discretion of <Building Name> representatives if certain products with recycled content present themselves as cost-prohibitive.

## **SECTION 7: TIME PERIOD**

This policy shall take effect on <Date> and shall continue indefinitely or until amended and/or replaced by a subsequent sustainable purchasing policy.

# <Building Name> Solid Waste Management Policy Template LEED for Existing Buildings: Operations and Maintenance <Month, Year>

### **\*\*\*HOW TO USE THIS TEMPLATE\*\*\***

The following template provides a structure for developing a Solid Waste Management Policy compliant with LEED for Existing Buildings: Operations & Maintenance (EBOM) requirements. When completed properly, this document can be submitted as evidence of compliance with MRp2.

The process for customizing this template for a specific property includes:

10. Reviewing best practices/example language indicated in green for applicability to the project building and revising as necessary.
11. Inputting basic project-specific data where indicated in red (e.g., hotel name, name of responsible parties, etc.).
12. Verifying that subsequent to changes, the key elements remain in the document, including the sections addressing:
  - a. Scope
  - b. Goals
  - c. Performance Metrics and Targets
  - d. Responsible Parties
  - e. Performance Evaluation
  - f. Procedures and Strategies
  - g. Time Period

Edits of black text should be limited and all changes should be carefully assessed to ensure that LEED requirements are still met, including addressing issues specific to this prerequisite/credit and adhering to the USGBC's Policy, Plan and Program Model (downloadable from the USGBC web site: [EBOM Project Resources](#)).
13. Working with service providers to incorporate requirements into contractual agreements.

## **SECTION 1: POLICY SCOPE**

This policy applies to the collection, sorting, diversion, and disposal of ongoing consumables, durable goods, and building materials associated with facility alterations and additions accrued in the operations of <Building Name>'s facility located at <Address>; and that are within the building and site management's control.

This policy will apply to, but is not limited to, the following types of materials:

- Ongoing Consumables, including but not limited to:
  - Paper
  - Cardboard
  - Glass
  - Plastic
  - Metals
  - Landscape waste
  - Batteries
- Mercury-containing lamps
- Durable Goods, including but not limited to:
  - Electronic equipment
  - Furniture
- Building Materials used in facility alterations and additions, including but not limited to:
  - Building components and structures (wall studs, insulation, doors, windows)
  - Panels
  - Attached finishings (drywall, trim, ceiling panels)
  - Carpet and other flooring material
  - Adhesives
  - Sealants
  - Paints and coatings

## **SECTION 2: POLICY GOALS**

To manage solid waste in a manner that will:

- protect the environment and public health

- conserve natural resources
- minimize landfilling and/or incineration and reduce toxicity

### **SECTION 3: PERFORMANCE METRIC**

The successful implementation of this policy will be measured by the ongoing recycling rate achieved. The recycling rate is derived by comparing the amount of consumables diverted from the landfill to those consumables sent to the landfill over a given time period. The policy's initial performance metric will be to achieve the reuse, recycling and/or composting of:

- At least <50%> <70%> of the ongoing consumable waste stream (by weight or volume)
- At least <80%> of discarded batteries
- <100%> of all mercury-containing lamps within the building and site management's control
- At least <75%> of the durable goods waste stream (by weight, volume, or replacement value)
- At least <70%> of waste (by volume) generated by facility alterations and additions

### **SECTION 4: PERFORMANCE EVALUATION**

The party(s) responsible under Section (5) shall periodically evaluate the success of this policy's implementation. This may include providing a report on an annual basis to senior management within <Building Name>. Whenever possible, the annual reports should include an evaluation of the performance, safety, cost and environmental/public health benefits achieved through source reduction, reuse, recycling and composting. Reports should also relate the progress in meeting the stated objectives of <Building Name> as set forth under Sections (2) and (3). Monthly reports, including waste recycling and/or disposal receipts, must be provided by the waste haulers/vendors to allow for ongoing documentation, monitoring and assessment of the program results.

### **SECTION 5: RESPONSIBLE PARTY**

The <Name of Responsible Party> shall implement this policy within <Building Name> in coordination with other appropriate organization personnel, including but not limited to, <Building Name>'s Facility Manager, <Building Name>'s janitorial staff and any contracted waste haulers. The <Name of Responsible Party> shall coordinate training, education and outreach programs throughout the organization, with the aim of promoting and maintaining the goals of this policy.

