BUREAU OF LAND MANAGEMENT: WINNEMUCCA DISTRICT

To: Burning Man 2014 File

Subject: Post-Event Inspection

From: Robert Bunkall

10/16/2014

This document summarizes the results of the 2014 Post Even Inspection Data. It includes overviews for each monitoring area, as well as discussion, results, and recommendation sections.

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From: Robert Bunkall

Summary

During the 2014 Post Event Inspection a total of 65, .1 acre plots were monitored using the 2013 Burning Man Post-Event Inspection Protocol. Random points were generated within the 3,633 acre city, which was divided into four core areas with 60 total plots: ***City Grid*** (1,219.9 ac), ***Walk-in-Camping*** (355.15 ac), ***Open Playa*** (1,456.27 ac), and ***Other*** (601.68 ac). An additional five targeted monitoring locations were established at ***Points of Interest***, including: The Man, The Temple, Services, DPW, and ICP. The data is summarized in Table 1.

In the core areas, there were a total of 1273 debris items collected which covered 2.82ft². The 29 plots within the ***City Grid*** had a total average of 288.97 items/acre with an average coverage of .59 ft²/ac. The seven plots within the ***Walk-in-Camping*** had an average of 148.6 items/acre with an average coverage of .38ft²/acre. The 18 plots within the ***Open Playa*** had an average of 168.2 items per acre that covered an average of .39 ft²/ac. There were six plots within the ***Other*** area, with an average of 75items per acre, and an average coverage of .315 ft²/acre. The measured debris levels in the randomly selected sampling areas were below the allowable average of 1.0ft²/acre, and were therefore in compliance with the Burning Man Special Recreation Permit Stipulations.

The five ***Points of Interest*** *(*targeted monitoring sites) had an average 197 items which covered 1.96ft². The average number of debris items was 32.8 per plot, which can be extrapolated to 328.8 items per acre with an average coverage of 3.27ft²/ac. While these sampling areas are not included in the debris level measurements used to determine compliance, they are above the 1.0ft²/acre allowable average, which is notable. It is suggested that they be added to the suite of yearly monitoring points and be included in the trend analysis.

Table 1: 2014 Summary

Sampling Area	# of Plots	Averages		
		Debris Area (ft²/ac)	# of Items/ac	Item Size (in²)
City Grid	29	.59	288.97	.29
Walk-in Camping	7	.38	148.6	.37
Open Playa	18	.39	168.2	.33
Other	6	.315	75	.61
Points of Interest	5	2.64	706	.54
All Areas	**65**			

Relationship to Previous Events

The location of this year's 2014 Burning Man Event was 700' North-Northeast from the 2013 site. See Attachment 1: City Location Comparison Map. Exact locations for the reference points were (DDM, Nad 83):

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The Man: 40.78880, -119.20315

P1 40.78542, -119.23241
P2 40.80875, -119.21665
P3 40.80464, -119.18240
P4 40.77869, -119.17687
P5 40.76678, -119.20772

Sampling

The 2014 Post-Event Inspection followed the same format and protocol as the 2004-2012 inspections. However, 60 total random points were generated for monitoring, and five targeted monitoring sites were added to collect baseline data on key areas. The percent of random points generated in each Inspection Area mimics 2013. Each Inspection Area was divided into Monitoring Zones; each zone contained 5-7 plots. The inspection took place on September 30 2014. The day of the inspection, BLM staff members located each plot center point using GPS receivers with 3-5 meter accuracy and marked the plot centers with flags. Then BLM staff, volunteers, and members of the BRC Playa Restoration team (the Burning Man staff responsible for event site cleanup) met onsite and were given a briefing on the inspection including the purpose, methods, and standards. The group was divided into teams and each team was assigned a monitoring zone and visited their assigned plots. At each plot, a pin attached to a long cord was placed at the plot center. The cord was marked at 37.23 feet from the pin; this delineated the radius of a 0.1 acre circle. Each team then used the cord to systematically search the plot area. All debris items found within the circle were placed into a plastic bag labeled with the plot number. Back in the office, the debris within each bag was examined to determine the number of individual debris items and surface area covered by the debris items for each plot.

Results

Extrapolating the data averages to the entire 3,633 acre area within the perimeter fence, there are an estimated 618,518 debris items covering 1,718 ft^2 remaining in the 2014 event area after the cleanup. This extrapolation does not include the Points of Interest.

Attachment 2 shows the relative amount of area covered by debris at each plot. Attachment 3 shows the relative number of debris items at each plot. Attachment 4 shows the average size of debris items at each plot.

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City Grid

Twenty-nine plots were read within the City Grid area. The first row in Table 1 shows the results from the analysis of the 2011 City Grid plots.

Summary:

- The average level of residual debris from these plots was 0.59 ft^2/ac (slightly above half of the 1.0 ft^2/ac standard). Therefore the cleanup effort met the standard.
- Two plots exceeded the standard (1.18 and 3.19 ft^2/ac) versus three plots in 2008 and 2009, four plots in 2010, six plots in 2011, and five plots in 2012.
- The average number of individual debris items per acre was 289 which is above the eight year average of 254.
- The average size of each item of debris was 0.29 $inch^2$, which is below the eight year average of .34
- Extrapolation of the samples to 1,148 acre City Grid, there were 331,772 debris items covering 677 ft^2 remaining after the event cleanup.

Table 2 summarizes inspection data for City Grid from 2006 to 2014.

Table 2: City Grid Summary

Year	Debris Area (ft^2/ac)	# of Items/ac	Item Size (in^2)
	Average Area	Average Count	Average Size
2006	0.298	185	0.25
2007	0.392	202	0.33
2008	0.596	416	0.22
2009	0.514	275	0.37
2010	0.505	237	0.33
2011	0.735	304	0.35
2012	0.532	160	0.48
2013	0.527	186	0.4
2014	.59	289	.29

Walk-in Camping Area

Seven plots were read in the Walk-in Camping area. The second row in Table 1 shows the results from the analysis of the 2013 Walk-in Camping area plots.

Summary:

- The average level of residual debris from these plots was 0.38 ft^2/ac. Therefore the cleanup effort met the standard.
- One plot exceeded the standard.
- The average number of individual debris items per acre was 104 which is more than the eight year average of 51.75.
- The average size of each item of debris was 0.37 $inch^2$, which is below the eight year average of .49 $inches^2$.
- Extrapolation of the samples to 391 acre Walk-in Camping area, there were 58,259 debris items covering 148 ft^2 remaining after the event cleanup.

Table 3 summarizes inspection data for the Walk-in Camping area from 2006 to 2014.

Table 3: Walk-in-Camping

Year	Debris Area (ft^2/ac)	# of Items/ac	Item Size (in^2)
	Average Area	Average Count	Average Size
2006	.147	32	.25
2007	.145	84	.25
2008	.278	46	.87
2009	.242	56	.58
2010	.260	63	.61
2011	.127	50	.41
2012	.124	33	.55
2013	.124	38	.46
2014	.38	149	.37

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Open Playa

Eighteen plots were read in the Open Playa area. The third row in Table 1 shows the results from the analysis of the 2013 Open Playa area plots.

Summary:

- The average level of residual debris from these plots was 0.389 ft^2/ac. Therefore the cleanup effort met the standard.
- No plots exceeded the standard which is consistent with the 2013 results. The standard was exceeded in two plots in 2010, and one plot in 2008 and 2011.
- The average number of individual debris items per acre was 168, above the seven year average of 134.
- The average size of each item of debris was 0.33 $inch^2$, below the eight year average of .41 $inches^2$
- Extrapolation of the samples to 1,432.2 acre Open Playa area, there were 240,610 debris items covering 557 ft^2 remaining after the event cleanup.

Table 4 summarizes inspection data for the Open Playa area from 2006 to 2014.

Table 4: Open Playa

Year	Debris Area (ft^2/ac)	# of Items/ac	Item Size (in^2)
	Average Area	Average Count	Average Size
2006	0.194	91	0.36
2007	0.417	181	0.45
2008	0.291	111	0.25
2009	0.396	159	0.4
2010	0.306	96	0.48
2011	0.398	194	0.35
2012	0.273	144	0.27
2013	0.53	96.6	0.79
2014	.389	168	.33

Other

Seven plots were read in the Other areas. The fourth row in Table 1 shows the results from the 2013 analysis.

Summary:
The average level of residual debris from these plots was 0.315 ft^2/ac. Therefore the cleanup effort met the standard.

- No plots exceeded the standard which is consistent with previous years.
- The average number of individual debris items per acre was 75, above the eight year average of 62.
- Extrapolation of the samples to 662.1 acre Other area, there were 49,657 debris items covering 208.6 ft^2 remaining after the event cleanup.

Table 5 summarizes inspection data for the Other Areas from 2006 to 2014.

Table 5: Other

Year	Debris Area (ft^2/ac)	# of Items/ac	Item Size (in^2)
	Average Count	Average Count	Average Count
2006	0.071	34	0.34
2007	0.113	68	0.25
2008	0.159	40	0.22
2009	0.08	23	0.53
2010	0.359	109	0.58
2011	0.454	140	0.58
2012	0.112	69	0.23
2013	0.04	20	0.66
2014	.315	75	.61

Points of Interest

This was the second year of targeted monitoring for the five points of interest.

Summary:

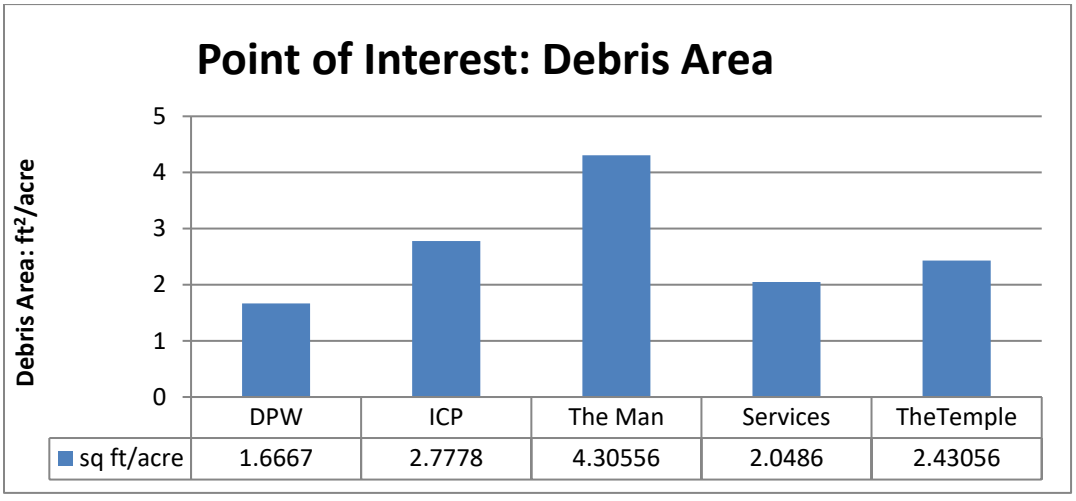
- All of the plots were above the allowable standard aside from The Man, which was over 4 times the allowable standard with a value of 4.3 ft²/acre.
- The average number of items collected exceeded all of the other monitoring areas.
- The average item size was .54, which is less than the Other.

Table 6 summarizes the data collected from 2013 and 2014. Figure 2 shows an overview of the debris area for each plot for 2014.

Table 6: Points of Interest

Year	Debris Area (ft²/ac)	# of Items/ac	Item Size (in²)
	Average Count	Average Count	Average Count
2013	3.27	197	0.62
2014	2.64	706	.54

Figure 2: Points of Interest: Debris Area



Discussion

Random Monitoring:
All of the inspection areas met the standard of 1.0 ft^2/ac of residual debris for 2014, which indicates a successful cleanup effort by the BRC Playa Restoration Team

Figure 3: Debris Area Trends

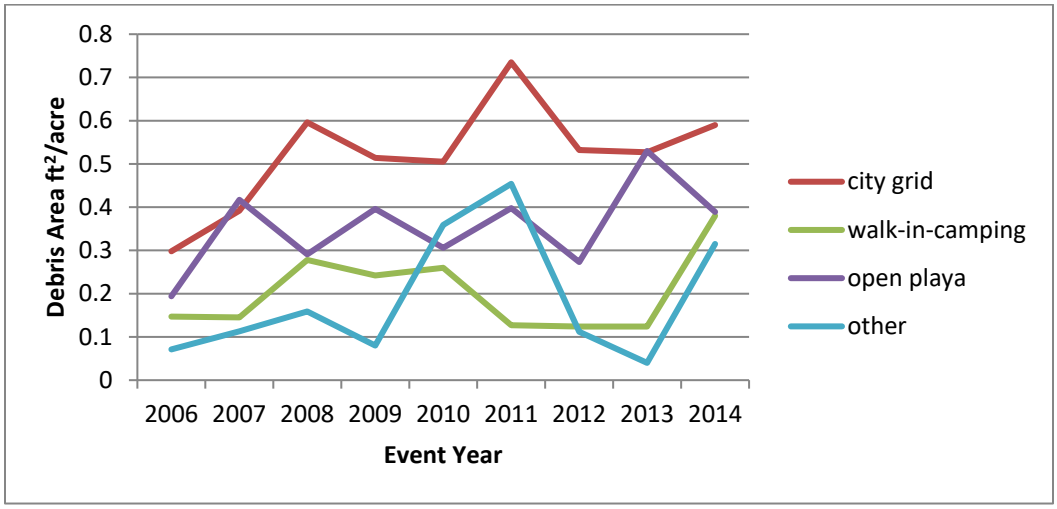
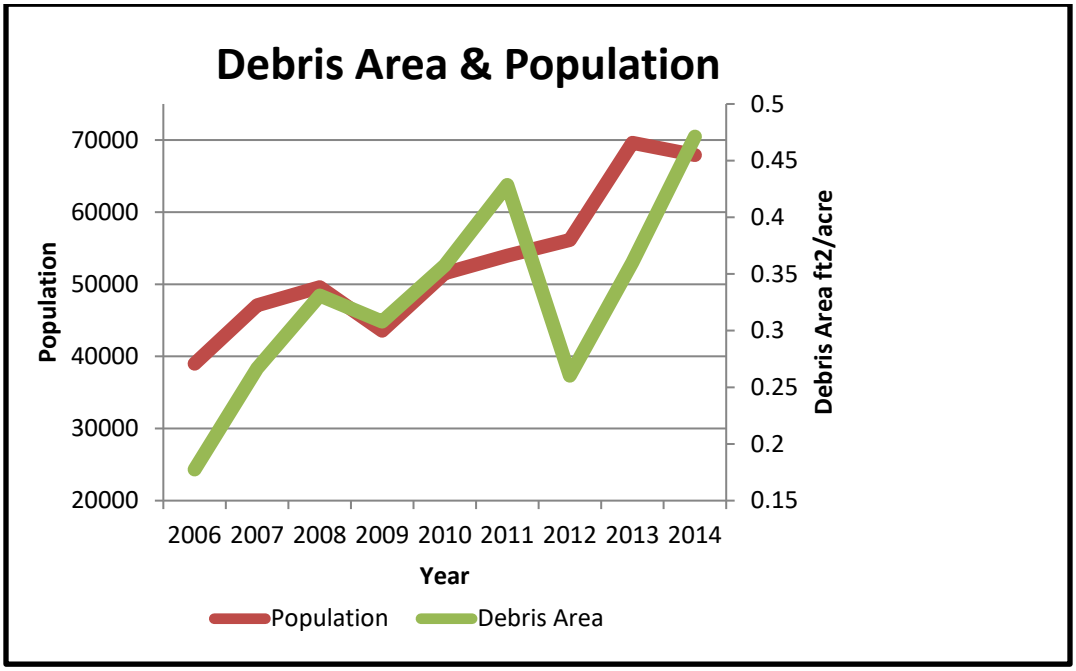


Figure 4: Debris Area and Population



Targeted Monitoring:

Initial monitoring data from the five Points of interest showed that cleanup efforts were successful for most of the sites. The Man, however, had significantly higher debris area and debris size values than any other site monitored with over three times the allowable debris area standard, this is an area of concern. While not exhaustively categorized, the items found at the site included significant amounts of large decomposed granite and wood particles (see figure 5). While decomposed granite (DG) is not usually counted as an item because it is usually only found in trace amounts, the size of the DG found within the plot constituted a highly significant amount of debris, and was therefore included in the totals. Discussions were held onsite between BLM and Playa Restoration team regarding some of the challenges facing cleanup at this site. Some of the topics included:

- How much cleanup is too much? Is there a point where the cleanup will ultimately do more harm to the playa (soil removal, increased potential for erosion, soil disturbance) than the debris would?
- Are there other alternatives to decomposed granite that would leave less debris?
- How/when should decomposed granite be counted towards the overall debris totals?

Figure 5: Debris Collected

There was large amount of debris collected at the Man.

Conclusions

The 2014 Burning Man cleanup effort met the standard of less than 1.0 ft^2/ac. None of the four inspection areas within the event site exceeded 53.2% of the standard. The current cleanup efforts are currently able to keep up with the cumulative amount of micro debris associated with overlapping event areas. Points of Interest should continue to be monitored, especially The Man since it is evident that issues exist that have not been captured during random monitoring.

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Recommendations:

- Continue using the current inspection protocol for future events.
- Continue to monitor the Targeted Monitoring Sites in future years, and incorporate the data as part of the total debris area counting towards the standard.
- Encourage BRC to maintain high levels of support to the “Playa Restoration” crew to ensure that future events do not lead to a failure to meet the cleanup standard.
- Encourage BRC LLC to continue their outreach to participants on the need to minimize waste that hits the ground and to clean up their camps thoroughly before they leave the event.

