LANDSCAPE PERFORMANCE SERIES
presented by the Landscape Architecture Foundation

# The Sandlot
# Methods

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This investigation was conducted as part of the Landscape Architecture Foundation's 2018 *Case Study Investigation* (CSI) program. CSI matches faculty-student research teams with design practitioners to document the benefits of exemplary high-performing landscape projects. Teams develop methods to quantify environmental, economic and social benefits and produce Case Study Briefs for LAF's *Landscape Performance Series*.

The full case study can be found at:
https://landscapeperformance.org/case-study-briefs/the-sandlot

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## Overview

The evaluation of The Sandlot's landscape performance as a temporary urban design intervention is based on the strategy of comparative analysis. Data collected by the research team or shared by project collaborators was compared to local/industry averages or alternative, more traditional design solutions in order to determine the extent of which landscape played a role in meeting or exceeding the project goals.

The primary data collected by the research team consisted of 1) air/surface temperatures at pre-determined onsite locations as well as several comparable areas adjacent to the site; 2) observation of visitors' use of various site features and those of similar installations in the Baltimore area; 3) visitors' home zip codes and space use preferences. These data were collected in June and July 2018.

The secondary data shared by project owner, landscape architect, and construction contractor cover 1) water consumption and greywater recycling; 2) recycling and composting; 3) planting variety; 4) attendance; 5) food and beverage sales; 6) site employment and event booking; 8) construction cost and revenue. Because Sandlot is a seasonal installation that operates May through October, most of the secondary data used reflect the 2017 season or as specified below.

While the focus of the research team was investigating the environmental, social, and economic impacts of Sandlot on the communities in Baltimore, the temporal (a 7-year operation period beginning in 2017) nature of the site lends itself to having investigation parameters that may be different from those for permanent sites. This recognition served as the guiding principle in defining the project's performance benefits and how they are quantified and measured.

## Environmental Benefits

- ***Saves approximately 840 gallons of potable water monthly by using recycled greywater for irrigation.***

The project reclaims greywater daily by collecting water from hand sinks in two 1,500-gallon tanks. The greywater collected is used for irrigation at an average of 40 gal per day.

*Methods:*
Greywater amount collected daily varies based on intensity of use. For the purpose of determining the amount of greywater used for irrigation, water level in both tanks was estimated before and after hours of operation and before and after an irrigation cycle. Average monthly water reclaimed was based on an average of 9 rainy days per month per US Climate Data.

*Calculations:*
40 gallons x 21 days = 840 gallons average greywater reclaimed monthly

*Sources:*
Water consumption and greywater recycling data provided by owner.

Monthly rainy days for Baltimore City were obtained from US Climate Data: https://www.usclimatedata.com/climate/maryland/united-states/1872

*Limitations:*
Determination of greywater amount used is an estimate made through visual observation of level change of water stored in tanks.

- ***Reduces surface temperatures by 10-14°F on sunny summer afternoons on the sand as compared to asphalt, a proxy for the previously existing multimedia cap.***

Prior to construction, the 80,000-sf project site was covered with compacted crushed stone and asphalt pathways over a 3-foot-thick multimedia cap that isolates the chromium-contaminated site soil and prevents stormwater infiltration. Sand was selected for the site as an inexpensive temporary material that would lower surface temperatures. Today, the Sandlot site consists of approximately 55,000 sf of sand (68%), 6,000 sf of structures and wood deck (7%), 7,000 sf of grass (9%) and a remaining 12,000 sf of asphalt walkways (16%). Immediately adjacent to Sandlot is a 175,000-sf asphalt parking lot. Temperature measurements of this parking lot were used as the best available proxy for understanding temperature reduction attributable to the use of sand on site.

*Methods:*
Sandlot offers minimal shade on site with more than 97% of area exposed to the sun at all times. In order to determine the thermal performance of the various surfaces on site, surface and air temperature readings were collected in six distinct zones (see Figure 1):

| **Zone** | **Surface Material** | **Sun/Shade Site Conditions** |
|---|---|---|
| Zone A - Dining Area | Sand | Sun and Shade (Canopy) |
| Zone B - Waterfront | Sand | Sun and Shade (Umbrellas) |
| Zone C - Food/Beverage Service Area | Wood Deck | Sun and Shade (Canopy) |
| Zone D - Stage and Play Area | Sand (Primary) and Asphalt (Secondary) | Sun |
| Zone E - Volleyball Area | Sand (Primary) and Asphalt (Secondary) | Sun |
| Zone F - Parking Lot | Asphalt | Sun and Shade (Containers) |