### **SECTION 6: PROCEDURES AND STRATEGIES**

The following table lists recyclable wastes at the building site, their disposal method and handling procedures.

Source/Consumables	Disposal Method	Handling Procedure
Glass, Plastic, Metals (commingled)	<p>&lt;SAMPLE TEXT:</p> <p>Building occupants dispose of these recyclables in separately provided collection points in each room or on each floor.</p> <p>Cleaning staff sorts commingled recyclables</p>	<p>&lt;SAMPLE TEXT:</p> <p>Amounts are tracked and taken away by hauler on a regular basis (same schedule as current waste pickup) for recycling.&gt;</p>

	out of the trash and delivers to collection points on each floor or in each building.>	
Mercury-containing Lamps	<SAMPLE TEXT: Custodial staff collects fluorescent lamps and stores the unbroken lamps for disposal.>	<SAMPLE TEXT: Taken away by an authorized hauler for safe disposal, in accordance with local regulations on disposal of products containing mercury.>
Paper/newspapers	<SAMPLE TEXT: Building occupants dispose of paper/newspapers in separately provided collection points in each room or on each floor. Cleaning staff sorts paper/newspapers out of the trash and delivers to collection points on each floor or in each building.>	<SAMPLE TEXT: Amounts are tracked and taken away by hauler on a regular basis (same schedule as current waste pickup) for recycling.>
Cardboard	<SAMPLE TEXT: Building occupants sort cardboard out of trash and deliver to collection points on each floor or in each building.>	<SAMPLE TEXT: Amounts are tracked and taken away by hauler on a regular basis (same schedule as current waste pickup) for recycling.>
Batteries	<SAMPLE TEXT: Building occupants deliver batteries to a specially-designated collection point for disposal.>	<SAMPLE TEXT: Taken away by an authorized hauler on a regular basis for proper disposal.>
Durable Goods (Electronic Waste and Furniture)	<SAMPLE TEXT: Building management provides a secure collection area to store durable goods that have reached the end of their life within the building but still have value and may be donated/re-used.>	<SAMPLE TEXT: Amounts are tracked and taken away by an authorized hauler or re-use center on a regular basis for recycling.>
Building Materials	<SAMPLE TEXT: Building management coordinates with contractors to collect construction waste for re-use/recycling.>	<SAMPLE TEXT: Amounts are tracked and taken away by an authorized hauler at the end of the demolition/construction period for recycling.>

## **SECTION 7: TIME PERIOD**

This policy shall take effect on <Date> and shall continue indefinitely or until amended and/or replaced by a subsequent sustainable solid waste management policy.

## **APPENDIX 3: ATTENDEES LIST**



**USAID**  
FROM THE AMERICAN PEOPLE



**JORDAN GBC**  
المجلس الأخضر للمباني  
Jordan Green Building Council



مجلس الأعمال الهندسي  
A/E Business Council

**"Greening Existing Buildings Course Agenda" 23<sup>rd</sup> -24<sup>th</sup> April 2011-Sheraton Hotel, Amman**

No.	Name	Organization	Email	Phone no.	Signature
1.	✓ Lubna A'amar	ACE.	L.aamar@ACE-Jordan / 0799298681	0796781986	
2.	✓ Firas Al-Rawi	Symbiosis Design	Firas.alrawi@symbiosisdesign.com		
3.	✓ WA'IL ABDULKARIM	SIGMA	wabdukarim@sigma.jo	0796347695	
4.	✓ Munir Al-Zaid	MEDA	munir@meda.jo	0795556617	
5.	✓ Hala al-Asir	UNRWA	h.alasir@unrwa.org	0776760084	
6.	✓ Osama Hasan	RSCN	osama@rscn.org.jo	0797038000	
7.	✓ Karim Alawad	ma'sam	Karim.alawad@gmail.com	0795409460	
8.	✓ Saba Alusamir	GAM	sba382@hotmail.com	0799053510	
9.	✓ Rula Diab	Arabtech Jor	Rula.Diab@Arabtech.jo	0799270776	
10.	✓ Mohd Jurt	AJB Highch	mohmed.jurt@ajb.com.jo	0728131116	
11.					
12.					
13.					