Attachments: Pages 13-16

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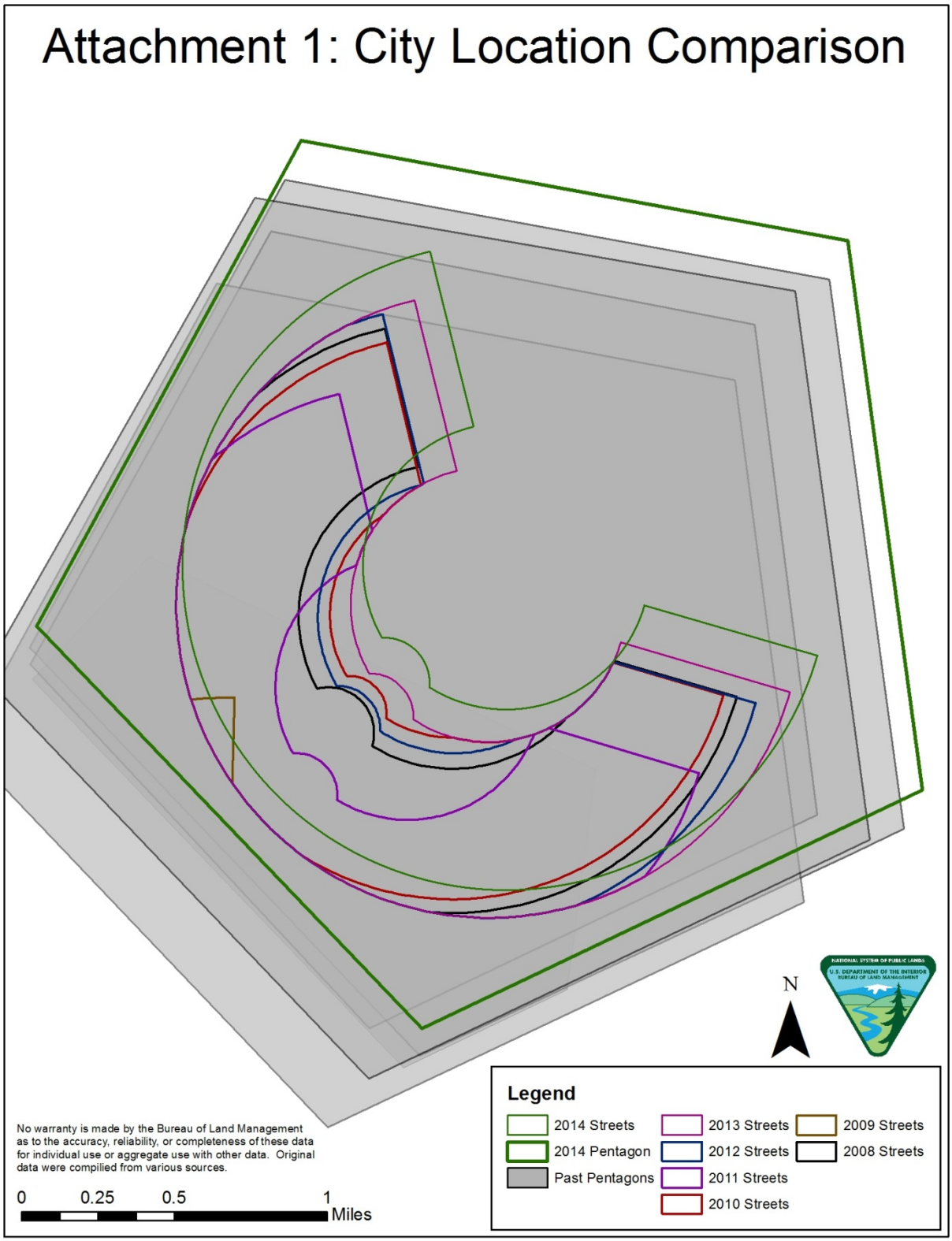

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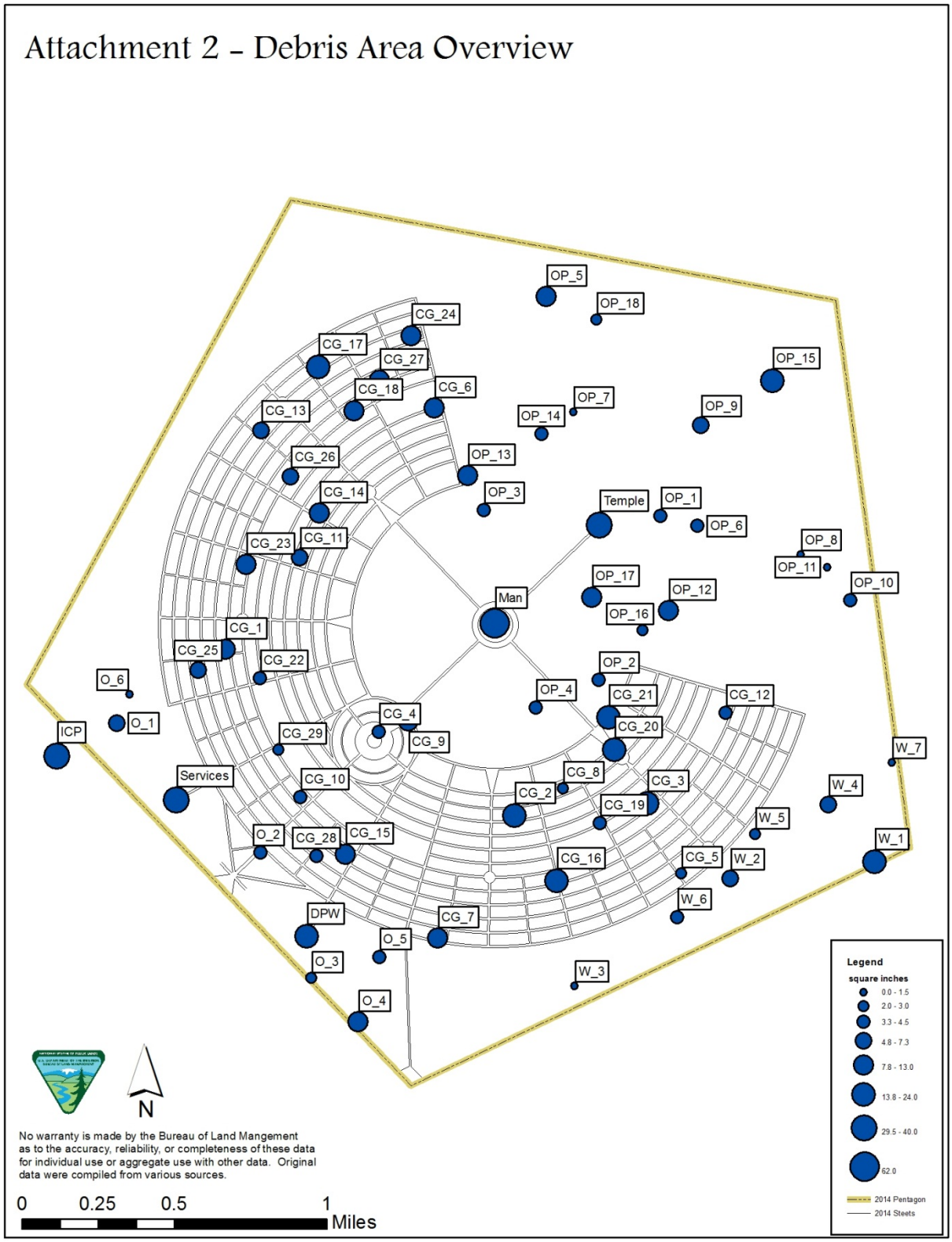

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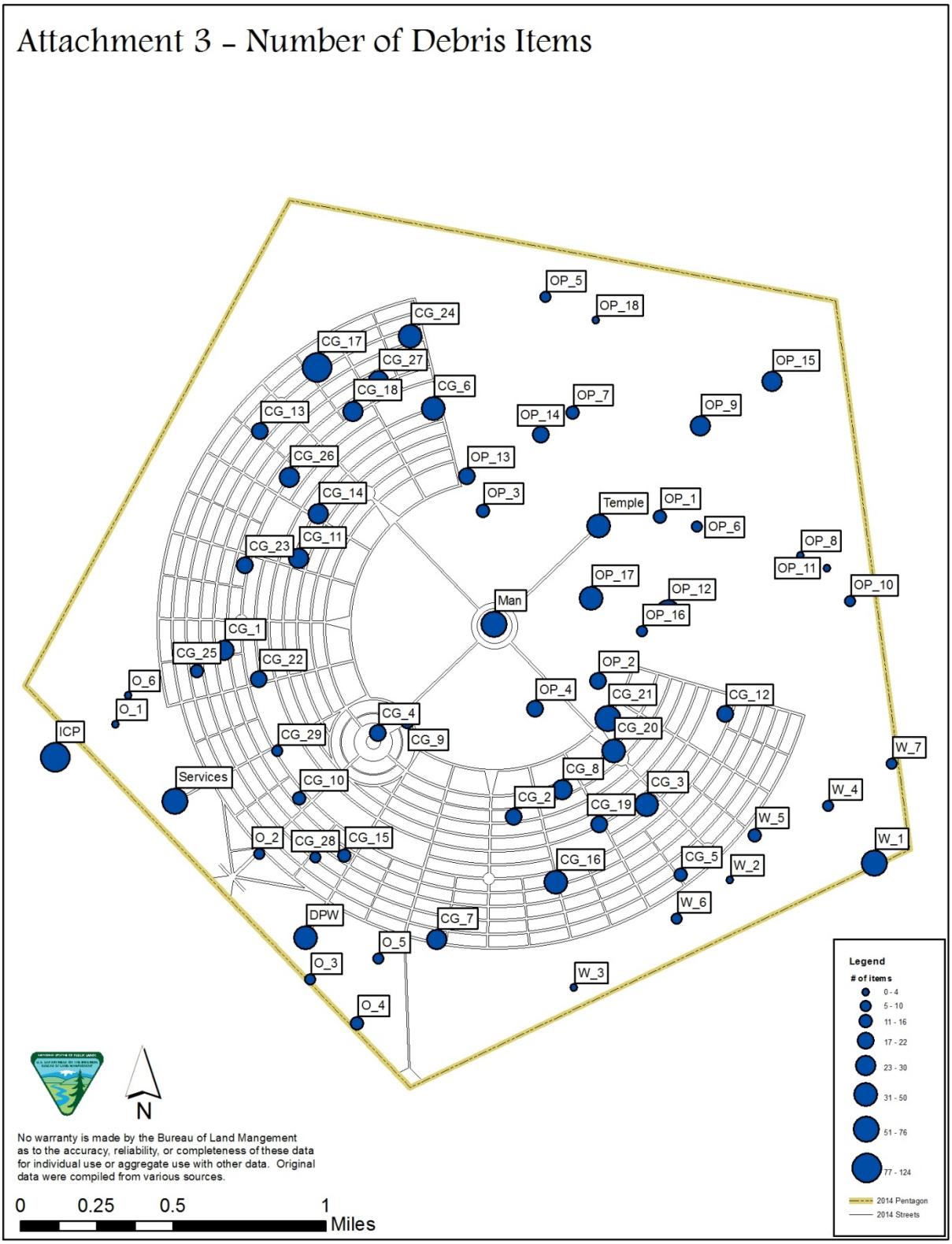

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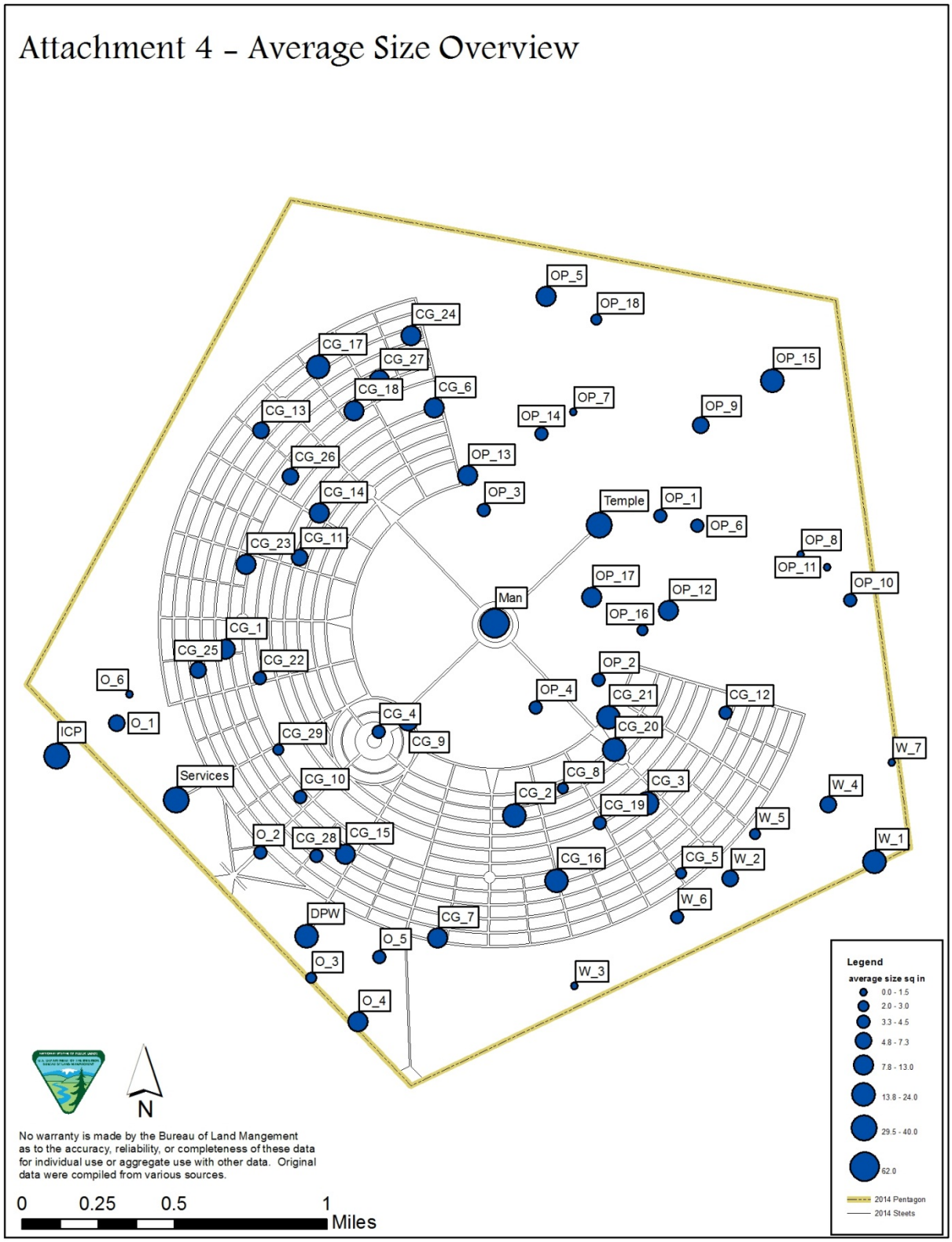


BUREAU OF LAND MANAGEMENT, WINNEMUCCA DISTRICT, BLACK ROCK FIELD OFFICE, NEVADA

Burning Man 2015

Post-Event Inspection

Robin Sears, Outdoor Recreation Planner & Philip Clauss, Lead GIS Specialist

1/25/2016

This document summarizes the results of the 2015 Post-Event Inspection Data. It includes overviews for monitoring conducted, as well as discussion, results, and recommendation sections.

Burning Man 2015

Post-Event Inspection

Abstract:

The 2015 Post Event Inspection report is to determine if the cleanup efforts of the Burning Man Event are met as outlined in the Burning Man Special Recreation Permit (SRP). The allowable remaining debris standard, from the average of sampling, should not be greater than 1 ft^2/acre for the entire Event area. This report explains the sampling protocol, techniques, calculations and a summary of whether the cleanup was a success or not.

2015 Black Rock City Playa Restoration Crew with 66 one gallon sized bags and remaining micro-debris collected at random plots. Event debris is also known as Matter out of Place (MOOP). *Photo: R Sears*

Introduction

Since the year 2000, the Bureau of Land Management (BLM) and the Black Rock City Playa Restoration Crew (BRC) have coordinated the post-event inspection for Burning Man. The main objective of this inspection is to determine if cleanup efforts of the Black Rock Desert playa have been successful and meet the standards outlined in the Burning Man Special Recreation Permit (SRP) and the Leave No Trace Code of Ethics.

Over the years, the Burning Man event has grown to a population of approximately 70,000 paid participants for the 2015 Event. By using the Burning Man Post-Event Inspection Protocol, (*BLM-Post-Event Inspection Protocol 2004-Present*) the sampling conducted on the playa and the ability to quantitatively analyze this data leads to conclusions regarding cleanup efforts. BRC Playa Restoration Crew continues to do an exceptional job restoring the playa to its pre-event condition.

The Post-Event Inspection Protocol (*BLM- Post-Event Inspection Protocol 2004-Present*) is outlined in the following standards and methodologies:

Standards:
- Number of sample plots: Variable (ranging from 50-75)
- Size of sample plot: .10 acre (1/10)
- Allowable average of debris: 1 ft^2/acre

Methodology (Random Point Generation):
- The number of plots to be monitored is decided based on BLM and BRC.
- Plots are randomly generated using GIS and stratified by Core Area. See figure 8.
- Each random plot is assigned a point name.
- Inspection areas are subdivided into Monitoring Zones and assigned a team and may vary based on the location and density of random points.

Setup:
- The morning of the Post-Event inspection, the BLM monitoring crew navigates to each random plot using GPS units.
- Each plot center is marked with a wooden stake and flag labeled with the plot name and GPS location.
- Each plot is assigned a gallon-size plastic bag labeled with: plot, name, date and team identifier. The bags are attached to the staked flags.

Team Formation and Instructions:
- Both parties meet on the playa at a set time and location.
- Team assignment and briefing is initiated; instruction on data collection is given, GPS units and maps are provided and the purpose for the survey explained.

- Teams should be a minimum of 3 people
- Teams should survey between 5-8 plots
- Teams should be broken out by Core Areas for surveying, i.e. City Grid, Open Playa, Walk-in Camping and Other.
- The 6 Points of Interest will be surveyed jointly by BLM and BRC.

Data Collection:

- Teams navigate to their Core Areas random monitoring sites using GPS if necessary.
- After the point is located, they unwind the 37.2" radial cord. This delineates the radius of 0.10 (1/10) of an acre.
- One person is responsible for holding the end of the radial cord and keeps it free of slack and also sets the pace of movement to ensure the group is working at a consistent pace (no-one is ahead or behind) to maintain full plot coverage.
- The team then spreads out along the cord, no more than 10' apart.
- The team moves clockwise around the plot searching for debris and once the sweep is complete, all items are collected into the gallon sized bag.

Sampling

The 2015 post-event inspection took place on October 6, 2015, and followed the same format and protocol as recent inspections. As such, 60 computer generated random points were identified for sampling with six targeted points of interest as additional sample locations. The percent of random points generated for each Core Area mimicked that of recent inspection. For sampling efficiency, the City was divided into eleven (11) Zones containing 5-8 plots each.

At 6:00 AM, BLM staff members located each plot using GPS receivers (3-5 meter accuracy) and marked the plot locations with staked flags. At 9:00 AM, BLM staff, volunteers, and members of the BRC Playa Restoration Crew met onsite, at the City center (on playa), and were given a briefing on the inspection process to include: purpose, methods and standards.

The group was divided into eleven (11) teams. Each team was assigned a specific Zone, given a GPS receiver and an overview map of inspection Zones. The teams then dispersed to their assigned plots. Each plot was equipped with a staked flag, site location- labeled gallon sized bag, and radius cord attached to the center of the staked flag. The cord was used to systematically search the plot area in a circular method. All debris items found within the circle were placed inside the gallon sized plastic bag and returned to BLM staff.

This bagged debris collected from the teams by the BLM was then brought back to the Winnemucca District Office for analysis. The contents of each bag were systematically placed on a Daubenmire frame (1'x 1' square) and examined to determine the type of debris, number of debris items and surface area covered by the debris (in^2) for each of the 66 plots. See Figure 7.

Results:

The results of the post-event inspection are documented in an event "Summary Report" that is distributed to BRC and stored electronically in the BLM Burning Man file.

Overall Results

Data averages from the sampling analysis (excluding the Points of Interest) were extrapolated to the entire 3,603.5 acre area within the City footprint. Results of this analysis showed there were an estimated 1,042,658.87 micro-debris items covering 2,652.49 ft^2 /acre remaining in the City footprint, post-event cleanup. The cleanup effort met the average allowable standard of 1.0 ft^2/acre. See Figures 1-6.

Results for the Core Areas and the Points of Interest follow:

City Grid

Twenty-nine (29) plots were read within the City Grid area. The bottom row in Table 1 shows the results from the analysis of the 2015 City Grid plots.

Summary:

- The average level of residual debris from these plots was 1.33 ft^2/acre (above the 1.0 ft^2/acre standard). Eleven City Grid plots exceeded the standard for 2015.
- Two plots exceeded the standard in 2014 versus three plots in 2008 and 2009, four plots in 2010, six plots in 2011, and five plots in 2012.
- The average number of individual debris items was 503.79/acre which is above the ten year average of 254/acre.
- The average size of each item of debris was 0.38 $inch^2$, which is above the ten year average of 0.34 $inch^2$.
- Given total City Grid Core Area of 1,197.10 acres, there were an estimated 603.092 micro-debris items covering 1,589.28 ft^2 /acre after cleanup.

Table 1 summarizes inspection data for City Grid from 2006 to 2015.

Table 1: City Grid Summary			
Year	**Debris Area (ft^2/ac)**	**# of Items/ac**	**Item Size (in^2)**
	Average Area	**Average Count**	**Average Size**
2006	0.298	185	0.25
2007	0.392	202	0.33
2008	0.596	416	0.22
2009	0.514	275	0.37
2010	0.505	237	0.33
2011	0.735	304	0.35
2012	0.532	160	0.48
2013	0.527	186	0.4
2014	.59	289	0.29
2015	1.33	504	0.367

Open Playa

Eighteen (18) plots were read in the Open Playa area. The bottom row in Table 2 shows the results from the analysis of the 2015 Open Playa area plots.

Summary:

- The average level of residual debris from these plots was 0.53 ft^2/acre. Therefore the cleanup effort met the standard.
- Two plots exceeded the standard for 2015. The standard was exceeded in two plots in 2010 and one plot in 2008 and 2011.
- The average number of individual debris items was 233/ acre, above the ten year average of 147/acre.
- The average size of each item of debris was 0.32 $inch^2$, below the ten year average of 0 .4 $inch^2$.
- Given total Open Playa Area of 1,457.8 acres, there were 339,346 micro-debris items covering approximately 774.6 ft^2 /acres in Open Playa after cleanup.

Table 2 summarizes inspection data for the Open Playa area from 2006 to 2015.

Table 2: Open Playa

Year	Debris Area (ft^2/ac)	# of Items/ac	Item Size (in^2)
	Average Area	Average Count	Average Size
2006	0.194	91	0.36
2007	0.417	181	0.45
2008	0.291	111	0.25
2009	0.396	159	0.4
2010	0.306	96	0.48
2011	0.398	194	0.35
2012	0.273	144	0.27
2013	0.53	96.6	0.79
2014	.389	168	.33
2015	0.53	233	0.32

Walk-in Camping Area

Seven (7) plots were read in the Walk-in Camping area. The bottom row in Table 3 shows the results from the analysis of the 2015 Walk-in Camping area plots.