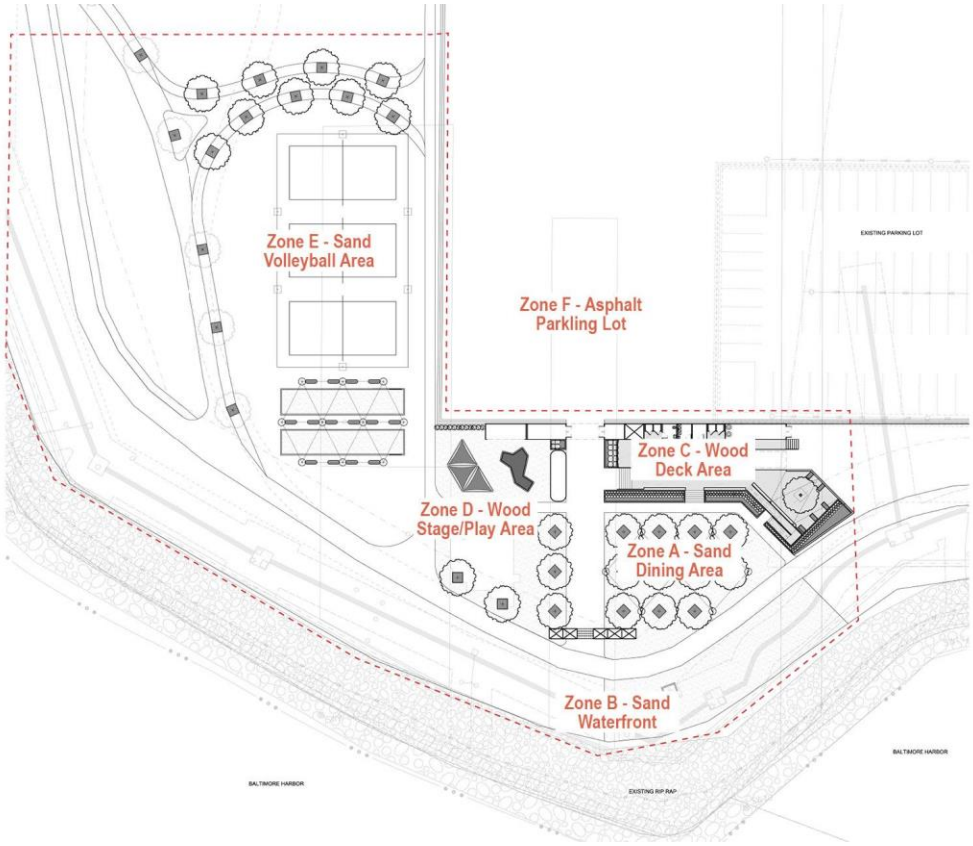


Figure 1: Sandlot's site map by zone.

Using Extech Instruments Hygro-Thermometer + InfraRed Thermometer (model #RH 101), measurements were taken in June 2018, 2 times per day for two days on weekends at approximately 2pm and 6pm, and once per day on three weekdays at around 6pm.

Separate surface temperatures for each of the six zones were measured on sunny and partly sunny days, in sun-exposed and shaded site conditions and on different surfaces where applicable. Air temperature was measured for each zone, in sun and shade, and recorded alongside the reported temperature at Little Montgomery Weather Station in Inner Harbor, Baltimore.

Summary Findings:

- In all-sand zones, on sunny days and under full sun exposure, sand surface is 10-14°F cooler (from 2pm to 6pm in June) than zones containing only asphalt surface
- In mixed (sand/asphalt) surface zones, on sunny days and under full sun exposure, sand surface is 7-9°F cooler (from 2pm to 6pm in June) than asphalt
- Sand surface is 4-8°F cooler (from 2 to 6pm in June) than wood deck surface on sunny days under full sun exposure
- Sand surface is 7-18°F cooler (from 2pm to 6pm in June) than sand surface on sunny days in shaded areas
- Differences in surface temperature for all surfaces on partly sunny days are within 3°F.

- Differences in air temperature for all surfaces under full sun exposure at 2pm on sunny days under full sun exposure are within 3°F.

*Methods:*
To measure surface temperature:

- For shaded area: position measuring device at a minimum of 2 ft away from sun exposure and 3 ft off the ground, pointing device directly to the surface
- For sun area: position measuring device 3 ft off the ground, pointing device directly to the surface

To measure air temperature:

- For shaded area: position measuring device at a minimum of 2 ft away from sun exposure and 3 ft off the ground, holding device parallel to the ground
- For sun area: position measuring device 3 ft off the ground, holding device parallel to the ground

*Calculations:*
The following tables indicate the **average surface and air temperatures** per zone:

2pm Average Surface Temperature

| **Zone / Temperature (°F)** | **Primary Surface** | | | | **Secondary Surface (Asphalt)** | |
|---|---|---|---|---|---|---|
| *(Site Condition)* | *Sun* | | *Shade* | | *Sun* | |
| *(Cloud Cover)* | *Sunny* | *Partly Sunny* | *Sunny* | *Partly Sunny* | *Sunny* | *Partly Sunny* |
| Zone A - Sand | 115.5 | - | 98.5 | - | | |
| Zone B - Sand | 116.0 | - | 97.5 | | | |
| Zone C - Wood Deck | 124.0 | - | 101.5 | - | | |
| Zone D - Sand | 119.0 | - | | | 127.5 | - |
| Zone E - Sand | 121.0 | - | | | 127.0 | - |
| Zone F - Asphalt | 129.5 | - | 89.0 | - | | |

Sand vs Asphalt Surface Areas:

Temperature ∆ (Zone F - Zone A) = 129.5 - 115.5 = 14°F

Temperature ∆ (Zone F - Zone B) = 129.5 - 116.0 = 13.5°F

**Average temperature ∆ = (14 + 13.5) / 2 = 13.75°F**

Adjacent Primary Sand vs Secondary Asphalt Surfaces:

Temperature ∆ Zone D (Asphalt Surface - Sand Surface) = 127.5 - 119.0 = 8.5°F

Temperature ∆ Zone E (Asphalt Surface - Sand surface) = 127.0 - 121.0 = 6°F

**Average Temperature ∆ = (8.5 + 6) / 2 = 7.25°F**

Sand vs Wood Deck Surface Areas:

Temperature ∆ (Zone C - Zone A) = 124.0 - 115.5 = 8.5°F

Temperature ∆ (Zone C - Zone B) = 124.0 = 116 = 8°F

**Average Temperature ∆ = (8.5 + 8) /2 = 8.25°F**

Sand Sun Exposure vs Shaded:

Temperature ∆ Zone A (Sand Sun - Sand Shaded) = 115.5 - 98.5 = 17°F

Temperature ∆ Zone B (Sand Sun - Sand Shaded) = 116.0 - 97.5 = 18.5°F

**Average Temperature ∆ = (17 + 18.5) / 2 = 17.75°F**

6pm Average Surface Temperature

| **Zone / Temperature (°F)** | **Primary Surface** | | | | **Secondary Surface (Asphalt)** | |
|---|---|---|---|---|---|---|
| *(Site Condition)* | *Sun* | | *Shade* | | *Sun* | |
| *(Cloud Cover)* | *Sunny* | *Partly Sunny* | *Sunny* | *Partly Sunny* | *Sunny* | *Partly Sunny* |
| Zone A - Sand | 97.7 | 81.1 | 90.0 | 77.8 | | |
| Zone B - Sand | 96.7 | 76.6 | 90.3 | 75.6 | | |
| Zone C - Wood Deck | 101.3 | 83.7 | 93.2 | 80.8 | | |
| Zone D - Sand | 94.0 | 79.6 | | | 103.3 | 85.8 |
| Zone E - Sand | 95.3 | 76.3 | | | 103.3 | 85.9 |
| Zone F - Asphalt | 107.0 | 88.8 | 93.6 | 81.8 | | |

Sand vs Asphalt Surface Areas:

Temperature ∆ (Zone F - Zone A) = 107.0 - 97.7 = 9.3°F

Temperature ∆ (Zone F - Zone B) = 107.0 - 96.7 = 10.3°F

**Average Temperature ∆ = (10.3 + 9.3) / 2 = 9.8°F**

Adjacent Sand vs Asphalt Surfaces:

Temperature ∆ Zone D (Asphalt Surface - Sand surface) = 103.3 - 94.0 = 9.3°F

Temperature ∆ Zone E (Asphalt Surface - Sand surface) = 103.3 - 95.3 = 8°F

**Average Temperature ∆ = (9.3 + 8) / 2 = 8.65°F**

Sand vs Wood Deck Surface Areas:

Temperature ∆ (Zone C - Zone A) = 101.3 - 97.7 = 3.6°F

Temperature ∆ (Zone C - Zone B) = 101.3 - 96.7 = 4.6°F

**Average Temperature ∆ = (3.6 + 4.6) / 2 = 4.1°F**

Sand Sun Exposure vs Shaded:

Temperature ∆ Zone A (Sand Sun - Sand Shaded) = 97.7 - 90.0 = 7.7°F

Temperature ∆ Zone B (Sand Sun - Sand Shaded) = 96.7 - 90.3 = 6.4°F

**Average Temperature ∆ = (7.7 + 6.4) / 2 = 7°F**

2pm Average Air Temperature

| **Temperature (F)** | **Weather Condition** | |
|---|---|---|
| | Sunny (94.5°F per nearby weather station) | Partly Sunny |
| Zone A - Sand | 96.6 | - |
| Zone B - Sand | 96.7 | - |
| Zone C - Wood Deck | 97.5 | - |
| Zone D - Wood Deck | 96.5 | - |
| Zone E - Sand | 98.5 | - |
| Zone F - Asphalt | 99.3 | - |