**USAID**  
FROM THE AMERICAN PEOPLE



**JORDAN GBC**  
المجلس الأردني للمباني الخضراء  
Jordan Green Building Council



منتدى الأعمال الأردني  
A/E Business Council

**"Greening Existing Buildings Course Agenda" 23<sup>rd</sup> -24<sup>th</sup> April 2011-Sheraton Hotel, Amman**

No.	Name	Organization	Email	Phone no.	Signature
27.	✓ Mehdi Rayyan	SatchNet	mohammad.rayyan@yahoo.com	0788266801	M. Rayyan
28.	✓ Anas Azayzeh	S.M. Duolin	anas@smduolin.com	0795275500	Anas
29.	✓ Hazem Al-Turk	Consolidated Consultants	hazem@ccjo.com	0777212382	Hazem
30.	✓ Suzan Shalabi	maison architects & engineers	suzan.shalabi@maison-jordan.com	0796634153	Suzan
31.	✓ Issam Migdadi	UNRWA	i.migdadi@unrwa.org	06-580 8367	Issam
32.	✓ Hanna Salameh	UHS	hanna@hannasalameh.com	0799177912	Hanna
33.	✓ Ramiz Khatib	Dar Al Amman	r.al-khatib@daralammann.com	0796671805	Ramiz
34.	✓ Daud Khasawneh	CSBE	khasawneh@csbe.org	0796005006	Daud
35.	✓ Amjad Blaibleh	CHF	amjadblaibleh@yahoo.com	00970595603114	Amjad
36.	✓ Nael Al-Khatib	UNRWA	nael.khatib@unrwa.org	075677784	Nael
37.	✓ Hala Ahmed Jaber	EMS	hjaber@ems-iraq.com	0796394848	Hala
38.					
39.					





مجلس الأعمال الهندسي  
A/E Business Council

"Greening Existing Buildings Course Agenda" 23<sup>rd</sup> -24<sup>th</sup> April 2011-Sheraton Hotel, Amman

No.	Name	Organization	Email	Phone no.	Signature
40.	✓ Deema Bant	Amble Jordan	dima_116@hotmail	0795130 910	
41.	✓ Reem Alfalah	Arabtech	Reem_Alfalah@aj-group.com	079/5032538	
42.	✓ Noh Sawafteh	Nutridar	nnoh.sawafteh@nutridar.com	0799070818	
43.	✓ Faiz Koudsi				
44.	<del>Randa Al-Rashtan</del>	<del>Jordanland</del>	<del>marketing@jordanland.net</del>	<del>0794050011</del>	
45.					
46.					
47.					
48.					
49.					
50.					

Jordan  
Land  
(Not participated)

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No.

07.3881





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A/E Business Council

**"Greening Existing Buildings Course Agenda" 23<sup>rd</sup> -24<sup>th</sup> April 2011-Sheraton Hotel, Amman**

No.	Name	Organization	Email	Phone no.	Signature
40.	Deema Banat	Arabtec Jordan	dina_116@hotmail	0795130910	
41.	Reem Alfalakh	Arabtech	Reem_Alfalakh@aj-group.com	079/5032538	
42.	Nah Sawafte	Nutridor	nah.sawafte@nutridor.com	0799070818	
43.	Faiz Koudsi				
44.	<del>Wael Al Rastan</del>	<del>Jordan Land</del>	<del>marketing@jordanland.net</del>	<del>0794085511</del>	
45.	WAIL ABDUKARIM		wail-abdukarim@gmail.com		
46.	Majd Abu Zaghlan	JoGBC	majd-zaghlan@jo-gbc.org	0799441281	
47.	Razan Nejmi	JoGBC	rnejmi@joconsultants.com		
48.					
49.					
50.					

Jordan Land  
(Not participating)

Fax  
No.

07.8881

**USAID Jordan Economic Development Program  
Deloitte Consulting LLP  
Salem Center, Sequleyah Street, Al-Rabiyeh  
Amman, 11194 Jordan  
Phone: + 962-6 550-3050  
Web address: <http://www.SABEQ-Jordan.org>**