Summary:

- All plots were below the standard.
- The average level of residual debris from these plots was 0.35 ft^2/acre. Therefore the cleanup effort met the standard.
- The average number of individual debris items was 123/acre which is greater than the ten year average of 67.4/acre.
- The average size of each item of debris was 0.38 $inch^2$, which is below the ten year average of .47 $inch^2$.
- Given total Walk-in Camping Area of 363 acres, there were an estimated 44,561 micro-debris items covering an area of approximately 125.26 ft^2 /acre after cleanup.

Table 3 summarizes inspection data for the Walk-in Camping area from 2006 to 2015.

Table 3: Walk-in-Camping			
Year	**Debris Area (ft^2/ac)**	**# of Items/ac**	**Item Size (in^2)**
	Average Area	**Average Count**	**Average Size**
2006	.147	32	.25
2007	.145	84	.25
2008	.278	46	.87
2009	.242	56	.58
2010	.260	63	.61
2011	.127	50	.41
2012	.124	33	.55
2013	.124	38	.46
2014	.38	149	.37
2015	.35	123	.38

Other

Six (6) plots were read in the Other area. The bottom row in Table 4 shows the results from the 2015 analysis.

Summary:

- The average level of residual debris from these plots was 0.28 ft^2/acre. Therefore the cleanup effort met the standard.
- No plots exceeded the standard which is consistent with previous years.
- The average number of individual debris items was 95/ acre, above the ten year average of 67.3/acre.
- Given total Other area of 585.89 acres, there were an estimated 55,659 debris items covering 164 ft^2 /acre after cleanup

Table 4 summarizes inspection data for the Other Areas from 2006 to 2015.

Table 4: Other			
Year	**Debris Area (ft^2/ac)**	**# of Items/ac**	**Item Size (in^2)**
	Average Count	**Average Count**	**Average Count**
2006	0.071	34	0.34
2007	0.113	68	0.25
2008	0.159	40	0.22
2009	0.08	23	0.53
2010	0.359	109	0.58
2011	0.454	140	0.58
2012	0.112	69	0.23
2013	0.04	20	0.66
2014	.315	75	.61
2015	0.28	95	0.33

Points of Interest
This was the third year of targeted monitoring for the six (6) points of interest.

Summary:

- 4 plots were above the allowable standard. The Man, which was over by 1.56 ft²/acre, Temple 2.02 ft²/acre, Services .68 ft²/acre and Heat 0.25 ft²/acre.
- The average item size was 0.51 in².

Table 5 summarizes the data collected from 2013 - 2015.

Table 5: Points of Interest

Year	Debris Area (ft^2/ac)	# of Items/ac	Item Size (in^2)
	Average Count	Average Count	Average Count
2013	3.27	197	0.62
2014	2.64	706	0.54
2015	1.54	433.30	0.51

Inspection Summary

Due to heavy rains, the post-inspection was delayed by one day. On October 6, 2015, a total of 66, one tenth (.10) acre plots were monitored during the 2015 post-event inspection using the *Burning Man Post-Event Inspection Protocol*. Jointly, BLM, BRC's Playa Restoration Crew and approximately 30 volunteers completed this task. This random sampling was preformed within the 3,603.5 acre City. The City is sub-divided into four Core Areas (containing 60 random plots): ***City Grid*** (1,197.1 acres & 29 plots), ***Open Playa*** (1,457.8 acres & 18 plots), ***Walk-in-Camping*** (362.7 acres & 7 plots), and ***Other*** (585.9 acres & 6 plots). An additional six points of interest have been established as ***Targeted***, including: The Man, The Temple, United Site Services, DPW, ICP and Heat. The data is summarized in Tables 1-5.

The 29 plots within ***City Grid*** had a total average of 503.8 items/acre with an average coverage of 1.33 ft²/acre. The 18 plots within ***Open Playa*** had a total average of 232.8 items/ acre with an average coverage of 0.53 ft²/acre. The seven plots within ***Walk-in-Camping*** had had a total average of 122.86 items/acre with an average coverage of 0.35 ft²/acre. The six plots within ***Other*** had a total average of 95 items/ acre with an average coverage of 0.33 ft²/acre. The ***City Grid*** contained the only randomly generated plots that had a total average over the 1.00 ft²/acre allowable standard. However, the combined overall average 0.62 ft²/acre meet the compliance

guidelines within the Burning Man Special Recreation Permit Stipulations and the cleanup efforts continue to be a success!

The six ***Targeted*** monitoring sites had a total average of 433.3 items/ acre with an average coverage of 1.54 ft²/acre. These Targeted sites are not included in the debris level measurements used to determine compliance; however, they do continue to be monitored points of interest for yearly trend analysis.

Discussion

Random Monitoring: Three out of four Core Areas met the standard of 1.0 ft^2/acre of residual debris for 2015. The City Grid was over by 0.33 ft^2/acre. Even so, this indicates a successful cleanup effort by the BRC Playa Restoration Crew. The average was 0.62 ft^2/acre, which is significantly below the standard.

Targeted Monitoring: Initial monitoring data from the six points of interest showed that cleanup efforts were successful for most sites. The Temple had a higher debris area than The Man for 2015 and both seem to be areas of concern. While not exhaustively categorized, the items found at the Temple included significant amounts of large decomposed granite, wood screws, plastic and wood particles. While decomposed granite (DG) is not usually counted as an item because it is usually only found in trace amounts, the size of the DG found within the plot constituted a highly significant amount of debris, and was therefore included in the totals.

Discussions were held onsite, between the BLM and the Playa Restoration Crew, regarding some of the challenges facing cleanup at the City site. Several topics included:

- How much cleanup is too much? Is there a point where the cleanup will ultimately do more harm to the playa (soil removal, increased potential for erosion, soil disturbance) than the micro debris would?
- Are there other alternatives to decomposed granite that would leave less debris?
- How/when should decomposed granite be counted towards the overall debris totals?

Conclusion

The 2015 Burning Man cleanup effort was successful and met the standard of less than 1.0 ft^2/acre for the entire event area. The current cleanup efforts are able to keep up with the cumulative amount of micro- debris associated with the event. Points of interest should continue to be monitored; especially The Temple and The Man. There is a noted continuation of playa depression associated with The Man.

City Location Relationship to Previous Event

The location of this year's 2015 Burning Man event was 1,266 (ft.) southwest from the 2014 event site. Locations of past City footprints are available upon request. Exact locations for the reference points were (UTM/DDM, NAD 83):

*The Man **2015**: Y-UTM: 4517389.086, X-UTM: 313829.9229 (40.786408, -119.206446)*

*The Man **2014**: Y-UTM: 4517647.61, X-UTM: 314114.73(40.78880, -119.20315)*

Recommendations

Following the 2015 event, the following recommendations are identified:

- Continue using the current inspection protocol for future events.
- Continue to monitor the Targeted Monitoring Sites in future years.
- Document data and associated trends for suggestion and future improvements.
- Encourage BRC, LLC, to maintain high levels of support to the Playa Restoration Crew to ensure that future events do not lead to a failure.
- Ensure BRC acknowledges that large items of debris left on the playa can have a large impact on the overall results.
- Keep up the dedication, respect and efforts, as illustrated, to continue to ensure minimum impacts are made to the playa.
- Encourage BRC, LLC, to continue their outreach and education to participants on the need to practice Leave No Trace Outdoor Ethics.

Attachments

Figure 1 Debris Area Trends

Figure 2 Debris Area and Population Correlation

Figure 3 Points of Interest – Debris Area

Figure 4 Core Area Map

Figure 5 Map showing Targeted Locations Debris Size (ft^2/acre)

Figure 6 Map showing Random Locations Debris Size (ft^2/acre)

Figure 7 Burning Man 2015, Post-Event Inspections, Results Table

Figure 8 Field Map - 2015 Inspection Areas and Plot Locations (11x17)

Figure 9 Daubenmire Frame technique used to sort and analyze MOOP

Figure 1: Debris Area Trends

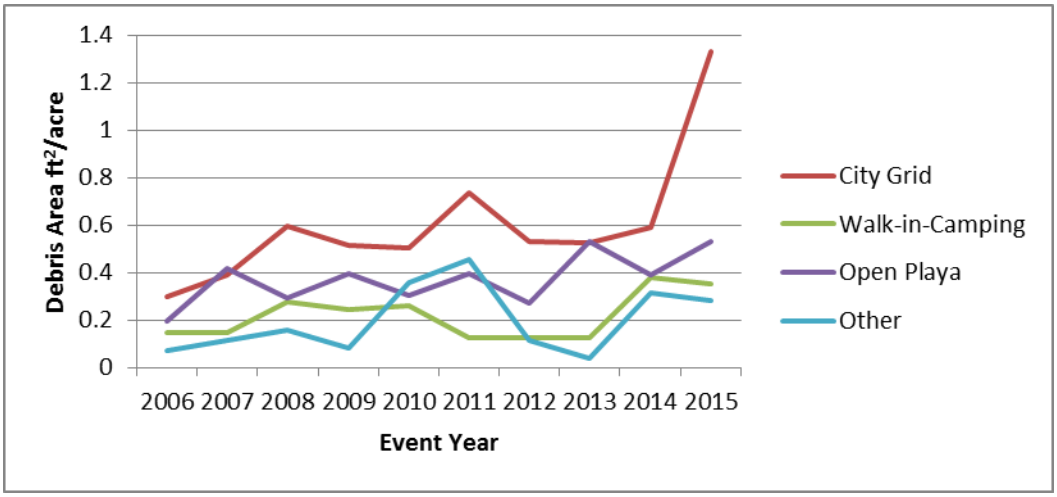


Figure 2: Debris Area and Population Correlation

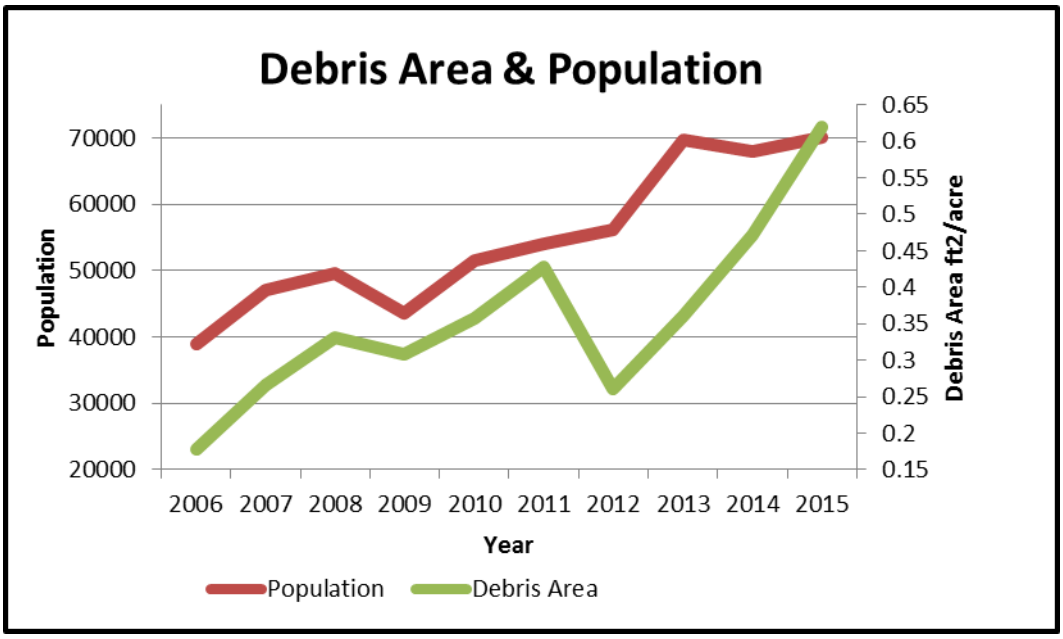
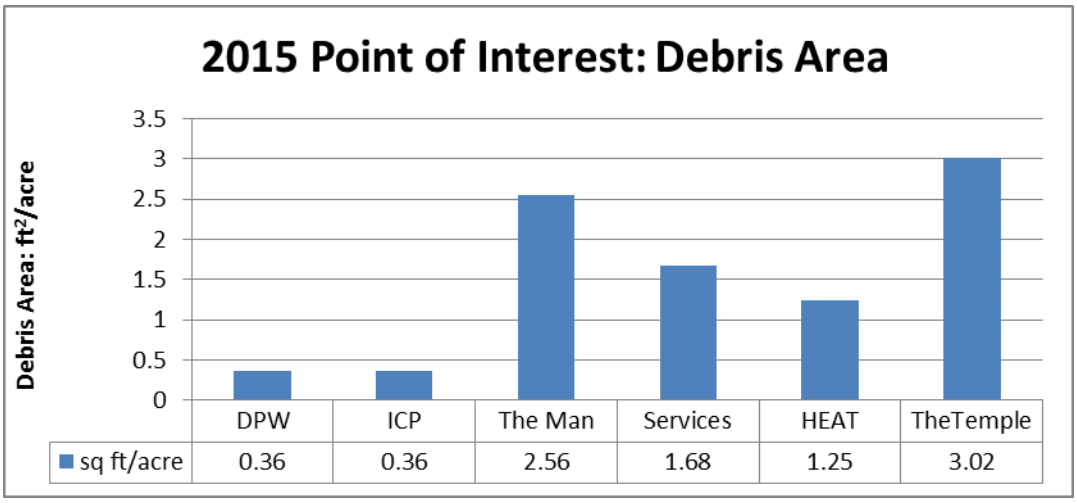


Figure 3: Points of Interest Debris Area



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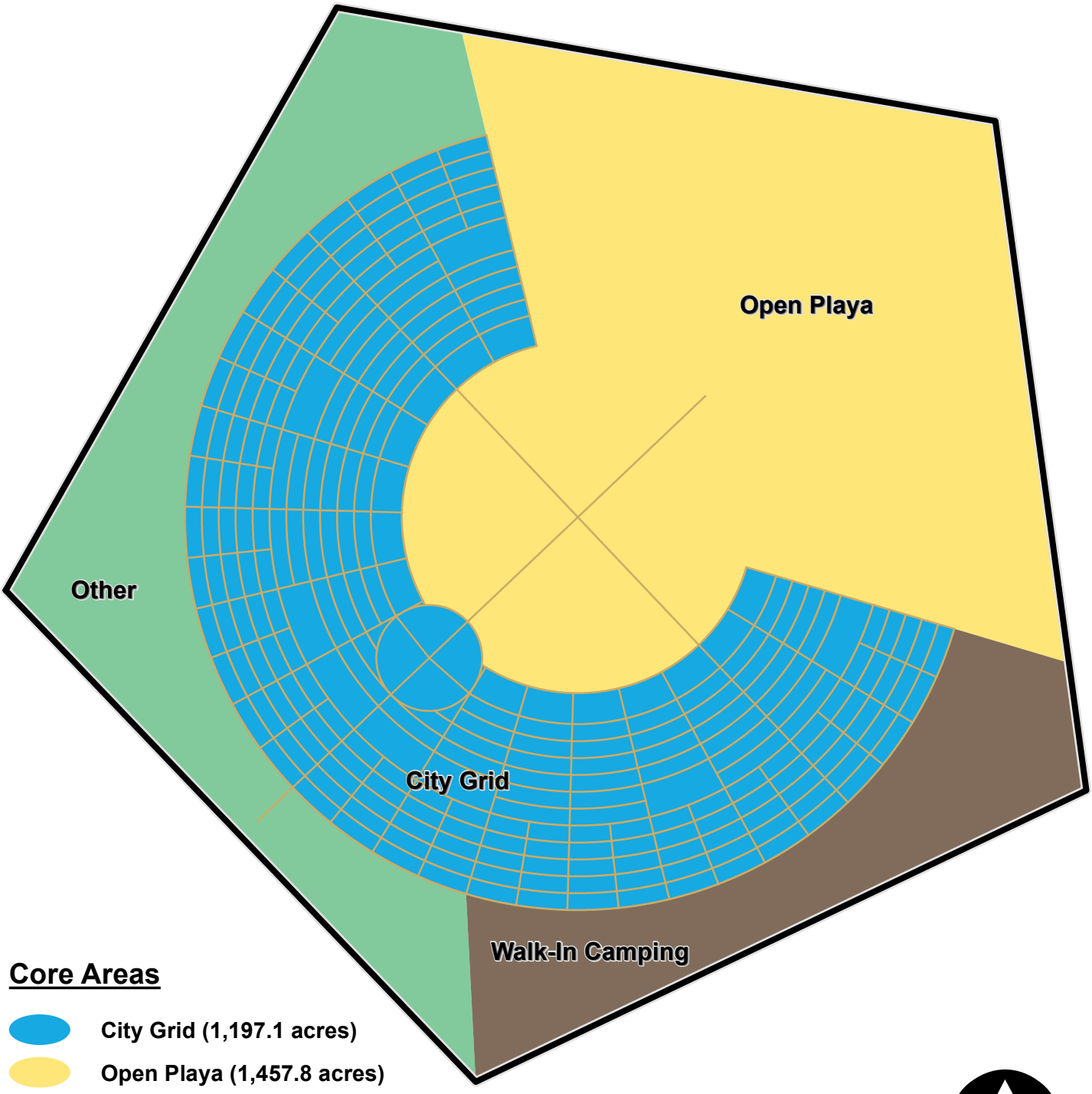
Post 2015 Burning Man

Burning Man Core Areas

Figure 4



Core Areas

- City Grid (1,197.1 acres)
- Open Playa (1,457.8 acres)
- Walk-In Camping (362.7 acres)
- Other (585.9 acres)

Document Name: 2015 Post Burning Man 1draft

Author: Philip A. Clauss, GISP

Date: 10/14/2015

Time: 9:59:31 AM

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Units: Meter

Centerlines

2015 Pentagon

BLM

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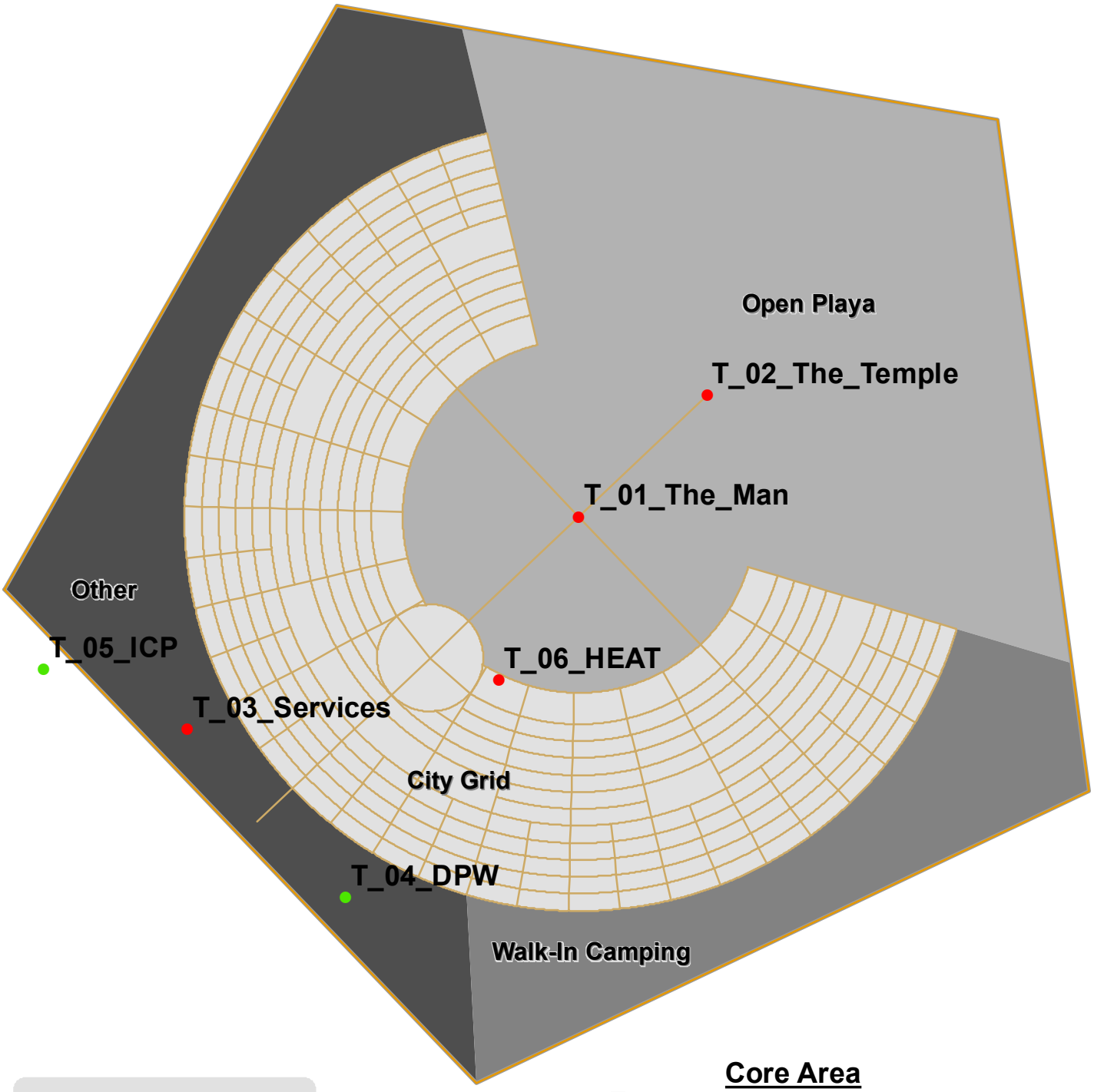
Post 2015
Burning Man