Average 2pm Air Temperature per surface zone:
Sand = 97.3°F
Wood Deck = 96.3°F
Asphalt = 99.3°F
Average Air Temperature for all zones = 97.6°F
**Temperature ∆ (Weather Station - Sandlot) = 94.5 - 97.6 = - 3.1°F**

6pm Average Air Temperature

| **Temperature (F)** | **Weather Condition (per nearby weather station)** | |
|---|---|---|
| | Sunny (92.2°F) | Partly Sunny (81°F) |
| Zone A - Sand | 89.5 | 81.6 |
| Zone B - Sand | 90.6 | 80.7 |
| Zone C - Wood Deck | 92.2 | 83.4 |
| Zone D - Wood Deck | 90.2 | 82.3 |
| Zone E - Sand | 91.0 | 82.4 |
| Zone F - Asphalt | 94.5 | 83.7 |

Average 6pm Air Temperature per surface zone:

| | |
|---|---|
| Sand = 90.4°F (Sunny) | 81.6°F (Partly Sunny) |
| Wood Deck = 91.3°F (Sunny) | 82.9°F (Partly Sunny) |
| Asphalt = 94.5°F (Sunny) | 84.7°F (Partly Sunny) |
| Average Air Temperature for all zones = 92.1°F (Sunny) | 83.1°F (Partly Sunny) |

**Temperature ∆ (Weather Station - Sandlot) = 92.2 - 92.1 = .1°F (Sunny)**

**Temperature ∆ (Weather Station - Sandlot) = 81 - 83.1 = -2.1°F (Partly Sunny)**

Average Air Temperature differences among all surfaces proved to be insignificant in light of the 3°F standard accuracy tolerance of the temperature recording device.

*Sources:*
Temperature readings conducted on site by research team.
Historic temperature data recorded by Wunderground Little Montgomery Weather Station: https://www.wunderground.com/personal-weather-station/dashboard?ID=KMDBALTI156&cm_ven=localwx_pwsdash

*Limitations:*
The shaded asphalt area on site is limited to a small strip at the north-facing entry and provides limited data for comparison among all zones.

The thermometer has a basic accuracy of +/- 3° F.

- ***Diverted 17.4 tons of composted waste from landfills and recycled 24.7 tons of glass and aluminum in 2017. Using a waste management service focused on composting saved $4,300 annually as compared to conventional waste management. In addition, 680 gallons of used cooking oil is collected annually and recycled offsite to make soap.***

*Methods:*
The project operation uses a compost waste treatment service and recycling service, Waste Neutral, that handles all waste from the project. This diverted 34,830 lbs of waste from landfills and processed 49,450 lbs of recycling during the June to October 2017 season. Project waste management fees were compared to conventional waste management services by Waste Management, a local Baltimore City service provider.

*Calculations:*
**Commercial Composting Fees with Waste Neutral (Actual)**
Waste pick-up: $1,000/month (2 pick-ups per week for two 6-yard containers)
$1,000/month x 5 months = $5,000 for 2017 season

**Conventional Waste Management Fees (Estimate)**
Waste pick-up = $1,858/month (2 pick-ups per week for two 6-yard containers)
$1,858/month x 5 months = $9,293 for 2017 season
Waste Management Fees Savings ∆ (Conventional – Commercial Composting) =
$9,293.4 - $5,000 = ~$4,300

*Sources:*
Data provided by owner and vendors.

Waste Management Commercial Services Fees:
http://www.cvsan.org/content/commercial-services-rates

*Limitations:*
Weights of waste and recycled materials are estimations.

Cost of conventional waste management services varies by vendor.

- ***Recycles 683 gallons of cooking oil annually by converting it to soap.***

*Methods:*
The project sources cooking oil from Susquehanna Mills Company, which recycles the used oil by converting it into soap. Data on oil used, recycled and diverted from waste streams was collected below.

*Calculations:*
Number of lbs of oil purchased in 2018 = 6,300 lbs
Lbs per gallon = 7.37 lbs/gallon
Total gallons of oil purchased in 2018 = 850 gallons
General recycled % (Per Susquehanna) = 80% (Due to cleaning, burn off, oil on food over service)
Total recycled gallons of oil in 2018 = 683 gallons

*Sources:*
Oil purchase and recycling data provided by owner and vendor.

*Limitations:*
Actual amount of oil recycled might vary slightly than vendor estimate due to specific site conditions or operations.

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## Social Benefits

- ***Attracted an average of 500 daily visitors and 75,000 total visitors during the 2017 season. Observations on two days in 2018 showed that Sandlot attracts 12 times the number of visitors per acre than a nearby waterfront park with similar recreation facilities.***

*Methods:*
The project operators reported 75,000 visitors at average 500 per night for the 2017 season.

Sandlot is organized in 4 general zones characterized by seating type and passive or active recreational activity. Observations of number of visitors per zone were conducted in order to determine the intensity of use of the various zones.

Additionally, an informal online survey was conducted between 7/12 and 07/30 to the 395 subscribers of Sandlot email updates; the survey link was also available on Sandlot's Facebook feed. The survey asked the respondents to identify their favorite spot via a drop-down menu with five selections: Dining area, Waterfront, Volleyball area, Bocce area, and Swing/Stage area.

Summary Findings:
- Sandlot is visited more often on weekends than on weekdays
- Sand volleyball tournaments triple the total visitorship
- Outside of the volleyball courts, the most populated space on site is the General Seating/Gathering dining area
- The Waterfront area appears to be visitors' favorite. 73% of the survey respondents identified the Waterfront as their preferred area.

A comparative study was conducted for the 2018 season between The Sandlot and Rash Fields Park as two sandy waterfront destinations that provide similar passive and active recreation.

Observations were taken from a single point, with a visual sweep, in each of the 4 observation areas. Observations occurred 2 times per day at 2pm and 6pm two days during two weekends, and 1 time per day at 6pm on three weekdays for Sandlot; and 5pm on two weekdays and 2pm one day during a weekend for Rash Field Park.

Rash Field Park occupies a prominent location in Baltimore's Inner Harbor and is approximately 288,000 sf, over 3 times larger than Sandlot. It contains 7 sand volleyball courts with bleachers, a carousel, a memorial, a gazebo with open picnic table area, and waterfront seating.

Summary Findings:
- While 3 times the size, Rash Field Park sees 29% of the total number of visitors at Sandlot when observed at the same day and time at both locations

- Rash Field Park attracts only 7% of the amount of Sandlot visitors in the General Seating/Gathering area and 19% in the Waterfront seating area
- Sandlot attracts 12 times the amount of visitors at 81 visitors per acre while Rash Field attracts 7 visitors per acre

*Calculations:*
On-site observation found the following visitorship during the period of June 21st, 2018 to July 6th, 2018:

The Sandlot Visitor Observations

| **Zones** | **6/20 6pm** | **6/21 6pm with volleyball event** | **6/24 2pm** | **6/24 6pm** | **6/29 6pm** | **6/30 2pm** | **6/30 6pm** | **Average per zone (no volleyball event)** |
|---|---|---|---|---|---|---|---|---|
| | WED | THR | SUN | SUN | FRI | SAT | SAT | |
| Sand Volleyball | 11 | 132 | 64 | 22 | 0 | 13 | 2 | 19 |
| Other Sand Activities | 6 | 32 | 23 | 35 | 20 | 2 | 38 | 21 |
| General Seating/Gathering | 73 | 162 | 120 | 114 | 50 | 57 | 75 | 82 |
| Waterfront Seating | 13 | 45 | 42 | 33 | 67 | 21 | 37 | 36 |
| Total | 103 | 371 | 249 | 204 | 137 | 93 | 152 | 156 |

Average (Weekday, no volleyball event @ 6pm) = 120 visitors
Average (Weekend @ 6pm) = 178 visitors
Average (Weekend @ 2pm) = 171 visitors

Rash Field Park Visitor Observations

| **Zones** | **6/24 6pm** | **6/29 6pm** | **6/30 2pm** | **Average per zone (no volleyball event)** |
|---|---|---|---|---|
| | SUN | FRI | SAT | |
| Sand Volleyball Area | 31 | 10 | 5 | 15 |
| Other Sand Activities | n/a | n/a | n/a | n/a |
| Other Recreation | 22 | 8 | 21 | 17 |
| General Seating/Gathering | 7 | 5 | 5 | 6 |
| Waterfront Seating | 14 | 2 | 6 | 7 |
| Total | 74 | 25 | 37 | 45 |

% Visitors Rash Field/Sandlot (Sand Volleyball Area) = 15/17 = 88%
% Visitors Rash Field/Sandlot (Other Recreation) = 17/21 = 81%
% Visitors Rash Field/Sandlot (General Seating/Gathering) = 6/82 = 7%
% Visitors Rash Field/Sandlot (Waterfront Seating) = 7/36 = 19%
**% Visitors Rash Field/Sandlot (Total) = 45/156 = 29%**

Comparative study days 6/24 at 6pm, 6/29 at 6pm and 6/30 at 2pm:
Sandlot Average Visitors = 145
Rash Field Average Visitors = 45

Sandlot Area = 80,000 sf = 1.8 acres
Rash Field Area = 288,000 sf = 6.6 acres

**Sandlot Visitors/Area = 145/1.8 = 81 visitors/acre**
**Rash Field Visitors/Area = 45/6.6 = 7 visitors/acre**

Informal online survey conducted between 7/12-7/30. The survey asked a question about preference: “What is your favorite spot at Sandlot?”