Targeted Locations
Relative Area Covered per Plot (Size ft^2/acre)

Figure 5



Relative Area Covered per Plot (Size ft^2/ac)

- 0.0 - 0.9
- 1.0 - 5.0

For exact figure(s) see: Burning Man 2015, Post-Event Inspection, Results Table, Figure 6

Core Area

- City Grid (1,197.1 acres)
- Open Playa (1,457.8 acres)
- Walk-In Camping (362.7 acres)
- Other (585.9 acres)

Document Name: 2015 Post Burning Man figure 4

Author: Philip A. Clauss, GISP

Date: 1/26/2016

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Units: Meter

2015 City Pentagon

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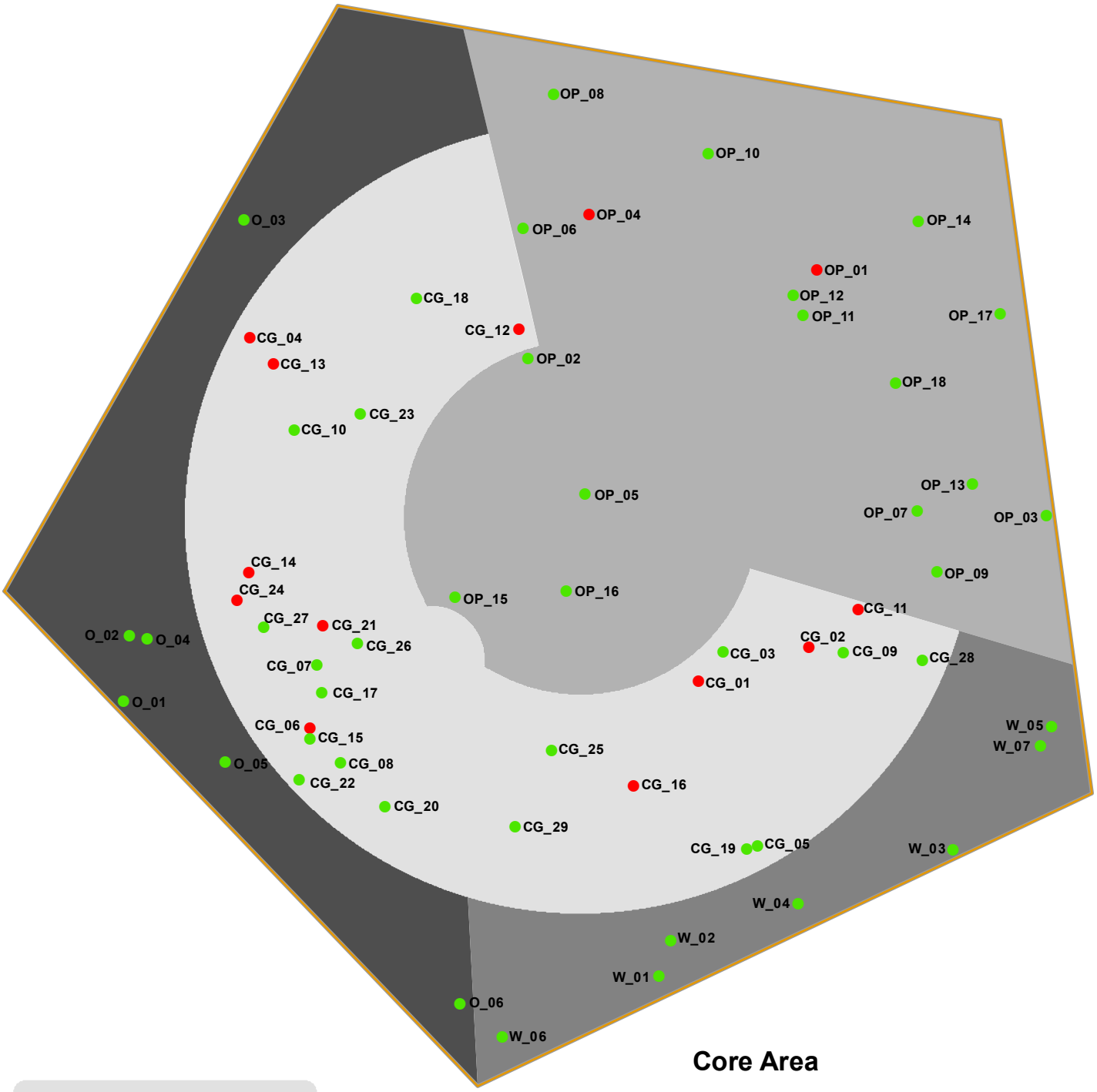
Post 2015
Burning Man

Random Locations
Relative Area Covered per Plot (Size ft^2/acre)

Figure 6



Relative Area Covered per Plot (Size ft^2/ac)

- 0.0 -0.9
- 1.0 - 5.0

For exact figure(s) see: Burning Man 2015, Post-Event Inspection, Results Table, Figure 8

Core Area

- City Grid
- Open Playa
- Walk-In Camping
- Other

Document Name: 2015 BM data fig 6

Author: Philip A. Clauss, GISP

Date: 1/26/2016

Time: 10:46:41 AM

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Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

2015 City Pentagon

Burning Man 2015, Post-Event Inspection, Results Table, Figure 7

Plot	Core Area	Length x (in)	Length y (in)	Size (in^2)	Size (ft^2)	Size (ft^2)/acre	Avg Size (ft^2)/acre	Items	Items/ acre	Avg Items/acre	Debris Size (in^2)	Avg Debris Size (in^2)	Core Area (acreage)	Avg Items/Core Area (acreage)	Avg Size (ft^2)/Core Area (acreage)
CG_01	City Grid	3	5.5	16.5	0.114583	1.145833	1.3276	27	270	503.793103	0.611111	0.367303	1,197.10	603,092.93	1,589.28
CG_02	City Grid	6	12	72	0.5	4.999997	1.3276	102	1020	503.793103	0.705882	0.367303	1,197.10	603,092.93	1,589.28
CG_03	City Grid	3	2.5	7.5	0.052083	0.520833	1.3276	55	550	503.793103	0.136364	0.367303	1,197.10	603,092.93	1,589.28
CG_04	City Grid	5	4	20	0.138889	1.388888	1.3276	68	680	503.793103	0.294118	0.367303	1,197.10	603,092.93	1,589.28
CG_05	City Grid	3.25	3.25	10.5625	0.073351	0.733506	1.3276	27	270	503.793103	0.391204	0.367303	1,197.10	603,092.93	1,589.28
CG_06	City Grid	3.5	4.75	16.625	0.115451	1.154513	1.3276	60	600	503.793103	0.277083	0.367303	1,197.10	603,092.93	1,589.28
CG_07	City Grid	3	3.25	9.75	0.067708	0.677083	1.3276	37	370	503.793103	0.263514	0.367303	1,197.10	603,092.93	1,589.28
CG_08	City Grid	2	2.25	4.5	0.03125	0.3125	1.3276	16	160	503.793103	0.28125	0.367303	1,197.10	603,092.93	1,589.28
CG_09	City Grid	3.25	3.5	11.375	0.078993	0.78993	1.3276	43	430	503.793103	0.264535	0.367303	1,197.10	603,092.93	1,589.28
CG_10	City Grid	3.25	3.25	10.5625	0.073351	0.733506	1.3276	52	520	503.793103	0.203125	0.367303	1,197.10	603,092.93	1,589.28
CG_11	City Grid	3.5	7.25	25.375	0.176215	1.762152	1.3276	36	360	503.793103	0.704861	0.367303	1,197.10	603,092.93	1,589.28
CG_12	City Grid	6.75	7.25	48.9375	0.339844	3.398435	1.3276	103	1030	503.793103	0.475121	0.367303	1,197.10	603,092.93	1,589.28
CG_13	City Grid	4.75	5	23.75	0.16493	1.649304	1.3276	78	780	503.793103	0.304487	0.367303	1,197.10	603,092.93	1,589.28
CG_14	City Grid	7	9.25	64.75	0.449652	4.496525	1.3276	139	1390	503.793103	0.465827	0.367303	1,197.10	603,092.93	1,589.28
CG_15	City Grid	2.25	2.75	6.1875	0.042969	0.429687	1.3276	27	270	503.793103	0.229167	0.367303	1,197.10	603,092.93	1,589.28
CG_16	City Grid	6.875	4.75	32.65625	0.226779	2.267794	1.3276	65	650	503.793103	0.502404	0.367303	1,197.10	603,092.93	1,589.28
CG_17	City Grid	3	3.75	11.25	0.078125	0.781249	1.3276	30	300	503.793103	0.375	0.367303	1,197.10	603,092.93	1,589.28
CG_18	City Grid	4	3	12	0.083333	0.833333	1.3276	45	450	503.793103	0.266667	0.367303	1,197.10	603,092.93	1,589.28
CG_19	City Grid	2.875	2.25	6.46875	0.044922	0.449218	1.3276	18	180	503.793103	0.359375	0.367303	1,197.10	603,092.93	1,589.28
CG_20	City Grid	4	3.5	14	0.097222	0.972222	1.3276	46	460	503.793103	0.304348	0.367303	1,197.10	603,092.93	1,589.28
CG_21	City Grid	5.25	6.625	34.78125	0.241536	2.415363	1.3276	34	340	503.793103	1.022978	0.367303	1,197.10	603,092.93	1,589.28
CG_22	City Grid	1.75	1.25	2.1875	0.015191	0.15191	1.3276	10	100	503.793103	0.21875	0.367303	1,197.10	603,092.93	1,589.28
CG_23	City Grid	2.25	1.75	3.9375	0.027344	0.273437	1.3276	27	270	503.793103	0.145833	0.367303	1,197.10	603,092.93	1,589.28
CG_24	City Grid	6	6.75	40.5	0.28125	2.812498	1.3276	164	1640	503.793103	0.246951	0.367303	1,197.10	603,092.93	1,589.28
CG_25	City Grid	3	3.75	11.25	0.078125	0.781249	1.3276	35	350	503.793103	0.321429	0.367303	1,197.10	603,092.93	1,589.28
CG_26	City Grid	2.25	2	4.5	0.03125	0.3125	1.3276	24	240	503.793103	0.1875	0.367303	1,197.10	603,092.93	1,589.28
CG_27	City Grid	3.25	2.75	8.9375	0.062066	0.620659	1.3276	22	220	503.793103	0.40625	0.367303	1,197.10	603,092.93	1,589.28
CG_28	City Grid	3.25	3.25	10.5625	0.073351	0.733506	1.3276	27	270	503.793103	0.391204	0.367303	1,197.10	603,092.93	1,589.28
CG_29	City Grid	4	3.25	13	0.090278	0.902777	1.3276	44	440	503.793103	0.295455	0.367303	1,197.10	603,092.93	1,589.28
OP_01	Open Playa	5.5	7	38.5	0.267361	2.673609	0.531322	97	970	232.777778	0.396907	0.323538	1,457.81	339,346.12	774.567308
OP_02	Open Playa	3.875	3.25	12.59375	0.087457	0.874565	0.531322	23	230	232.777778	0.547554	0.323538	1,457.81	339,346.12	774.567308
OP_03	Open Playa	2.75	1.25	3.4375	0.023872	0.238715	0.531322	13	130	232.777778	0.264423	0.323538	1,457.81	339,346.12	774.567308
OP_04	Open Playa	5	3	15	0.104167	1.041666	0.531322	36	360	232.777778	0.416667	0.323538	1,457.81	339,346.12	774.567308
OP_05	Open Playa	1.75	1.25	2.1875	0.015191	0.15191	0.531322	19	190	232.777778	0.115132	0.323538	1,457.81	339,346.12	774.567308
OP_06	Open Playa	2.25	2.25	5.0625	0.035156	0.351562	0.531322	25	250	232.777778	0.2025	0.323538	1,457.81	339,346.12	774.567308
OP_07	Open Playa	2	2.5	5	0.034722	0.347222	0.531322	9	90	232.777778	0.555556	0.323538	1,457.81	339,346.12	774.567308
OP_08	Open Playa	2.25	2.75	6.1875	0.042969	0.429687	0.531322	21	210	232.777778	0.294643	0.323538	1,457.81	339,346.12	774.567308
OP_09	Open Playa	3.75	2.5	9.375	0.065104	0.651041	0.531322	18	180	232.777778	0.520833	0.323538	1,457.81	339,346.12	774.567308
OP_10	Open Playa	2	2	4	0.027778	0.277778	0.531322	10	100	232.777778	0.4	0.323538	1,457.81	339,346.12	774.567308
OP_11	Open Playa	2.25	2	4.5	0.03125	0.3125	0.531322	21	210	232.777778	0.214286	0.323538	1,457.81	339,346.12	774.567308
OP_12	Open Playa	0.75	4	3	0.020833	0.208333	0.531322	13	130	232.777778	0.230769	0.323538	1,457.81	339,346.12	774.567308
OP_13	Open Playa	0.5	2.5	1.25	0.008681	0.086805	0.531322	5	50	232.777778	0.25	0.323538	1,457.81	339,346.12	774.567308
OP_14	Open Playa	0.75	3.25	2.4375	0.016927	0.169271	0.531322	12	120	232.777778	0.203125	0.323538	1,457.81	339,346.12	774.567308
OP_15	Open Playa	2.25	2.5	5.625	0.039062	0.390625	0.531322	27	270	232.777778	0.208333	0.323538	1,457.81	339,346.12	774.567308
OP_16	Open Playa	4	1.75	7	0.048611	0.486111	0.531322	31	310	232.777778	0.225806	0.323538	1,457.81	339,346.12	774.567308
OP_17	Open Playa	3	1.75	5.25	0.036458	0.364583	0.531322	10	100	232.777778	0.525	0.323538	1,457.81	339,346.12	774.567308
OP_18	Open Playa	3.25	2.25	7.3125	0.050781	0.507812	0.531322	29	290	232.777778	0.252155	0.323538	1,457.81	339,346.12	774.567308
W_01	Walk-in Camping	1.75	1	1.75	0.012153	0.121528	0.345362	11	110	122.857143	0.159091	0.381098	362.701931	44,560.52	125.263464
W_02	Walk-in Camping	3	3.75	11.25	0.078125	0.781249	0.345362	17	170	122.857143	0.661765	0.381098	362.701931	44,560.52	125.263464
W_03	Walk-in Camping	0.75	1	0.75	0.005208	0.052083	0.345362	11	110	122.857143	0.068182	0.381098	362.701931	44,560.52	125.263464
W_04	Walk-in Camping	1.5	1.75	2.625	0.018229	0.182292	0.345362	9	90	122.857143	0.291667	0.381098	362.701931	44,560.52	125.263464
W_05	Walk-in Camping	4.625	2.5	11.5625	0.080295	0.802951	0.345362	24	240	122.857143	0.481771	0.381098	362.701931	44,560.52	125.263464
W_06	Walk-in Camping	1.75	2	3.5	0.024306	0.243055	0.345362	6	60	122.857143	0.583333	0.381098	362.701931	44,560.52	125.263464
W_07	Walk-in Camping	1.5	2.25	3.375	0.023437	0.234375	0.345362	8	80	122.857143	0.421875	0.381098	362.701931	44,560.52	125.263464
O_01	Other	0.5	0.5	0.25	0.001736	0.017361	0.278863	2	20	95	0.125	0.334325	585.887353	55,659.30	163.382305
O_02	Other	1.75	0.75	1.3125	0.009115	0.091146	0.278863	4	40	95	0.328125	0.334325	585.887353	55,659.30	163.382305
O_03	Other	0.75	0.75	0.5625	0.003906	0.039062	0.278863	2	20	95	0.28125	0.334325	585.887353	55,659.30	163.382305
O_04	Other	2	1.75	3.5	0.024306	0.243055	0.278863	12	120	95	0.291667	0.334325	585.887353	55,659.30	163.382305
O_05	Other	2.25	3	6.75	0.046875	0.46875	0.278863	16	160	95	0.421875	0.334325	585.887353	55,659.30	163.382305
O_06	Other	3.75	3.125	11.71875	0.08138	0.813802	0.278863	21	210	95	0.558036	0.334325	585.887353	55,659.30	163.382305
T_01_The_Man	Targeted	5	7.375	36.875	0.256076	2.560762	1.539532	83	830	433.333333	0.444277	0.489594	n/a	n/a	n/a
T_02_The_Temple	Targeted	7.25	6	43.5	0.302083	3.020831	1.539532	43	430	433.333333	1.011628	0.489594	n/a	n/a	n/a
T_03_Services	Targeted	4.125	5.875	24.234375	0.168294	1.682942	1.539532	61	610	433.333333	0.397285	0.489594	n/a	n/a	n/a
T_04_DPW	Targeted	1.875	2.75	5.15625	0.035807	0.358073	1.539532	22	220	433.333333	0.234375	0.489594	n/a	n/a	n/a
T_05_ICP	Targeted	1.75	3	5.25	0.036458	0.364583	1.539532	15	150	433.333333	0.35	0.489594	n/a	n/a	n/a
T_06_HEAT	Targeted	4.5	4	18	0.125	1.249999	1.539532	36	360	433.333333	0.5	0.489594	n/a	n/a	n/a