Online Survey Preference Results

| **Answer** | **No. of Responses** | **Percentage** |
|---|---|---|
| Dining Area | 8 | 8.99% |
| **Waterfront** | **65** | **73.03%** |
| Volleyball Area | 2 | 2.25% |
| Bocce Area | 2 | 2.25% |
| Stage/Swing Area | 12 | 13.48% |
| Total | 86* | 100% |

*9 respondents indicated *Other* as their response.

*Sources:*
Observations conducted on site by research team.
Online survey developed by research team.

*Limitations:*
Calculations exclude days with special events.

Observations of Rash Field Park were taken during a limited number of days.

The online study is a limited sample of email subscribers and Facebook users.

- ***Hosted 44 special events for nearly 15,000 visitors during 4.5 months of operation in the 2017 season and 2.5 months in the 2018 season.***

*Methods:*
Event data was sorted per category in order to determine special event attendance.

Since its launch in June 2017, the Sandlot has held 44 planned events with Holiday Celebrations and Social Events drawing the highest visitorship.

*Calculations:*
According to the owner's data, a total of 16 events were held during Sandlot's 2017 season. For its 2018 season (May through mid-July), Sandlot hosted 28 events. Each of these events was assigned a category according to its program and purpose, and the number of events as well as attendances were tabulated by category.

2017 Season Special Events

| **Event Category** | **Number of Events** | **Attendance** |
|---|---|---|
| Live Music Performances | 4 | 200 |
| Community Events (fundraisers, cause awareness events) | 1 | 60 |
| Holiday Celebrations | 1 | 3,500 |
| Social Events | 4 | 195 |
| Wellness and Recreational Events (yoga, golf…) | 6 | 170 |
| Total | 16 | 4,125 |

2018 Season Special Events (as of mid-July)

| **Event Category** | **Number of Events** | **Attendance** |
|---|---|---|
| Live Music Performances | 2 | 350 |
| Community Events (fundraisers, cause awareness events) | 2 | 650 |
| Holiday Celebrations | 4 | 5070 |
| Social Events | 14 | 3,663 |
| Wellness and Recreational Events (yoga, golf…) | 6 | 586 |
| Total | 28 | 10,319 |

Total number of events = 16 + 28 = 44
Total attendance = 4,125 + 10,319 = 14,444

*Sources:*
Events Data (2017 season and 2018 season as of 7/10/2018) provided by owner.

*Limitations:*
Attendance number accuracy varies between those reported from ticket sales and visitor entry.

- ***Attracts visitors from a diverse geographic area within Baltimore City and Maryland, with 95 surveyed visitors representing at least 42 zip codes and 23 cities.***

*Methods:*
An informal online survey was conducted between 7/12 and 07/30 to the 395 subscribers of Sandlot email updates; the survey link was also available on Sandlot's Facebook feed. The survey asked the respondents to enter their five-digit home zip code.

Summary Findings:

- 35% of 95 visitors who responded to survey come from surrounding waterfront communities in Baltimore City
- 23% of 95 visitors who responded to survey come from Baltimore City downtown and other central corridor communities
- The remaining 42% of 95 visitors who responded represent a wide geographic area throughout Maryland

*Calculations:*
Ninety-five responses were received during the survey period. Based on rollout schedule, 43 responses came from email subscribers (11% response rate), and 52 came from Facebook users. These respondents represented 42 zip codes and 23 cities.

Visitors from surrounding zip codes 21224, 21230 and 21231 =
14 + 12 + 7 = 33 visitors / 95 responded = 35% of visitors who responded to survey

Visitors from other Baltimore city zip codes 21201, 21202, 21211, 21212, 21213 and 21218 =
3 + 4 + 5 + 3 + 3 + 4 = 22 visitors / 95 responded = 23% of visitors who responded to survey

A breakdown of the zip codes (in ascending order) as well as their respective city and the number of responses is below.

Online Survey Respondents by Zip Code

| Zip code | City* | No. of responses |
|---|---|---|
| 08054 | Mount Laurel, NJ | 1 |
| 20602 | Waldorf, MD | 1 |
| 20716 | Bowie, MD | 1 |
| 21013 | Baldwin, MD | 1 |
| 21015 | Bel Air, MD | 1 |
| 21043 | Ellicott City, MD | 1 |
| 21045 | Columbia, MD | 1 |
| 21047 | Fallston, MD | 1 |
| 21060 | Glen Burnie, MD | 1 |
| 21074 | Hampstead, MD | 1 |
| 21075 | Elkridge, MD | 1 |
| 21093 | Lutherville Timonium, MD | 2 |
| 21152 | Sparks Glencoe, MD | 2 |
| 21153 | Stevenson, MD | 1 |
| 21162 | White Marsh, MD | 1 |
| 21201 | Baltimore, MD | 3 |
| 21202 | Baltimore, MD | 4 |

| | | |
|---|---|---|
| 21204 | Towson, MD | 2 |
| 21206 | Baltimore, MD | 1 |
| 21207 | Gwynn Oak, MD | 1 |
| 21209 | Baltimore, MD | 1 |
| 21210 | Baltimore, MD | 1 |
| 21211 | Baltimore, MD | 5 |
| 21212 | Baltimore, MD | 3 |
| 21213 | Baltimore, MD | 3 |
| 21214 | Baltimore, MD | 1 |
| 21215 | Baltimore, MD | 2 |
| 21216 | Baltimore, MD | 1 |
| 21217 | Baltimore, MD | 1 |
| 21218 | Baltimore, MD | 4 |
| 21220 | Middle River, MD | 2 |
| 21221 | Essex, MD | 1 |
| 21223 | Baltimore, MD | 1 |
| 21224 | Baltimore, MD | 14 |
| 21226 | Curtis Bay, MD | 1 |
| 21229 | Baltimore, MD | 1 |
| 21230 | Baltimore, MD | 12 |
| 21231 | Baltimore, MD | 7 |
| 21232 | N/A | 1 |
| 21234 | Parkville, MD | 2 |
| 21236 | Nottingham, MD | 2 |
| 21286 | Towson, MD | 1 |
| Total | | 95 |

* Recommended city names by USPS*Sources*

*Sources:*
Online survey developed by research team.
USPS zip code lookup tool: https://tools.usps.com/zip-code-lookup.htm?citybyzipcode

*Limitations:*
The study is a limited sample of email subscribers.

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## Economic Benefits

- ***Provides 8 permanent and 130 temporary/seasonal jobs, 65% of which are for Baltimore City residents, as well as 6 bookings for local musicians since opening.***

*Methods:*
As contribution to a rise to local employment, during the study period operation, the project provided 8 permanent and 130 temporary/seasonal employment opportunities of which 65% of the individuals hired were Baltimore residents.

*Calculations:*
According to owner's data, a total of 138 individuals have been offered employment at Sandlot since its inception.

Jobs Created by Employment Type

| **Employment Category** | **Employment Type** | **Number of Individuals Employed** |
|---|---|---|
| Permanent | Regular Full Time | 8 |
| | Regular Part Time | 0 |
| Temporary/Seasonal | Temporary Full Time | 60 |
| | Temporary Part Time | 70 |
| | Total | 138 |

Of the 138 individuals who were offered employment at Sandlot, 90 of them identified Baltimore as their city of residence. Percentage of Baltimore residents offered employment = (90 / 138) x 100 = 65.2% Contributing to the growth of the local creative economy, the project contracted 6 local musicians on recurring basis with diverse genres as follows:

2017 Season Bookings

| **Booking Category/Genres** | **Number of Bookings** |
|---|---|
| Indie | 1 |
| Americana | 1 |
| Pop | 1 |
| Bluegrass | 1 |

2018 Season Bookings (as of mid-July)

| **Booking Category/Genres** | **Number of Bookings** |
|---|---|
| Blues/Jazz | 1 |
| Folk | 1 |

*Sources:*
Employment and Booking Data provided by owner.

Profiles (website and social media) of musicians that have performed at Sandlot.

*Limitations:*
There are no significant limitations associated with this method.

- ***Generated $89,000 in sales tax and $79,000 in parking revenue during the 2017 season.***

*Methods:*
Collected and tabulated 2017 sales tax and parking revenue data.

*Calculations:*
2017 Parking Revenue generated by the project

| Month (2017) | Night ($4) # of Vehicles | Weekend ($4) # of Vehicles | Total Night/Weekend Income | Total Monthly Income |
|---|---|---|---|---|
| Apr | 106 | 11 | $468 | $962 |
| May* | 126 | 21 | $588 | $879 |
| Jun* | 808 | 554 | $5,448 | $12,145 |
| Jul* | 993 | 960 | $7,812 | $17,673 |
| Aug* | 1048 | 911 | $7,836 | $16,446 |
| Sep* | 726 | 720 | $5,784 | $12,834 |
| Oct* | 530 | 248 | $3,112 | $10,991 |
| Nov* | 129 | 35 | $656 | $3,719 |
| Dec | 25 | 21 | $184 | $3,118 |
| | | | | |
| Total | | | $31,888 | $78,767 |

*Months of 2017 when Sandlot was in operation.