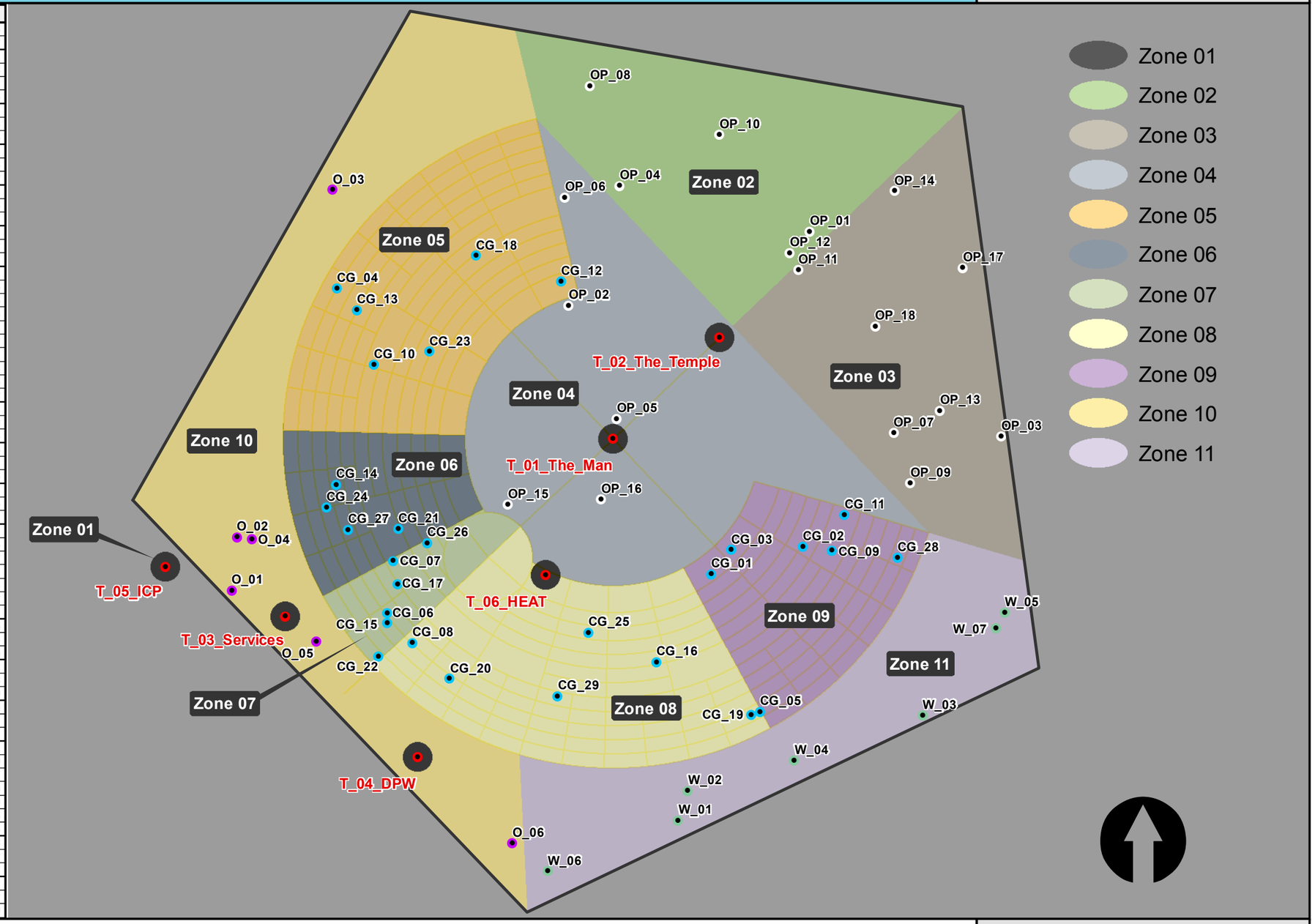
BLM NV, Winnemucca District Office

Burning Man 2015

Inspection Areas & Plot Locations

Figure 8

Zone	PlotName	Type	Longitude	Latitude	X-UTM	Y-UTM
Zone 01	T_01_The_Man	Targeted	-119.206446	40.786408	313829.9229	4517389.086
Zone 01	T_02_The_Temple	Targeted	-119.200069	40.791241	314381.4869	4517912.077
Zone 01	T_03_Services	Targeted	-119.226144	40.777786	312143.4988	4516473.911
Zone 01	T_04_DPW	Targeted	-119.217836	40.771446	312826.7866	4515752.258
Zone 01	T_05_ICP	Targeted	-119.233542	40.779958	311525.2947	4516730.86
Zone 01	T_06_HEAT	Targeted	-119.210328	40.780015	313484.4526	4516687.525
Zone 02	OP_01	Open Playa	-119.19473	40.796235	314845.8467	4518455.16
Zone 02	OP_04	Open Playa	-119.206401	40.798143	313866.5423	4518691.725
Zone 02	OP_08	Open Playa	-119.208364	40.802748	313713.7773	4519207.115
Zone 02	OP_10	Open Playa	-119.200384	40.800637	314381.1307	4518955.331
Zone 02	OP_12	Open Playa	-119.195931	40.795235	314741.717	4518346.673
Zone 03	OP_03	Open Playa	-119.182751	40.786962	315830.9227	4517400.547
Zone 03	OP_07	Open Playa	-119.189307	40.787016	315277.8343	4517470.301
Zone 03	OP_09	Open Playa	-119.188229	40.784699	315362.3791	4517160.835
Zone 03	OP_11	Open Playa	-119.195377	40.794457	314786.3374	4518259.2
Zone 03	OP_13	Open Playa	119.186529	40.788104	315515.239	4517535.25
Zone 03	OP_14	Open Playa	-119.18963	40.798209	315281.6353	4518663.582
Zone 03	OP_17	Open Playa	-119.185341	40.794731	315633.8334	4518268.461
Zone 03	OP_18	Open Playa	-119.190604	40.791941	315182.0865	4517969.772
Zone 04	OP_02	Open Playa	-119.209327	40.792522	313603.9527	4518073.946
Zone 04	OP_05	Open Playa	-119.206217	40.787344	313851.9034	4517492.446
Zone 04	OP_06	Open Playa	-119.209721	40.797542	313584.7743	4518632.053
Zone 04	OP_15	Open Playa	-119.212721	40.783223	313291.4895	4517048.851
Zone 04	OP_16	Open Playa	-119.207063	40.783579	313769.9985	4517076.322
Zone 05	CG_04	City Grid	-119.223489	40.793062	312410.583	4518164.114
Zone 05	CG_10	City Grid	-119.22111	40.789559	312601.3762	4517770.063
Zone 05	CG_12	City Grid	-119.209829	40.793641	313564.6774	4518199.256
Zone 05	CG_13	City Grid	-119.222264	40.792092	312511.188	4518053.792
Zone 05	CG_18	City Grid	-119.21508	40.794739	313124.7316	4518332.334
Zone 05	CG_23	City Grid	-119.217758	40.790229	312886.1612	4517837.329
Zone 06	CG_14	City Grid	-119.223245	40.783973	312405.5575	4517154.483
Zone 06	CG_21	City Grid	119.21939	40.781985	312725.2639	4516925.566
Zone 06	CG_24	City Grid	-119.223785	40.782895	312356.8998	4517036.04
Zone 06	CG_27	City Grid	-119.22243	40.781883	312468.4296	4516920.756
Zone 07	CG_06	City Grid	119.219909	40.778041	312670.3902	4516488.841
Zone 07	CG_07	City Grid	-119.219635	40.780485	312700.3709	4516759.605
Zone 07	CG_15	City Grid	-119.219929	40.777615	312667.506	4516441.59
Zone 07	CG_17	City Grid	119.219356	40.779407	312720.8672	4516639.32
Zone 07	CG_22	City Grid	-119.220395	40.776034	312623.6928	4516267.075
Zone 07	CG_26	City Grid	-119.217607	40.781359	312873.9478	4516852.327
Zone 08	CG_05	City Grid	-119.197032	40.773927	314589.6117	4515983.521
Zone 08	CG_08	City Grid	-119.218352	40.776705	312798.0525	4516337.163
Zone 08	CG_16	City Grid	-119.203427	40.776112	314055.9208	4516239.592
Zone 08	CG_19	City Grid	-119.197583	40.773779	314542.6312	4515968.281
Zone 08	CG_20	City Grid	-119.216017	40.775093	312990.5966	4516153.216
Zone 08	CG_25	City Grid	-119.20762	40.777404	313705.7011	4516391.953
Zone 08	CG_29	City Grid	-119.209397	40.774415	313547.3365	4516063.846
Zone 09	CG_01	City Grid	-119.200213	40.780241	314338.6947	4516691.232
Zone 09	CG_02	City Grid	-119.194673	40.781632	314810.0887	4516833.938
Zone 09	CG_03	City Grid	-119.19904	40.781386	314440.849	4516815.839
Zone 09	CG_09	City Grid	-119.192895	40.781473	314959.7043	4516812.516
Zone 09	CG_11	City Grid	-119.192192	40.783159	315023.6823	4516998.13
Zone 09	CG_28	City Grid	-119.188872	40.781232	315298.5059	4516777.21
Zone 10	O_01	Other	119.229448	40.778923	311867.8344	4516607.182
Zone 10	O_02	Other	-119.22922	40.781421	311894.1686	4516883.999
Zone 10	O_03	Other	-119.223928	40.797622	312386.3451	4518671.281
Zone 10	O_04	Other	-119.228301	40.781316	311971.4176	4516870.356
Zone 10	O_05	Other	-119.224206	40.77666	312303.823	4516344.679
Zone 10	O_06	Other	-119.211935	40.767543	313313.954	4515306.406
Zone 11	W_01	Walk-in Camping	-119.201861	40.768783	314167.6711	4515422.685
Zone 11	W_02	Walk-in Camping	-119.201315	40.770176	314217.6245	4515576.108
Zone 11	W_03	Walk-in Camping	-119.187096	40.773942	315428.1686	4515964.232
Zone 11	W_04	Walk-in Camping	-119.194867	40.771697	314766.1034	4515731.392
Zone 11	W_05	Walk-in Camping	-119.182253	40.778811	315850.3851	4516494.502
Zone 11	W_06	Walk-in Camping	-119.209751	40.766287	313494.7309	4515162.272
Zone 11	W_07	Walk-in Camping	-119.182746	40.778058	315806.6617	4516412.019



Author: Philip A. Clauss, GISP
Date: 1/26/2016
Time: 10:44:03 AM

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NATIONAL SYSTEM OF PUBLIC LANDS
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BUREAU OF LAND MANAGEMENT

1:22,500

0 0.25 0.5 1 1.5 2

Miles

Coordinate System: NAD 1983 UTM Zone 11N
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: -117.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

- Targeted
- City Grid
- Open Playa
- Walk-in Camping
- Other
- 2015 Pentagon

Figure 9

Photo: R Sears

Daubenmire Frame containing debris collected from a sample monitoring site. Each bag of MOOP is systematically placed inside a Daubenmire Frame and examined to determine the type of debris, number of items and surface area covered by the debris (in^2) for each of the 66 plots collected from the Post Event Inspection. All contents are measured, sorted and categorized for data analysis.

BURNING MAN

2016 POST EVENT INSPECTION REPORT

Compiled by:

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Introduction

A Post Event Inspection (PEI) is required following each Burning Man event per Stipulation #58 of the Black Rock City, LLC (BRC) 2016 Burning Man event Special Recreation Permit (SRP). Stipulation #58 specifically states,

> "Inspections of the event site, in the fall post event, will be coordinated by the BLM using randomly placed transects on the site and a measurable cleaning standard. The inspecting party will intensively collect debris found on the ground within each transect. A follow-up spring inspection will be conducted only when deemed necessary by the BLM. The Post Event Cleanup Standard shall be the average total surface area of debris collected from either the fall or spring transects will not exceed the equivalent of an average of one (1) square foot per acre from identified inspection areas."

This 2016 PEI report summarizes the BLM's findings following cleanup efforts by BRC's Playa Restoration Crew and includes collection protocol, calculations utilized, a discussion of the results and recommendations.

Background

Since 2000, BLM and BRC's Playa Restoration crew have closely coordinated conducting the PEI. However, over this 16 year time span, three updated inspection protocols have been used; 2000-2003, 2004-2012 and 2013 to present. The main objective of every cleanup inspection was and still is to determine if BRC's post event cleanup efforts of the Black Rock Desert playa, within the fenced perimeter of the event area, were successful and met the Cleanup Standards outlined the SRP. In 2016, Stipulation #57 stated,

> "BRC shall make personnel available immediately after the end of the post-event cleanup period and if deemed appropriate to determine any latent adverse impacts, such as pit depressions, bumps, depressions from roadways, ruts from vehicular traffic, or surfacing buried materials, to ensure that the site is returned to pre-event condition."

Additionally, Stipulation #60 states,

> "If cleanup studies indicate the Post Event Cleanup Standard has been or is likely to be exceeded, the permit will be suspended until the site has been cleaned up to a level not to exceed 50% of the standard and the Operations Plan includes reasonable measures to assure that the Post Event Cleanup Standard will not be exceeded during the life of the permit."

The 2016 PEI was conducted and completed by six BLM employees and approximately 37 of BRC's Playa Restoration Crew on Tuesday October 4, 2016. The small, micro-debris or Matter Out of Place (MOOP) collected at each monitoring site was sorted and recorded at the Winnemucca District Office on October 18-19, 2016. Geographic Information System (GIS) post-process mapping and analysis was completed for all monitoring sites on October 27, 2016.

PEI Protocol

The *BLM- Post-Event Inspection Protocol 2013* (attached) was utilized for the 2016 PEI. The following is a brief synopsis of the 2013 Protocol PEI.

Within the Burning Man event fenced perimeter of 3,642 acres, four Core Inspection Areas were delineated (Map 1). Within the Core Inspection Areas, 60 monitoring sites were randomly generated via ArcGIS program application and plotted for inspection. On-Playa, these monitoring site locations were staked with flags labeled with the site name. Per protocol, both random and Points of Interest* sites were measured at 1/10 of an acre using a 37' 2" rope affixed to the stake placed at the exact UTM locations. A full clockwise circle rotation by the team delineates the radius of 1/10 of an acre. Monitoring teams had a minimum of 3 people spaced no more than 10' apart along the rope and completed at least one zone or 5-8 sites. At each staked monitoring point, one person held the terminal end of the rope keeping the rope free of slack. This individual set the pace of movement to ensure the group worked at a consistent pace, maintaining full site coverage searching for and collecting MOOP. MOOP collected was placed in a gallon-size plastic bag labeled with: site and zone identifier and collection date.

* Results at Points of Interest sites are not included in the cumulative total average of MOOP collected from the Random sites and therefore will not be used to determine if the Cleanup Standards were met.

MOOP Sorting and Measuring

A total of 66 bags of MOOP were collected by BRC's Playa Restoration crew and BLM. At the Winnemucca District Office, MOOP was sorted and separated out and evenly spread across the 1' x 1' Daubenmire cover class frame and measured for length and width (in^2) to determine surface area coverage, Photos 1 and 2 of MOOP bag contents within a Daubenmire cover class frame.

- MOOP collected from each monitoring site within each Core Inspection Area was averaged, resulting in a total average, essentially, greater than or less than the Cleanup Standard of 1.0 ft^2/acre;

  (4.5 in.)(2.5 in.) = 11.25 in^2 (.006944 f^2) = .07812 f^2 (10 acre) = 0.78 f^2/acre - Example

- The number of MOOP items per monitoring site was extrapolated out to the entire acreage within each Core Inspection Area;

  Debris items per/acre were calculated as: # of items/0.10 ac. site X 10ac = # of items/acre.

- The average size (in^2) of MOOP was also recorded;

  Number of debris items per site or zone / Total in^2 of monitoring site debris.

Photo 1. WIC 2. 8"x 2"= 1.11 f^2/acre

Photo 2. HEaT. 4.75" x 2" = 0.66 f^2/acre

Random Site Selection:

According to the 2016 Burning Man event SRP Stipulations, only random generated monitoring sites were analyzed in determining whether PEI Cleanup Standards were met (Map 2). Sixty random monitoring sites were sampled; **City Grid** (1,197 acres with 29 sites), **Walk-in-Camping** (365 acres with 7 sites), **Open Playa** (1,451 acres with 18 sites) and **Other** (629 acres with 6 sites), Table 1.

CORE Inspection Area	*Number of Monitoring Points*	*Monitoring Zones*
City Grid Main area designated for camping; The City	29	Zones 4-8
Walk-in-Camping Camping area where no motorized vehicles are allowed	7	Zone 10
Open Playa Area east of The City Grid, Other and Walk-in-Camping	18	Zones 1-3
Other Area west of The City Grid, Playa and Walk-in-Camping	6	Zone 9

Table 1. Core Inspection Areas, Assoc. Zones and monitoring points per Zone

Points of Interest Inspection Sites:

Since 2013, six Points of Interest sites (Map 3) have been targeted for monitoring via the same monitoring protocol as the random site because site-specific data is helpful determining potential issues associated with the high traffic volume these areas generate, Table 2. All Points of Interest are surveyed by BLM and BRC Playa Restoration Crew Leads.

Name	*Justification*	*Northing (UTM)*	*Easting (UTM)*
The Man	The large-scale construction effort, frequency of visitation and structure burn	4515467	3142064
The Temple	The large-scale construction effort, frequency of visitation and structure burn	4515695	3128005
United Site Services (USS)	This area receives a high degree of traffic with large amounts of grey and black water	4515293	3136882
Dept. of Public Works (DPW)	The level of use and population density of this area during the event	4514982	3133975
Joint Operations Command (JOC)	The level of use and population density of this area during the event	4515366	3134836
Heavy Equipment and Transportation (HEaT)	The use and storage of Heavy Equipment and Transportation items in this area	4515744	3128203

Table 2. Points of Interest and locations

Core Inspection Area Results

MOOP collected from each monitoring site within each Core Inspection Area was averaged, resulting in a total average (Map 4). The number of MOOP items per monitoring site is extrapolated out to the entire acreage within each Core Inspection Area. The average size (inches^2) of MOOP is also recorded.

City Grid Core Inspection Area (1,197 acres)

City Grid Summary			
Year	**Debris Area (ft^2/ac)**	**# of Items/acre**	**Item Size (in^2)**
	Average Area	Average	Average Size
2006	0.298	185	0.25
2007	0.392	202	0.33
2008	0.596	416	0.22
2009	0.514	275	0.37
2010	0.505	237	0.33
2011	0.735	304	0.35
2012	0.532	160	0.48
2013	0.527	186	0.4
2014	0.59	289	0.29
2015	**1.33**	504	0.37
2016	**1.25**	557	0.36

Table 3. City Grid Core Inspection Area 2006-2016 comparison

City Grid Core Inspection Area Summary:

In 2016, PEI results show that 29 monitoring sites within City Grid had an average of 1.25 ft²/acre of MOOP or 0.25 ft²/acre above the Cleanup Standard. Thus, the City Grid Core Inspection Area exceeded the average allowable debris per the 2016 SRP Cleanup.

- 14 of the 29 City Grid monitoring sites exceeded the Cleanup Standard.
- The average number of MOOP extrapolated per acre in City Grid was 557 (Table 3.)
- The average size of each item of debris was 0.36 in^2

Walk-in Camping Core Inspection Area (365 acres)

Walk-in-Camping			
Year	Debris Area (ft^2/ac)	# of Items/acre	Item Size (in^2)
	Average Area	Average Count	Average Size
2006	0.147	32	0.25
2007	0.145	84	0.25
2008	0.278	46	0.87
2009	0.242	56	0.58
2010	0.26	63	0.61
2011	0.127	50	0.41
2012	0.124	33	0.55
2013	0.124	38	0.46
2014	0.38	149	0.37
2015	0.35	123	0.38
2016	0.50	113	0.80

Table 4. Walk-In Camping Core Inspection Area 2006-2016 comparison

Walk-in Camping Core Inspection Area Summary:

In 2016, PEI results showed that seven monitoring sites within the Walk-in Camping had an average of 0.50 ft^2/acre of MOOP. Thus, the cleanup effort within Walk-in Camping Core Inspection Area did meet the 2016 SRP Cleanup Standard.

- Six out of seven monitoring sites were measured below the Cleanup Standard.
- The average size of each item of debris was 0.80 in^2
- The average number of MOOP extrapolated per acre in Walk-in Camping was 113 which is trending down since 2014 (Table 4)

Open Playa Core Inspection Area (1,451 acres)

Open Playa			
Year	Debris Area (ft^2/ac)	# of Items/acre	Item Size (in^2)
	Average Area	Average Count	Average Size
2006	0.194	91	0.36
2007	0.417	181	0.45
2008	0.291	111	0.25
2009	0.396	159	0.4
2010	0.306	96	0.48
2011	0.398	194	0.35
2012	0.273	144	0.27
2013	0.53	96.6	0.79
2014	0.389	168	0.33
2015	0.53	233	0.32
2016	0.92	242	0.57

Table 5. Open Playa Core Inspection Area 2006-2016 comparison

Open Playa Core Inspection Area Summary:

In 2016, PEI results showed that seven monitoring sites within the Open Playa had an average of 0.92 ft^2/acre of MOOP. The cleanup effort within the Open Playa Core Inspection Area did meet the average allowable debris per 2016 SRP Cleanup Standard.

- Thirteen out of eighteen monitoring sites were measured below the Cleanup Standard.
- The average size of each item of debris was 0.57 in^2
- The average number of MOOP extrapolated per acre in Open Playa was 242, which is trending higher since 2013 (Table 5)

Other Core Inspection Area (629 acres)

Year	Other		
	Debris Area (ft^2/ac)	# of Items/acre	Item Size (in^2)
	Average Count	Average Count	Average Count
2006	0.071	34	0.34
2007	0.113	68	0.25
2008	0.159	40	0.22
2009	0.08	23	0.53
2010	0.359	109	0.58
2011	0.454	140	0.58
2012	0.112	69	0.23
2013	0.04	20	0.66
2014	0.315	75	0.61
2015	0.28	95	0.33
2016	0.41	120	0.57

Table 6 Other Core Inspection Area 2006-2016 comparison

Other Core Inspection Area Summary:

In 2016, PEI results showed that seven monitoring sites within the Other had an average of 0.41 ft^2/acre of MOOP. The Other Core Inspection Area did meet the 2016 SRP Cleanup Standard of 1.0 ft^2/acre.

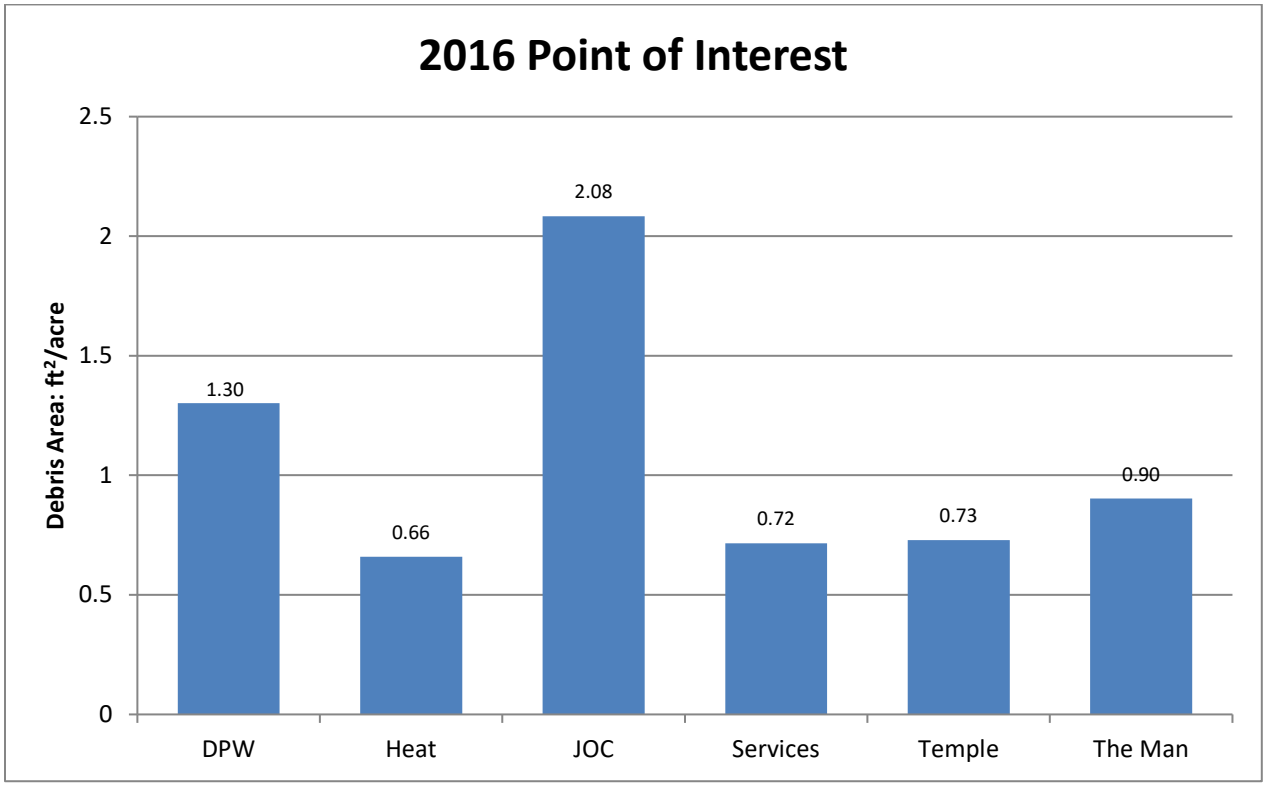
- All six monitoring sites were measured below the Cleanup Standard.
- The average size of each item of debris was 0.41 $inch^2$
- The average number of MOOP extrapolated per acre in Open Playa was 120, which is trending higher since 2013 (Table 6)

Points of Interest Inspection Site Results

MOOP collected from each Point of Interest monitoring site (Table 7) is the total used for calculation and to determine whether cleanup efforts measured greater than or less than the Cleanup Standard.* The number of MOOP items per monitoring site is extrapolated out to the entire acreage within each Point of Interest. The average size (in^2) of MOOP is also recorded.

*The data collected at Points of Interest sites will not be included in the average total surface area of MOOP collected from the Random Sites, thus will not be used to determine if the cleanup standard has been met.

Chart 1: Point of Interest monitoring results



Point of Interest Inspection Sites Summary:

This was the 4th year of recording targeted monitoring at the six Points of Interest. In 2016, PEI results showed that the two of the six Points of Interest monitoring sites exceeded the 2016 SRP Cleanup Standard of 1.0 ft²/acre. The JOC was measured at 2.08 ft²/acre and DPW was measured at 1.3 ft²/. Although not a factor in determining overall success of the 2016 PEI the cumulative average of the six Points of Interest was 1.07 ft²/acre, Table 7.

Year	Debris Area (ft^2/ac)	# of Items/acre	Item Size (in^2)
	Cumulative Average Count	Average Count	Average Count
2013	3.27	197	0.62
2014	2.64	706	0.54
2015	1.54	433	0.51
2016	1.07	545	0.31

Table 7. 2016 Point of Interest monitoring site MOOP ft^2/acre

PEI Discussion

CORE Inspection Areas

Three out of four Core Inspection Areas met the 2016 Burning Man event SRP Cleanup Standards.

Plainly, Walk-in Camping and Other Core Inspection Areas generally have lighter participant foot and vehicle traffic as opposed to City Grid and Open Playa Core Inspection Areas which both sustain heavy concentration of foot and vehicle traffic. Both Walk-in Camping and Other Core monitoring sites consistently fall below Cleanup Standards. Chart 2 (below) MOOP average per year and associated paid population levels for the past 11 years.

Results show that BRC's Playa Restoration Crew does locate and collect larger MOOP objects from the City Grid suggesting that more time, equipment and/or personnel is dedicated to that area. However, in both 2015 and 2016 the average amount of MOOP within the City Grid exceeded the allowable Cleanup Standard of $1ft^2$/acre. The Open Playa Inspection Area average of 0.92 ft^2/acre is trending toward impermissible Standards and should be an area of concern for the 2017 Playa Restoration Crew and BRC in general.

Excluding the Other Inspection Area, Walk-In Camping, City Grid and Open Playa had at least one random Monitoring Site exceeding the Cleanup Standard of 1 ft^2/acre. A total of 20 out of 60 random Monitoring Sites exceeded the Cleanup Standard, Table 8. The exact UTM locations for each monitoring site exceeding Cleanup Standards are listed on Table 9.

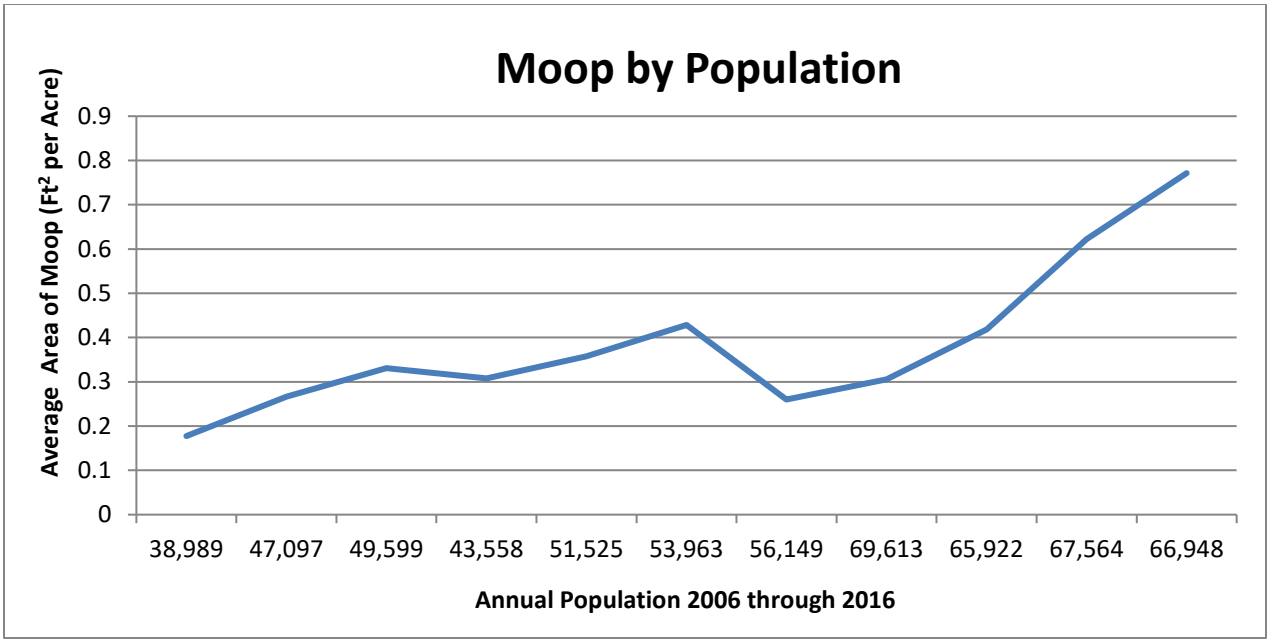


Chart 2: Population and amount of debris per year

Point of Interest Inspection Sites

The JOC was measured at 2.08 ft²/acre and DPW was measured at 1.3 ft²/acre, both above the Cleanup Standard of 1 ft²/acre, respectively. The cumulative average of the six Points of Interest was 1.07 ft²/acre.

The JOC monitoring point was measured at the exact spot where a double-wide trailer had been set. Upon disassembly of the two trailers, the joint putty glue was scraped from the trailer edges causing a mass scatter of hardened glue debris left on-site. This debris field highly contributed to the amount of MOOP collected.

DPW is an expansive "camp" where BRC conducts event operations which is consistent with the debris found; wood splinters, metal screws/nails, paper, plastic and glass shards.

The Temple had a lesser amount of debris than The Man in 2016. MOOP found at the Man included decomposed granite (DG), metal screws, plastic and wood particles. DG is generally not counted as MOOP unless the size of the DG found is roughly larger than a golf ball.

HEaT and USS had the lowest MOOP collection totals suggesting that the HEaT and USS teams did a considerate amount of MOOP cleanup prior to the Playa Restoration Crew.

Conclusion

The 2016 Burning Man event PEI concludes that cumulatively across all four Core Inspection Areas, BRC's Playa Restoration crew was successful in meeting the 2016 Burning Man SRP Cleanup Standard of less than 1.0 ft²/acre with an average Core Inspection Area measurement of

0.77 ft²/acre. Current cleanup efforts and protocol are adequate for keeping up with the cumulative amount of MOOP associated with the event however cleanup efforts and protocol may need to be revisited for efficacy as total event population's increase over time.

City Grid-	1.25 ft²/acre
Walk-in Camping-	.50 ft²/acre
Open Playa-	.92 ft²/acre
Other-	.41 ft²/acre
Total Average	3.08/4 = **0.77 ft²/acre**

Recommendations

Following the 2016 Burning Man event PEI, the following are identified recommendations:

- BLM should revise the 2013 PEI Protocol to add calculation formulas and GIS protocols.
- BLM/BRC should continue to monitor all six Points of Interest Monitoring Sites
- BLM should continue to document annual PEI efforts through data sheets and GIS database retention of all monitoring data collected.
- BRC could explore the integration, compatibility and testing of the Fulcrum application, which BRC utilizes for Environmental Compliance purposes, for future PEI's.
- BRC should continue supporting and promoting the Playa Restoration Crew efforts.
- BRC should continue to educate participants in the ethos of Leave No Trace® and intensify *Pack it In, Pack it Out* communications. Camps, both large and small, leaving large, bulky items and piles of trash following exodus dramatically impacts the amount of time and coverage the Playa Restoration Crew has to address micro-debris.
- BLM/BRC should ensure that Contractor's and Vendor's working the event are made aware of the Leave No Trace® policy.
- BLM recommends that BRC conduct a Spring 2017 cleanup effort at the monitoring sites and Points of Interest that exceeded the Cleanup Standard of 1 ft²/acre in Fall 2016.
- BLM/BRC should determine whether the Points of Interest monitoring sites should be included for Environmental Compliance Monitoring during the event.

Attachments:

BLM- Post-Event Inspection Protocol 2013

Core Area	Plot	Core Area Acres	Length x(in)	Length y(in)	Size (in²)	Size (ft²)	Square Feet Per Acre	Avg Size (ft²)/acre	# of Items	# of Items Per Acre	Avg # of Items Per Acre	Debris Size	Avg Debris Size (in²)	Avg # Items/Core Area (acreage)	Avg Size (ft2)/Core Area (acreage)
City Grid	CG_10		5.00	2.50	12.50	0.09	0.87		29.00	290		0.43			
City Grid	CG_12		7.50	3.50	26.25	0.18	1.82		88.00	880		0.30			
City Grid	CG_13		5.50	2.00	11.00	0.08	0.76		30.00	300		0.37			
City Grid	CG_14		8.00	5.00	40.00	0.28	2.78		106.00	1,060		0.38			
City Grid	CG_15		2.50	1.00	2.50	0.02	0.17		15.00	150		0.17			
City Grid	CG_16		3.50	2.50	8.75	0.06	0.61		20.00	200		0.44			
City Grid	CG_17		6.50	1.50	9.75	0.07	0.68		41.00	410		0.24			
City Grid	CG_18		9.50	2.00	19.00	0.13	1.32		36.00	360		0.53			
City Grid	CG_21		3.50	1.50	5.25	0.04	0.36		11.00	110		0.48			
City Grid	CG_23		5.50	2.25	12.38	0.09	0.86		41.00	410		0.30			
City Grid	CG_24		12.00	3.25	39.00	0.27	2.71		113.00	1,130		0.35			
City Grid	CG_27		5.50	2.43	13.37	0.09	0.93		38.00	380		0.35			
City Grid	CG_28		5.50	2.25	12.38	0.09	0.86		72.00	720		0.17			
City Grid	CG_29		8.00	2.50	20.00	0.14	1.39		111.00	1,110		0.18			
City Grid	CG_30	1,197.02	8.00	2.00	16.00	0.11	1.11	1.25	78.00	780	556.90	0.21	0.36	666,615.20	1496.60
City Grid	CG_31		10.00	3.50	35.00	0.24	2.43		135.00	1,350		0.26			
City Grid	CG_32		6.00	3.75	22.50	0.16	1.56		73.00	730		0.31			
City Grid	CG_33		6.00	3.50	21.00	0.15	1.46		33.00	330		0.64			
City Grid	CG_34		5.25	3.00	15.75	0.11	1.09		65.00	650		0.24			
City Grid	CG_35		12.00	3.50	42.00	0.29	2.92		151.00	1,510		0.28			
City Grid	CG_37		3.50	1.50	5.25	0.04	0.36		14.00	140		0.38			
City Grid	CG_41		10.00	1.00	10.00	0.07	0.69		25.00	250		0.40			
City Grid	CG_48		4.50	2.50	11.25	0.08	0.78		37.00	370		0.30			
City Grid	CG_50		8.50	4.50	38.25	0.27	2.66		46.00	460		0.83			
City Grid	CG_54		4.50	2.50	11.25	0.08	0.78		33.00	330		0.34			
City Grid	CG_56		5.50	2.50	13.75	0.10	0.95		29.00	290		0.47			
City Grid	CG_57		6.25	4.00	25.00	0.17	1.74		94.00	940		0.27			
City Grid	CG_59		5.00	3.00	15.00	0.10	1.04		24.00	240		0.63			
City Grid	CG_9		4.00	2.00	8.00	0.06	0.56		27.00	270		0.30			
Open Playa	OP_36		4.50	2.50	11.25	0.08	0.78		35.00	350		0.32			
Open Playa	OP_38		3.25	2.50	8.13	0.06	0.56		18.00	180		0.45			
Open Playa	OP_39		5.75	3.50	20.13	0.14	1.40		36.00	360		0.56			
Open Playa	OP_40		3.50	2.75	9.63	0.07	0.67		32.00	320		0.30			
Open Playa	OP_43		4.00	1.00	4.00	0.03	0.28		10.00	100		0.40			
Open Playa	OP_47		2.25	3.50	7.88	0.05	0.55		13.00	130		0.61			
Open Playa	OP_49		3.50	2.00	7.00	0.05	0.49		21.00	210		0.33			
Open Playa	OP_52		7.00	2.50	17.50	0.12	1.22		45.00	450		0.39			
Open Playa	OP_53	1,451.28	4.00	2.25	9.00	0.06	0.62	0.92	14.00	140	242	0.64	0.57	350,724.79	1337.47
Open Playa	OP_55		2.00	1.50	3.00	0.02	0.21		8.00	80		0.38			
Open Playa	OP_58		5.50	2.75	15.13	0.11	1.05		20.00	200		0.76			
Open Playa	OP_60		1.38	2.00	2.75	0.02	0.19		10.00	100		0.28			
Open Playa	OP_61		2.50	1.50	3.75	0.03	0.26		12.00	120		0.31			
Open Playa	OP_62		4.50	1.75	7.88	0.05	0.55		16.00	160		0.49			
Open Playa	OP_63		5.50	9.75	53.63	0.37	3.72		100.00	1,000		0.54			
Open Playa	OP_64		3.50	1.50	5.25	0.04	0.36		16.00	160		0.33			
Open Playa	OP_65		2.50	2.00	5.00	0.03	0.35		12.00	120		0.42			
Open Playa	OP_66		12.00	4.00	48.00	0.33	3.33		17.00	170		2.82			
Other	Other_11		3.25	1.50	4.88	0.03	0.34		19.00	190		0.26			
Other	Other_22		12.00	1.00	12.00	0.08	0.83		10.00	100		1.20			
Other	Other_42	629.15	3.50	2.50	8.75	0.06	0.61	0.41	7.00	70	120	1.25	0.57	75,498.52	260.33
Other	Other_46		1.50	1.00	1.50	0.01	0.10		5.00	50		0.30			
Other	Other_5		4.50	1.75	7.88	0.05	0.55		25.00	250		0.32			
Other	Other_7		1.50	0.50	0.75	0.01	0.05		6.00	60		0.13			
Walk-In Camping	WIC_1		4.50	2.00	9.00	0.06	0.62		14.00	140		0.64			
Walk-In Camping	WIC_19		4.00	1.50	6.00	0.04	0.42		6.00	60		1.00			
Walk-In Camping	WIC_2		8.00	2.00	16.00	0.11	1.11		27.00	270		0.59			
Walk-In Camping	WIC_26	365.29	2.40	1.00	2.40	0.02	0.17	0.50	9.00	90	113	0.27	0.80	41,225.15	182.64
Walk-In Camping	WIC_3		5.50	2.00	11.00	0.08	0.76		18.00	180		0.61			
Walk-In Camping	WIC_4		3.00	1.00	3.00	0.02	0.21		3.00	30		1.00			
Walk-In Camping	WIC_8		3.00	1.00	3.00	0.02	0.21		2.00	20		1.50			
Targeted	DPW_6		7.50	2.50	18.75	0.13	1.30		68.00	680		0.28			
Targeted	Hea_67		4.75	2.00	9.50	0.07	0.66		31.00	310		0.31			
Targeted	JOC_25	N/A	8.00	3.75	30.00	0.21	2.08	N/A	110.00	1,100	N/A	0.27	0.31	N/A	N/A
Targeted	Srvcs_20		8.25	1.25	10.31	0.07	0.72		47.00	470		0.22			
Targeted	Temple_51		5.25	2.00	10.50	0.07	0.73		49.00	490		0.21			
Targeted	The Man_44		6.50	2.00	13.00	0.09	0.90		22.00	220		0.59			

Table 8. Burning Man 2016 PEI Monitoring Site Results

Plot Name	Type	Ft^2 Per Acre	Northing	Easting
CG_13	City Grid	1.82	4516153	312991
CG_15	City Grid	2.78	4516267	312624
CG_21	City Grid	1.32	4516489	312670
CG_27	City Grid	2.71	4516760	312700
CG_30	City Grid	1.39	4516816	314441
CG_31	City Grid	1.11	4516834	314810
CG_32	City Grid	2.43	4516852	312874
CG_33	City Grid	1.56	4516921	312468
CG_34	City Grid	1.46	4516926	312725
CG_35	City Grid	1.09	4516998	315024
CG_37	City Grid	2.92	4517036	312357
CG_54	City Grid	2.66	4518054	312511
CG_59	City Grid	1.74	4518332	313125
CG_9	City Grid	1.04	4515968	314543
OP_39	Open Playa	1.40	4517138	314480
OP_52	Open Playa	1.22	4517996	314601
OP_58	Open Playa	1.05	4518299	314937
OP_63	Open Playa	3.72	4518704	313924
OP_66	Open Playa	3.33	4519098	314587
WIC_19	Walk-In Camping	1.11	4516465	315831
DPW_6	DPW	1.30	4516467	312133
JOC_25	JOC	2.08	4517388	313825

Table 9. Burning Man 2016 PEI Monitoring Site UTM's (Exceeding Standards)

BURNING MAN

2017 POST EVENT INSPECTION REPORT

Compiled by:

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Introduction

A Post Event Inspection (PEI) is required following each Burning Man event per Stipulation #59 of the Black Rock City, LLC (BRC) 2017 Burning Man event Special Recreation Permit (SRP), which states:

> "Inspections of the event site, in the fall post event, will be coordinated by the BLM using randomly placed transects on the site and a measurable cleaning standard. The inspecting party will intensively collect debris found on the ground within each transect. A follow-up spring inspection will be conducted only when deemed necessary by the BLM. The Post Event Cleanup Standard shall be the average total surface area of debris collected from either the fall or spring transects will not exceed the equivalent of an average of one (1) square foot per acre from identified inspection areas."

This 2017 PEI report summarizes the BLM's findings following cleanup efforts by BRC's Playa Restoration Crew and includes collection protocol, calculations utilized, a discussion of the results and recommendations.