*Sources:*
Parking revenue collected by project ownership.

*Limitations:*
There are no significant limitations associated with this method.

- ***Stimulated $677,110 in labor and material costs on a site that otherwise would have no investment until the redevelopment phase.***

*Methods:*
Collected and tabulated 2017 hard cost construction data. Since Sandlot is a pop-up/temporary installation that will become a park as part of the 7-year redevelopment effort, the site would not have received investment until after that period.

*Calculations:*
*2*017 Construction Budget Data

| Hard Costs | | $ 677,110 |
|---|---|---|
| | | |
| Architectural/Design Costs | $ 99,500 | |
| KK Containers | $ 18,695 | |
| Shipping Container Bar | $ 35,950 | |
| Refrigerated Shipping Container Trailer | $ 8,550 | |
| Airstream Ice Cream /Blender Bar | $ 43,665 | |
| Shipping Container Kitchen | $ 35,950 | |
| Site MEP | $ 80,500 | |
| Lawn Games | $ 91,200 | |
| Landscape | $ 262,250 | |
| Shipping Fees | $ 850 | |

*Sources:*
Construction Cost data provided by owner.

*Limitations:*
Construction costs do not include incidental expenses, substitutions, and changes during the course of construction.

## Inconclusive Benefits

The installation of 25 new trees and a variety of local plant species provided an opportunity for expanding the native habitat, improve diversity and increase the number of species for this post-industrial site.

During the study period, no notable increase in the number of pollinators, insects, and birds was observed on site.

*Methods:*
Considering that the site was previously 100% hardscape and no plants were present, the study assumes 0 prior pollinator and insect species and unchanged amount of bird species on the site.

Observations occurred at various times and days per observation schedule below and were taken from a single point, with a visual sweep for all observation areas.

During those time periods, 4 species of 3 individual pollinators and 5 individual insects as well as two species of 4 individual birds were observed on the site.

*Calculations:*

Pollinators, Insects, and Birds Observed

| **Date and Time** | **Types** | | |
|---|---|---|---|
| | **Pollinators, e.g., bees** | **Insects, e.g., wasps** | **Birds** |
| 6/20 6 pm | 0 | 0 | 2 (zone B) ducks |
| 6/21 6 pm | 1 (Zone A) | 0 | 0 |
| 6/24 2 pm | 1 (Zone A) | 0 | 0 |
| 6/24 6 pm | 0 | 0 | 0 |
| 6/29 6 pm | 0 | 0 | 0 |
| 6/30 2 pm | 0 | 0 | 0 |
| 6/30 6 pm | 0 | 0 | 0 |
| 7/5 4:45 pm | 0 | 0 | 0 |
| 7/6 12:30 pm | 0 | 0 | 0 |
| 7/8 10 am | 1 (Zone D) honeybee | 2 (Zone D) fly and wasp | 0 |
| 7/12 10:30pm | 0 | 3 (Zones A, E, F) dragonflies | 2 (Zone B) crows |

*Sources:*
Observation conducted on site by research team.

*Limitations:*
Proximity of visitors to vegetated areas may discourage habitation by pollinators and insects.

## Cost Comparison Sources

All Cost Comparison data was collected from the landscape architects and the owner.

## "Context" Sources

Downtown Baltimore's Harbor East district where Sandlot is located was home to Baltimore Chrome Works, a chromite processing plant, from the mid-19th century to the 1980s. During the plant's operation, large quantities of chromium migrated from the site into Baltimore's Inner Harbor as well as the groundwater below the harbor.[1, 2]

Upon the plant's closing in the mid 1989s, the Environmental Protection Agency and the State of Maryland Department of Environment entered into a Consent Decree with the owner of the site, for further investigation and remediation, including construction of containment structure: a deep vertical hydraulic barrier and a multi-media cap.[3] The containment structure was completed in 1999.

Redevelopment began in earnest in the mid 2000s, with the developer's vision of Harbor Point being a mixed-use and 'exemplary model for brownfield revitalization in an urban waterfront setting."[4] In September 2013, the Baltimore City Council approved tax increment financing to fund construction of infrastructure and public park space on Harbor Point. The developer of Harbor Point aims to include in this long-term revitalization effort a five-acre waterfront park, part of which is where Sandlot is located.[5]

Sources:
[1, 5]. http://www.harborpointbaltimore.info/history/
[2, 3]. https://www.epa.gov/hwcorrectiveaction/hazardous-waste-cleanup-honeywell-baltimore-inner-harbor-baltimore-md
[4]. https://www.harborpointbaltimore.info/#project