Background

Since 2000, BLM and BRC's Playa Restoration crew have closely coordinated conducting the PEI. However, over this 17 year time span, three updated inspection protocols have been used; 2000-2003, 2004-2012 and 2013 to present. The main objective of every cleanup inspection was, and still is, to determine if BRC's post event cleanup efforts of the Black Rock Desert playa, within the fenced perimeter of the event area, were successful and met the Cleanup Standards outlined the SRP. In 2017, Stipulation #58 states:

> "BRC shall make personnel available immediately after the end of the post-event cleanup period and if deemed appropriate to determine any latent adverse impacts, such as pit depressions, bumps, depressions from roadways, ruts from vehicular traffic, or surfacing buried materials, to ensure that the site is returned to pre-event condition."

Additionally, Stipulation #61 states,

> "If cleanup studies indicate the Post Event Cleanup Standard has been or is likely to be exceeded, the permit will be suspended until the site has been cleaned up to a level not to exceed 50% of the standard and the Operations Plan includes reasonable measures to assure that the Post Event Cleanup Standard will not be exceeded during the life of the permit."

The 2017 PEI was conducted and completed by six BLM employees and approximately 65 of BRC's Playa Restoration Crew on Monday October 2, 2017. The small, micro-debris or Matter Out of Place (MOOP) collected at each monitoring site was sorted and recorded at the Winnemucca District Office on October 3-4, 2017. Geographic Information System (GIS) post-process mapping and analysis was completed for all monitoring sites on October 06, 2017.

PEI Protocol

The *BLM- Post-Event Inspection Protocol 2013* (attached) was utilized for the 2017 PEI. The following is a brief synopsis of the 2017 PEI methodology.

Within the Burning Man event fenced perimeter of 3,633 acres 60 monitoring sites were randomly generated and plotted via ArcGIS program application. The event area was divided into four Core Inspection Areas: Open Playa (1,468 acres), City Grid (1,207 acres), Other (607 acres), and Walk-in-Camping (351 acres) (Map 1). In addition to the 60 monitoring sites, 6 Points of Interest (POI) sites were selected: The Man, Temple, USS, JOC, Depot, and HeAT. The targeted sites and Core Inspection Areas were divided into 10 monitoring zones. On Playa these monitoring site locations were staked with flags labeled with the site name.

Per protocol, both random and POI[1] sites were measured at 1/10 of an acre using a 37' 2" rope affixed to the stake placed at the exact UTM locations. A full clockwise or counter clockwise circle rotation by the team delineates the radius of 1/10 of an acre. Monitoring teams had a minimum of 3 people spaced no more than 10' apart along the rope and completed at least one zone or 5-8 sites. At each staked monitoring point, one person held the terminal end of the rope keeping the rope free of slack. This individual set the pace of movement to ensure the group worked at a consistent pace, maintaining full site coverage searching for and collecting MOOP. MOOP collected was placed in a quart-size plastic bag labeled with: site, zone identifier, UTM coordinates.

MOOP Sorting and Measuring

A total of 66 bags of MOOP were collected by BRC's Playa Restoration crew,BLM, and when available, BLM volunteers. At the Winnemucca District Office, MOOP was sorted and separated out and evenly spread across the 1' x 1' Daubenmire cover class frame and measured for length and width (in^2) to determine surface area coverage (see Photos 1 and 2 of MOOP bag contents within a Daubenmire cover class frame).

MOOP collected from each monitoring site within each Core Inspection Area was averaged, resulting in a total average, essentially, greater than or less than the Cleanup Standard of 1.0 ft^2/acre.

Photo 1 Example:
(8.25 in.)(7.25 in.) = 59.81 in^2 (.006944 f^2) = .415338 f^2 (10 acre) = 4.15 f^2/acre –

The number of MOOP items per monitoring site was extrapolated out to the entire acreage within each Core Inspection Area.

[1] Results at POI sites are not included in the cumulative total average of MOOP collected from the Random sites and therefore will not be used to determine if the Cleanup Standards were met.

Photo 1 Example: (92 items) x 10 = 920 items per acre

Item size of MOOP was estimated by dividing the area of the monitoring site (in^2) by the number of debris (MOOP) items per site.

Photo 1 Example: $59.81in^2$ / 92 items ≈$1.54in^2$ per item.

Photo 1. CG_23 8.25"x 7.25"= 4.15 f^2/acre

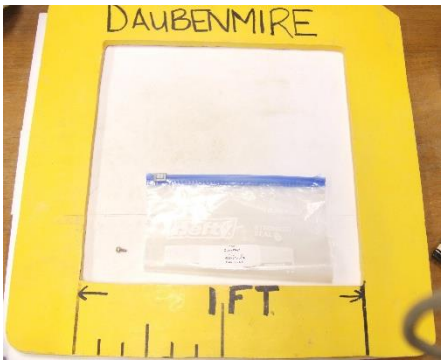


Photo 2. OP_04 0.38" x 0.25" = 0.007 f^2/acre

Random Site Selection:

According to the 2017 Burning Man event SRP Stipulations, only random generated monitoring sites were analyzed in determining whether PEI Cleanup Standards were met (Map 2).

CORE Inspection Area	*Number of Monitoring Points*	*Monitoring Zones*
Open Playa Area east of The City Grid, Other and Walk-in-Camping 1,468 acres	23	Zones 2-3
City Grid Main area designated for camping; The City 1,207 acres	23	Zones 5-8
Other Area west of The City Grid, Playa and Walk-in-Camping	10	Zone 9
Walk-in-Camping Camping area where no motorized vehicles are allowed	4	Zone 10

Table 1. Core Inspection Areas, Assoc. Zones and monitoring points per Zone

Points of Interest Sites:

Since 2013, six POI sites (Map 3) have been targeted for monitoring via the same monitoring protocol as the random site because site-specific data is helpful determining potential issues

associated with the high traffic volume these areas generate. All POI are surveyed by BLM and BRC Playa Restoration Crew Leads.

Name	*Justification*	*Northing (UTM)*	*Easting (UTM)*
The Man	The large-scale construction effort, frequency of visitation and structure burn	4517411	313817
The Temple	The large-scale construction effort, frequency of visitation and structure burn	4517937	314369
United Site Services (USS)	This area receives a high degree of traffic with large amounts of grey and black water	4516489	312133
Dept. of Public Works (DPW)	The level of use and population density of this area during the event	4515744	312820
Joint Operations Command (JOC)	The level of use and population density of this area during the event	4516990	311405
Heavy Equipment and Transportation (HEaT)	The use and storage of Heavy Equipment and Transportation items in this area	4516685	313417

Table 2. Points of Interest and locations

Results

Core Inspection Area Results

MOOP collected from each monitoring site within each Core Inspection Area was averaged, resulting in a total average (Map 4). The number of MOOP items per monitoring site is extrapolated out to the entire acreage within each Core Inspection Area. The estimated average size (inches^2) of MOOP is also recorded.

Open Playa Core Inspection Area Summary

Open Playa (1,468 acres)			
Year	**Debris Area (ft^2/ac) (Average Area)**	**# of Items/acre (Average Count)**	**≈ Item Size (in^2) (Average Size)**
2006	0.194	91	0.36

Open Playa (1,468 acres)			
Year	**Debris Area (ft^2/ac) (Average Area)**	**# of Items/acre (Average Count)**	**≈ Item Size (in^2) (Average Size)**
2007	0.417	181	0.45
2008	0.291	111	0.25
2009	0.396	159	0.4
2010	0.306	96	0.48
2011	0.398	194	0.35
2012	0.273	144	0.27
2013	0.53	96.6	0.79
2014	0.389	168	0.33
2015	0.53	233	0.32
2016	0.92	242	0.57
2017	0.38	105	0.43

Table 3. Open Playa Core Inspection Area 2006-2017 comparison

In 2017, PEI results showed that 23 monitoring sites within the Open Playa had an average of 0.38 ft^2/acre of MOOP. The cleanup effort within the Open Playa Core Inspection Area did meet the average allowable debris per 2017 SRP Cleanup Standard of 1.0 ft^2/acre.

- Two out of 23 monitoring sites were measured below the Cleanup Standard.
- The average estimated size of each item of debris was 0.43 in^2
- The average number of MOOP extrapolated per acre in Open Playa was 105, which is lower than last year (Table 3).

City Grid Core Inspection Area Summary

City Grid Summary (1,207 acres)			
Year	**Debris Area (ft2/ac) (Average Area)**	**# of Items/acre (Average Count)**	**≈ Item Size (in2) (Average Size)**
2006	0.298	185	0.25
2007	0.392	202	0.33
2008	0.596	416	0.22
2009	0.514	275	0.37
2010	0.505	237	0.33

City Grid Summary (1,207 acres)			
Year	Debris Area (ft2/ac) (Average Area)	# of Items/acre (Average Count)	≈ Item Size (in2) (Average Size)
2011	0.735	304	0.35
2012	0.532	160	0.48
2013	0.527	186	0.4
2014	0.59	289	0.29
2015	**1.33**	504	0.37
2016	**1.25**	557	0.36
2017	0.65	205	0.44

Table 4. City Grid Core Inspection Area 2006-2017 comparison

In 2017, PEI results show that 23 monitoring sites within City Grid had an average of 0.65 ft²/acre of MOOP. Thus, the City Grid Core Inspection Area did meet the 2017 SRP Clean Up standard of 1.0 ft²/acre.

- 3 of the 23 City Grid monitoring sites exceeded the Cleanup Standard.
- The average number of MOOP extrapolated per acre in City Grid was 205 (Table 4).
- The average estimated size of each item of debris was 0.44 in^2

Other Core Inspection Area Summary

Year	Other (607 acres)		
	Debris Area (ft^2/ac) (Average Area)	# of Items/acre (Average Count)	≈ Item Size (in^2) (Average Size)
2006	0.071	34	0.34
2007	0.113	68	0.25
2008	0.159	40	0.22
2009	0.08	23	0.53
2010	0.359	109	0.58
2011	0.454	140	0.58
2012	0.112	69	0.23
2013	0.04	20	0.66
2014	0.315	75	0.61

Year	Other (607 acres)		
	Debris Area (ft^2/ac) (Average Area)	# of Items/acre (Average Count)	≈ Item Size (in^2) (Average Size)
2015	0.28	95	0.33
2016	0.41	120	0.57
2017	0.25	33	2.22

Table 5 Other Core Inspection Area 2006-2016 comparison

In 2017, PEI results showed that 10 monitoring sites within the Other had an average of 0.25 ft^2/acre of MOOP. The Other Core Inspection Area did meet the 2017 SRP Cleanup Standard of 1.0 ft^2/acre.

- All 10 monitoring sites were measured below the Cleanup Standard.
- The average estimated size of each item of debris was 2.22 $inch^2$.
- The average number of MOOP extrapolated per acre in Other area was 33, which is less than last year (Table 5).

Walk-in Camping Core Inspection Area Summary

Walk-in-Camping (351 acres)			
Year	Debris Area (ft^2/ac) (Average Area)	# of Items/acre (Average Count)	≈ Item Size (in^2) (Average Size)
2006	0.147	32	0.25
2007	0.145	84	0.25
2008	0.278	46	0.87
2009	0.242	56	0.58
2010	0.26	63	0.61
2011	0.127	50	0.41
2012	0.124	33	0.55
2013	0.124	38	0.46
2014	0.38	149	0.37
2015	0.35	123	0.38
2016	0.50	113	0.80
2017	0.09	20	0.32

Table 6. Walk-In Camping Core Inspection Area 2006-2016 comparison

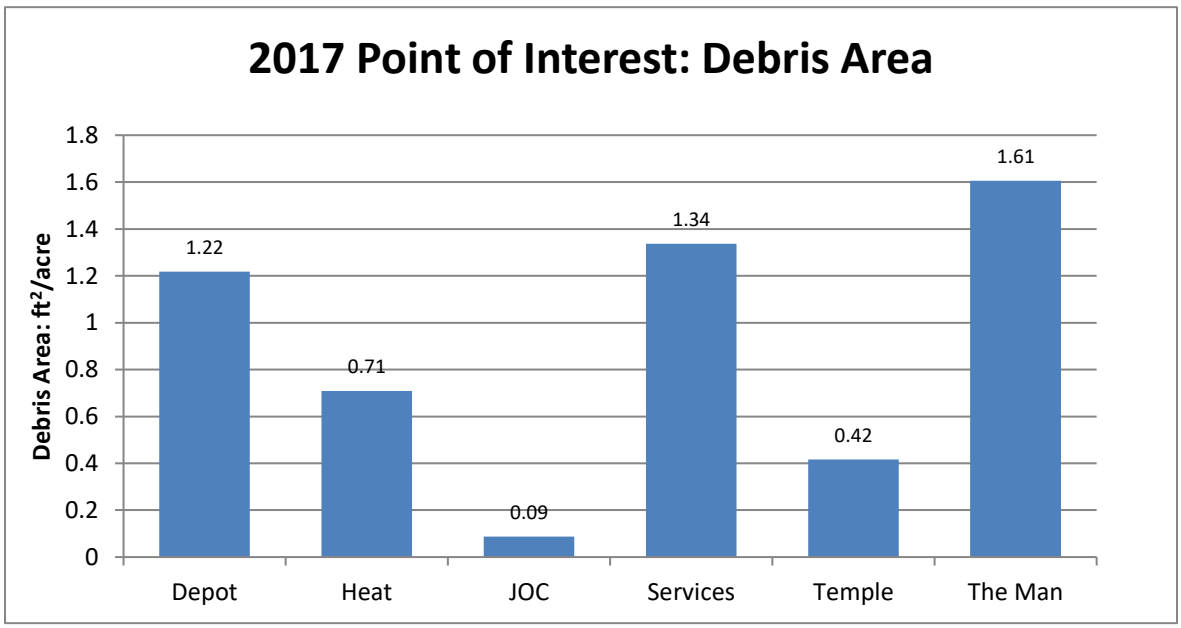
In 2017, PEI results showed that four monitoring sites within the Walk-in Camping area had an average of 0.09 ft²/acre of MOOP. Thus, the cleanup effort within Walk-in Camping Core Inspection Area did meet the 2016 SRP Cleanup Standard of 1.0 ft²/acre.

- All four monitoring sites were measured below the Cleanup Standard.
- The average estimated size of each item of debris was 0.32 in^2
- The average number of MOOP extrapolated per acre in Walk-in Camping was 20 which is less than last year (Table 6).

Points of Interest Inspection Site Results

MOOP collected from each Point of Interest monitoring site (Table 7) is the total used for calculation and to determine whether cleanup efforts measured greater than or less than the Cleanup Standard.[2] The number of MOOP items per monitoring site is extrapolated out to the entire acreage within each Point of Interest. The average size (in^2) of MOOP is also recorded.

Chart 1: Point of Interest monitoring results



Point of Interest Inspection Sites Summary:

[2] The data collected at POI sites will not be included in the average total surface area of MOOP collected from the Random Sites, thus will not be used to determine if the cleanup standard has been met.

This was the 5th year of recording targeted monitoring at the six POI. In 2017, PEI results showed three of the six POI monitoring sites exceeded the 2017 SRP Cleanup Standard of 1.0 ft²/acre. The Depot measured at 1.22 ft²/acre, USS (Services) measured at 1.34 ft²/acre, and The Man measured at 1.61 ft²/acre. Although not a factor in determining overall success of the 2017 PEI the cumulative average of the six POI was 0.89 ft²/acre.

Year	Debris Area (ft^2/ac) (Cumulative Average Count)	# of Items/acre (Average Count)	Estimated Item Size (in^2) (Average)
2013	3.27	197	0.62
2014	2.64	706	0.54
2015	1.54	433	0.51
2016	1.07	545	0.31
2017	0.89	435	0.30

Table 7. 2017 Point of Interest monitoring sites

Discussion

CORE Inspection Areas

All of the Core Inspection Areas met the 2017 Burning Man event SRP Cleanup Standards.

Results show that BRC's Playa Restoration Crew does locate and collect larger MOOP objects from the City Grid suggesting that more time, equipment and/or personnel is dedicated to that area. In both 2015 and 2016 the average amount of MOOP within the City Grid exceeded the allowable Cleanup Standard of 1ft^2/acre. The effort of cleanup for 2017 demonstrates a higher level of effort this year as the average amount of MOOP within the City Grid fell by half, from 1.25 ft^2/acre in 2016 to 0.625 ft^2/acre in 2017. Likewise, the Open Playa area displayed dramatic decrease of MOOP from last year (0.92 ft^2/acre in 2016 to 0.38 ft^2/acre in 2017). It should be noted however, that City Grid had 3 and Open Playa had 2 monitoring sites that exceeded the Cleanup Standard (Table 8).

Generally, Walk-in Camping and Other Core Inspection Areas generally have lighter participant foot and vehicle traffic as opposed to City Grid and Open Playa Core Inspection Areas which both sustain heavy concentration of foot and vehicle traffic. Over the last 11 years, both Walk-in Camping and Other monitoring sites consistently fell below Cleanup Standards.

Chart 2 (below) displays MOOP average per year and associated paid population levels for the past 11 years.

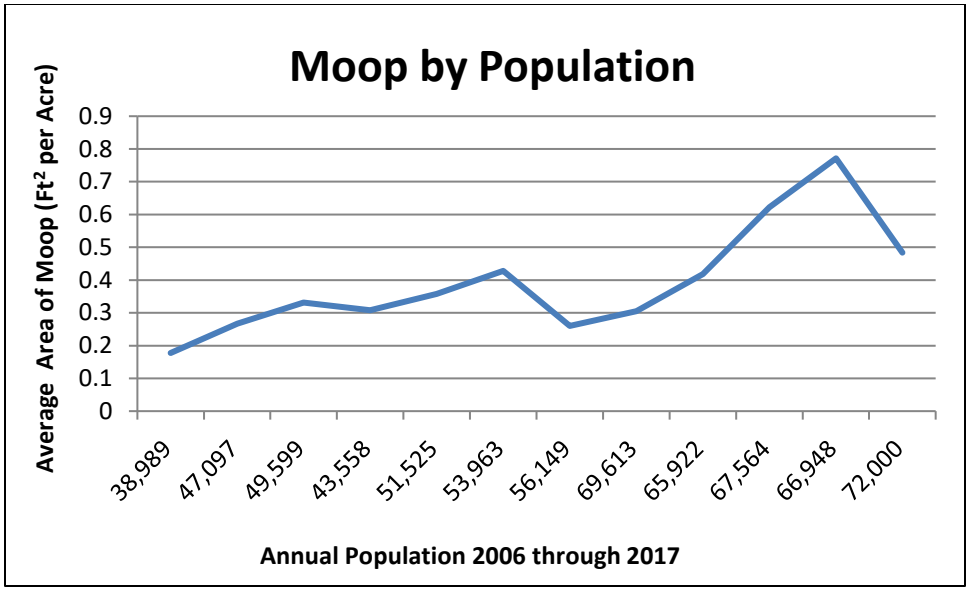
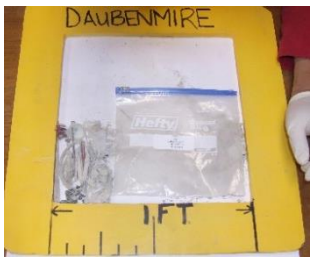


Chart 2: Population and amount of debris per year

Point of Interest Inspection Sites

Of the six POI inspection sites, The Man had the highest amount of MOOP measured at 1.60 ft²/acre. This was in large part due to a number of large pieces of wood, burned wood and other items that remained on site.



The MOOP at United Sites Services (USS) (incorrectly identified on the monitoring labels as OSS) measured 1.34 ft²/acre. USS is the location where sanitation facilities (porta potties) are stored. The MOOP consisted primarily of large pieces of paper but also long pieces of wood and rubber/silicone material.

The MOOP at Depot measured 1.22 ft²/acre. The Depot is an expansive "camp" where BRC conducts event operations. This site also had a number of relatively large items left behind.

The Man, USS and the Depot failed to meet the Cleanup Standard of 1 ft²/acre. The cumulative average of all six POI was 0.99 ft²/acre.

Conclusion

The 2017 Burning Man event PEI concludes that cumulatively across all four Core Inspection Areas, BRC's Playa Restoration crew was successful in meeting the 2017 Burning Man SRP Cleanup Standard of less than 1.0 ft^2/acre with an average Core Inspection Area measurement of **0.34 ft^2/acre.** Current cleanup efforts and protocol are adequate for keeping up with the cumulative amount of MOOP associated with the event however cleanup efforts and protocol may need to be revisited for efficacy as total event population's increase over time.

Open Playa-	0.38 ft^2/acre
City Grid-	0.65 ft^2/acre
Other-	0.25 ft^2/acre
Walk-in Camping-	0.09 ft^2/acre
Total Average	1.37/4 = **0.34 ft^2/acre**

Recommendations

Following the 2017 Burning Man event PEI, the following are identified recommendations:

- BLM should revise the 2013 PEI Protocol to add calculation formulas, GIS protocols, MOOP measuring protocols, and meaningful reporting requirements.
- BLM/BRC should continue to monitor all six POI Monitoring Sites
- BLM should continue to document annual PEI efforts through data sheets and GIS database retention of all monitoring data collected.
- BRC could explore the integration, compatibility and testing of the Fulcrum application, which BRC utilizes for Environmental Compliance purposes, for future PEI's.
- BRC should continue supporting and promoting the Playa Restoration Crew efforts.
- BRC should continue to educate participants in the ethos of Leave No Trace® and intensify *Pack it In, Pack it Out* communications. Camps, both large and small, leaving large, bulky items and piles of trash following exodus dramatically impacts the amount of time and coverage the Playa Restoration Crew has to address micro-debris.
- BLM/BRC should ensure that Contractor's and Vendor's working the event are made aware of the Leave No Trace® policy.
- BLM recommends a spring meeting with BRC conduct a Spring 2018 cleanup effortto discuss sites that exceeded 1.5 ft^2/acre. .
- BLM/BRC should determine whether the POI monitoring sites should be included for Environmental Compliance Monitoring during the event.

Core Area	Plot	Core Area Acres	Length X(in)	Length y(in)	Size (in^2)	Size (ft^2)	Square Feet per Acre	Avg Size (ft^2) per Acre	# of Items	# of Items per Acre	Avg # of Items per Acre	Est. Debris Size	Avg. Est. Debris Size	Avg. Items per Core Area (Acres)	Avg. Size (ft2)/Core Area (Acres)
Open Playa	OP_1	1,468	1.25	5.75	7.19	0.05	0.50	0.38	10	100	105	0.72	0.43	154,409	558
	OP_2		4.25	6.00	25.50	0.18	1.77		34	340		0.75			
	OP_3		7.75	0.75	5.81	0.04	0.40		8	80		0.73			
	OP_4		0.38	0.25	0.10	0.00	0.01		1	10		0.10			
	OP_5		0.00	0.00	0.00	0.00	0.00		0	0		0.00			
	OP_6		1.50	2.00	3.00	0.02	0.21		4	40		0.75			
	OP_7		1.00	3.50	3.50	0.02	0.24		12	120		0.29			
	OP_8		1.56	3.25	5.07	0.04	0.35		13	130		0.39			
	OP_9		1.00	1.13	1.13	0.01	0.08		2	20		0.57			
	OP_10		1.25	0.69	0.86	0.01	0.06		5	50		0.17			
	OP_11		2.50	2.50	6.25	0.04	0.43		10	100		0.63			
	OP_12		1.31	3.19	4.18	0.03	0.29		5	50		0.84			
	OP_13		0.06	0.06	0.00	0.00	0.00		1	10		0.00			
	OP_14		1.00	3.50	3.50	0.02	0.24		10	100		0.35			
	OP_15		6.00	3.00	18.00	0.12	1.25		19	190		0.95			
	OP_16		1.00	1.13	1.13	0.01	0.08		9	90		0.13			
	OP_17		1.00	0.69	0.69	0.00	0.05		4	40		0.17			
	OP_18		1.19	2.00	2.38	0.02	0.17		9	90		0.26			
	OP_19		1.25	1.56	1.95	0.01	0.14		21	210		0.09			
	OP_20		3.00	2.25	6.75	0.05	0.47		16	160		0.42			
	OP_21		10.25	1.38	14.15	0.10	0.98		17	170		0.83			
	OP_22		4.00	3.19	12.76	0.09	0.89		26	260		0.49			
	OP_23		1.00	2.00	2.00	0.01	0.14		6	60		0.33			
City Grid	CG_1	1,207	1.50	2.69	4.04	0.03	0.28	0.65	13	130	205	0.31	0.44	247,735	790
	CG_2		3.75	7.19	26.96	0.19	1.87		24	240		1.12			
	CG_3		2.00	4.50	9.00	0.06	0.62		24	240		0.38			
	CG_4		2.00	3.25	6.50	0.05	0.45		27	270		0.24			
	CG_5		2.00	3.25	6.50	0.05	0.45		36	360		0.18			
	CG_6		2.00	4.75	9.50	0.07	0.66		23	230		0.41			
	CG_7		1.50	3.50	5.25	0.04	0.36		13	130		0.40			
	CG_8		2.50	2.75	6.88	0.05	0.48		26	260		0.26			
	CG_9		1.63	3.50	5.71	0.04	0.40		14	140		0.41			
	CG_10		2.25	3.25	7.31	0.05	0.51		17	170		0.43			
	CG_11		5.75	3.00	17.25	0.12	1.20		37	370		0.47			
	CG_12		2.50	1.19	2.98	0.02	0.21		9	90		0.33			
	CG_13		3.31	2.00	6.62	0.05	0.46		24	240		0.28			
	CG_14		1.81	3.50	6.34	0.04	0.44		13	130		0.49			
	CG_15		1.88	3.00	5.64	0.04	0.39		11	110		0.51			
	CG_16		1.19	3.19	3.80	0.03	0.26		10	100		0.38			
	CG_17		2.00	4.19	8.38	0.06	0.58		8	80		1.05			
	CG_18		1.38	1.00	1.38	0.01	0.10		8	80		0.17			
	CG_19		2.00	0.88	1.76	0.01	0.12		9	90		0.20			
	CG_20		1.50	4.00	6.00	0.04	0.42		13	130		0.46			
	CG_21		1.50	3.00	4.50	0.03	0.31		13	130		0.35			
	CG_22		3.81	1.19	4.53	0.03	0.31		8	80		0.57			
	CG_23		8.25	7.25	59.81	0.42	4.15		92	920		0.65			
Other	Other_1	607	3.75	1.63	6.11	0.04	0.42	0.25	2	20	33	3.06	2.22	20,232	149
	Other_2		0.00	0.00	0.00	0.00	0.00		0	0		0.00			
	Other_3		1.50	1.00	1.50	0.01	0.10		8	80		0.19			
	Other_4		1.63	3.00	4.89	0.03	0.34		2	20		2.45			
	Other_5		5.50	2.31	12.71	0.09	0.88		1	10		12.71			
	Other_6		3.00	1.00	3.00	0.02	0.21		3	30		1.00			
	Other_7		1.50	1.44	1.00	0.01	0.07			0		0.00			
	Other_8		2.75	1.00	2.75	0.02	0.19		2	20		1.38			
	Other_9		0.63	4.25	2.68	0.02	0.19		2	20		1.34			
	Other_10		1.00	0.75	0.75	0.01	0.05		10	100		0.08			
Walk in Camping	WIC_1	351	1.00	0.68	0.68	0.00	0.05	0.09	2	20	20	0.34	0.32	7,025	30
	WIC_2		0.44	0.25	0.11	0.00	0.01		1	10		0.11			
	WIC_3		6.00	0.69	4.14	0.03	0.29		5	50		0.83			
	WIC_4		0.00	0.00	0.00	0.00	0.00		0	0		0.00			

Table 8: Burning Man 2017 PEI Monitoring Results

Plot	Ft^2 per Acre	Northing	Easting
CG_2	1.87	4515868	313459
CG_11	1.20	4516680	314188
CG_23	4.15	4518910	313284
OP_2	1.77	4517151	314920
OP_15	1.25	4518302	313660
Depot	1.22	4515744	312820
Services	1.34	4516489	312133
The Man	1.61	4517411	313817

Table 9. Burning Man 201 PEI Monitoring Site UTM's (Exceeding Standards)

Attachments:

BLM- Post-Event Inspection Protocol 2013

Burning Man Post-Event Inspection Protocol

2013

BUREAU OF LAND MANAGEMENT

September 26, 2013

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Background:

Since 2000, the Bureau of Land Management and Black Rock City Playa Restoration Crew have coordinated the Post-Event Inspection for Burning Man. This inspection determines if cleanup efforts have been successful in meeting the standards prescribed in the Burning Man Special Recreation Permit Stipulations as well as the promotion of and adherence to Leave No Trace Ethics. Applicable stipulations for the 2013 event include:

- **Permit Administration --13 General Terms, Item 6:**
  - The final phase of cleanup and restoration will be completed no later than ***Wednesday, October 2, 2013 (30 days after the event).*** If unforeseen weather conditions arise, minor adjustments to the post-event cleanup deadlines may be granted by the BLM authorized officer.
- **Compliance Inspection Stipulations, Items 1-3:**

  1. Inspections of the event site in the fall after the event, will be coordinated by the BLM using randomly placed transects on the site and a measurable cleaning standard. The inspecting party will intensively collect debris found on the ground within each transect. A follow-up spring inspection will be conducted only when deemed necessary by the BLM. The Post-Event Cleanup Standard

shall be the average total surface area of debris collected from either the fall or spring transects will not exceed the ***equivalent of 1 square foot per acre from any inspection area.***

2. The BLM may consider a time extension for the completion of the cleanup if weather or some other catastrophic event interferes with access to the site for cleanup purposes. BRC shall make a written request to the BLM authorized officer immediately upon such an occurrence.

3. If cleanup studies indicate the Post-Event Cleanup Standard has been or is likely to be exceeded, the permit will be suspended until the site has been cleaned up to a level not to exceed 50% of the standard and the operations plan includes reasonable measures to assure that the Post-Event Cleanup Standard will not be exceeded during the life of the permit.

Relationship to Previous Events:

The location of this year's Burning Man Event was 660' East-Northeast from the 2012 site. See Attachment 1: City Location Comparison Map . Exact locations for the reference points were (DDM, Nad 83):

The Man: 40.78700, -119.20430
P1: 40.78355, -119.23348
P2: 40.80688, -119.21772
P3: 40.80278, -119.18346
P4: 40.77683, -119.17794
P5: 40.76492, -119.20880

Protocols:

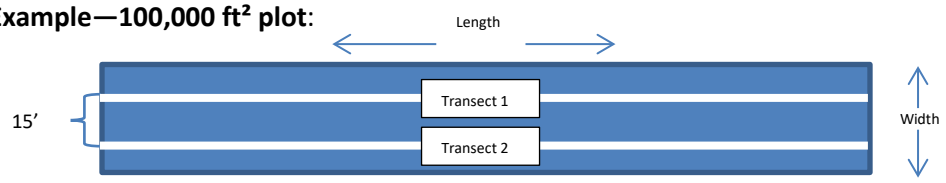
Due to on-site observations, coordination with partners and BLM staff, the analysis of results and yearly recommendations, several iterations of the protocol have been implemented. These protocols have also evolved based on new regulations and requirements. While the processes and details of the protocol have always remained flexible and dynamic, two main procedures have been utilized: the *2000-2003 Protocol*, and the *2004-Present Protocol*.

2000-2003 Protocol:

- **Standards:**
  - Number of sample plots: 3
  - Size of sample plot: 100,000 ft^2
  - Allowable average of debris cover: 1.45 ft^2
- **Methodology:**
  - The plots were randomly selected
  - The dimensions of the plot were determined on a case-by-case basis (exact plot length and width varied)

- Every 15' along the width of the plot, a transect was established which ran the length of the plot. The total number of transects varied based on the width of the plot. One person was assigned to walk each transect
- Debris was collected along each transect within the plot. The total amount of debris collected along all of the plots was then calculated to determine if it met the allowable average of debris cover

Example—100,000 ft² plot:



**Note: This information was compiled from various written and verbal sources.

2004-Present Protocol:

After 2003, the existing protocol was revised to adhere to the newly initiated NCA guidelines regarding permitted events. The new protocol also provided better sampling coverage of the area and improved the ability to quantitatively analyze the cleanup effort. The protocol was based on the following standards and methodology:

- **Standards:**
  - Number of sample plots: Variable (typically ranging from 50-75)
  - Size of sample plot: .10 acre
  - Allowable average of debris cover: 1ft²/acre
- **Methodology:**
  - ***Random Point Generation***
    - The number of plots to be monitored is decided based on BLM and BRC input
    - Plots are randomly generated using GIS and stratified by Inspection Area. A minimum distance of 100 meters between points is included as a parameter in the exercise. See Attachment 2: Inspection Area Map

Inspection Area	***Acreage***	***% of Total Points Generated*** *(Has varied since 2003. Percent based on 2012 plots, N=65)*
City Grid *Main area designated for camping; City*	1148.89	46.2% (30 plots)
Walk-in-Camping *Camping area where no motorized vehicles are allowed*	389.8	12.3% (8 plots)
Open-Playa *Area east of Residential, Other, and Walk-in-Camping*	1432.2	30.8% (20 plots)
Other *Area west of Residential, Playa and Walk-in-Camping*	662.1	10.8% (7 plots)
TOTALS	3,633	100%

- Each random plot is assigned a point name in this format:

- *Area Name Abbreviation_Feature ID (generated in GIS)*
- Example: **O P_7** (Point number 7 in the Open Playa area)

- Inspection Areas will be subdivided into Monitoring Zones, which will be utilized for team assignments. The Monitoring Zone Locations may vary yearly based on the location and density of random points.

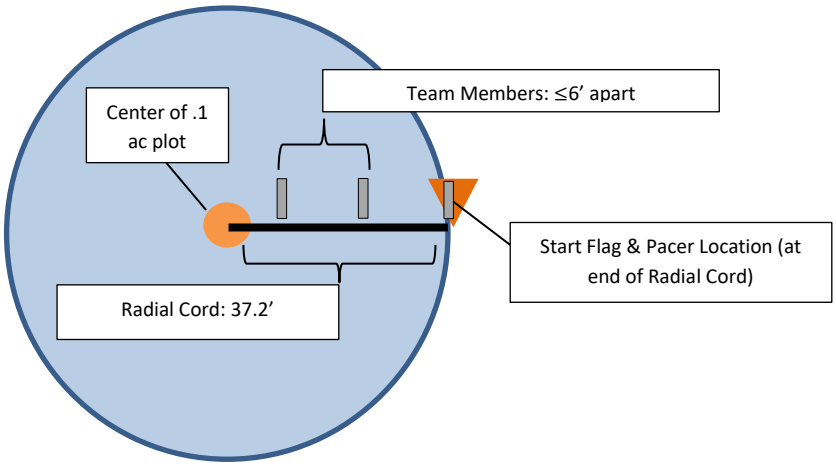
- ***Setup:***
  - Prior to the Post-Event inspection, the BLM Post-Event Inspection Team navigates to each random plot using GPS units (WAAS enabled, 2-5 meter accuracy).
  - Each plot center is marked with a flag on a survey stake which is labeled with the point name. A "zip-lock" type plastic bag labeled with the plot name, UTM and geographic coordinates and date is staked at the flag location with a pin flag. If winds are anticipated, the bag should be weighted down with "soil".
- ***Team Formation:***
  - The Playa Restoration Team meets with the BLM on site at 1000 on October 2. The specific site location is the plot closest to the location of Center Camp.
  - Team briefing is initiated, including: purpose, standards and methods, team composition, and team assignments.
  - The plot at the meeting site will be read as part of the briefing as a demonstration prior to teams being assigned plots.
  - Teams should be at a minimum 3 people
  - Teams should be assigned between 5-8 plots. Note: this may not always be possible depending on the number of people available
  - Plots assigned to a team should be located in proximity to each other and a map of the Monitoring Zone identifying all the plots with the assigned plots clearly marked handed out to the team lead.
  - Teams will be equipped with a GPS unit (depending on availability) a plot radial cord (a length of nylon cord with a loop at one end and a knot 37.2 feet from the end of the loop), an 8 inch spike to stake the loop end of the cord, and extra plastic bags (in case the bags provided at the plot have blown away).
  -
- ***Data Collection:***
  - Each team navigates to the pre-staked plot—using GPS if necessary
  - The spike is inserted into the center of the plot, and the Radial Cord is looped around it.
  - The Radial Cord is extended to full length. This location is then flagged as the starting point.
    - One person is responsible for holding the end of the Radial Cord and keeping it free of slack.
    - This person will also be designated as the "Pacer", responsible for gauging the progress/pace of the team to ensure the group is working

at a consistent pace (no one is ahead or behind) to maintain full plot coverage.

- The team then spreads out along the cord, no more than 6 feet apart.
- The team moves clockwise around the plot searching for debris
- Any debris found is bagged
- If the number of team members does not allow the entire plot to be covered in one pass then the team members slide toward the center and repeat a second pass of the plot.
- Once the starting flag is reached the plot is complete

- Inspection Conclusion
  - When each team has completed their assigned plots they will return to the inspection start location; the team lead will return equipment and plot bags to the BLM inspection coordinator.
  - The inspection coordinator will check off each bag against a master list of all plots to ensure that every plot has been read.
  - In the event that a plot has been missed a team will be assigned that plot(s)
  - When all plots have been accounted for:
    - The traditional inspection photo will be taken
    - The inspection coordinator will do a cursory examination of the bags to estimate the success or failure of the cleanup effort. For 60 plots the, allowable amount would be roughly 6ft² (2.45' x '2.45') .

Example Plot:



- ***Results:***
  - For each plot, the BLM team will fill out a playa inspection form--see Attachment 3: Playa Inspection Form--which will be used for analysis. The results of the Post-Event Inspection analysis will be documented in an event summary to be distributed to BRC and stored electronically in the Burning Man BLM files. The summary document will include:

- Overall Summary:
  - Number of total plots and a summary of the averages for : Debris Area (ft^2/ac), Number of items/ac, Item Size (in^2)
- Individual Inspection Area Summary:
  - Information to include: average level of residual debris, comparison of debris levels with allowable standard, average number of debris items per acre, average size of items
  - Trend data (including previous years)
- Overall Conclusions
  - Evaluation of cleanup effort
  - Determination of success (met/did not meet standards)
  - Recommendations for the following year

2013 Protocol Overview & Additions:

Overview:

Random Points:

The 2013 Post-Event Inspection will follow the same format and protocol as the 2004-2012 inspections. However, 60 total random points were generated for monitoring, five less than 2012 (this reduction was implemented to mitigate the impact of adding the five proposed targeted monitoring sites). The percent of the points generated in each Inspection Area mimics 2012. Each Inspection Area was divided into Monitoring Zones. Each Monitoring Zone contains 5-7 plots. See Attachment 4: Inspection Areas & Plot Location Map

Inspection Area	*Points*	*Monitoring Zones*
City Grid *Main area designated for camping; City*	29	Zones 4-8
Walk-in-Camping *Camping area where no motorized vehicles are allowed*	7	Zone 10
Open-Playa *Area east of Residential, Other, and Walk-in-Camping*	18	Zones 1-3
Other *Area west of Residential, Playa and Walk-in-Camping*	6	Zone 9
TOTAL	60	

Team Assembly:

A total of seven BLM representatives will be participating in the Post-Event Inspection this year. Responsibilities will include event preparation, event setup, monitoring, and event closeout/data analysis.

Mark Pirtle—Burning Man Project Manager

Allie Brandt—GIS Lead/BLM Inspection Co-Lead

Greg Page--Recreation/BLM Inspection Co-Lead

Robert Bunkall--GIS Specialist/Compliance Team

Zach Million--Recreation/Logistics

Whitney Kroschel--NEPA/Compliance Team

Cathy Kadigan--Wildlife Biologist/Compliance Team

The Playa Restoration Team will be providing 30 participants this year. A total of 10, 3-person teams will be assembled for monitoring. Each team will be responsible for a Monitoring Zone

Additions:

Targeted Monitoring on Points of Interest:

According to the stipulations, only random sites will be included in the analysis to determine if the measurable cleaning standard has been met. This random site data is valuable in gauging the success of the cleanup effort, and the overall trends in debris levels throughout the years. These random sites, however, do not necessarily take into consideration some of the areas that are of special interest due to their function or level of traffic. This year, the BLM proposes to include six additional sites for targeted monitoring. The resulting data will not be included in the average total surface area of debris collected from the random plots, and therefore will not be used to determine if the cleanup standard has been met. Since the majority of these areas were not targeted for Compliance Monitoring during the event, site specific data will be helpful in determining potential issues associated with these areas. The following Points of Interest are proposed for targeted monitoring using the same protocol utilized for the random sites: (See Attachment 5: Points of interest)

Name	*Justification*	*X*	*Y*
The Man	The large-scale construction efforts, frequency of visitation, and structure burn make this site a point of interest	-119.204336	40.787005
The Temple	The large-scale construction efforts, frequency of visitation, structure burn make this site a point of interest	-119.198111	40.791628
Services	This area receives a high degree of traffic and deals with large amounts of grey and black water, making it a point of interest	-119.223502	40.778532
DPW	The level of use and population density of this area during the event make it a point of interest	-119.215188	40.772299

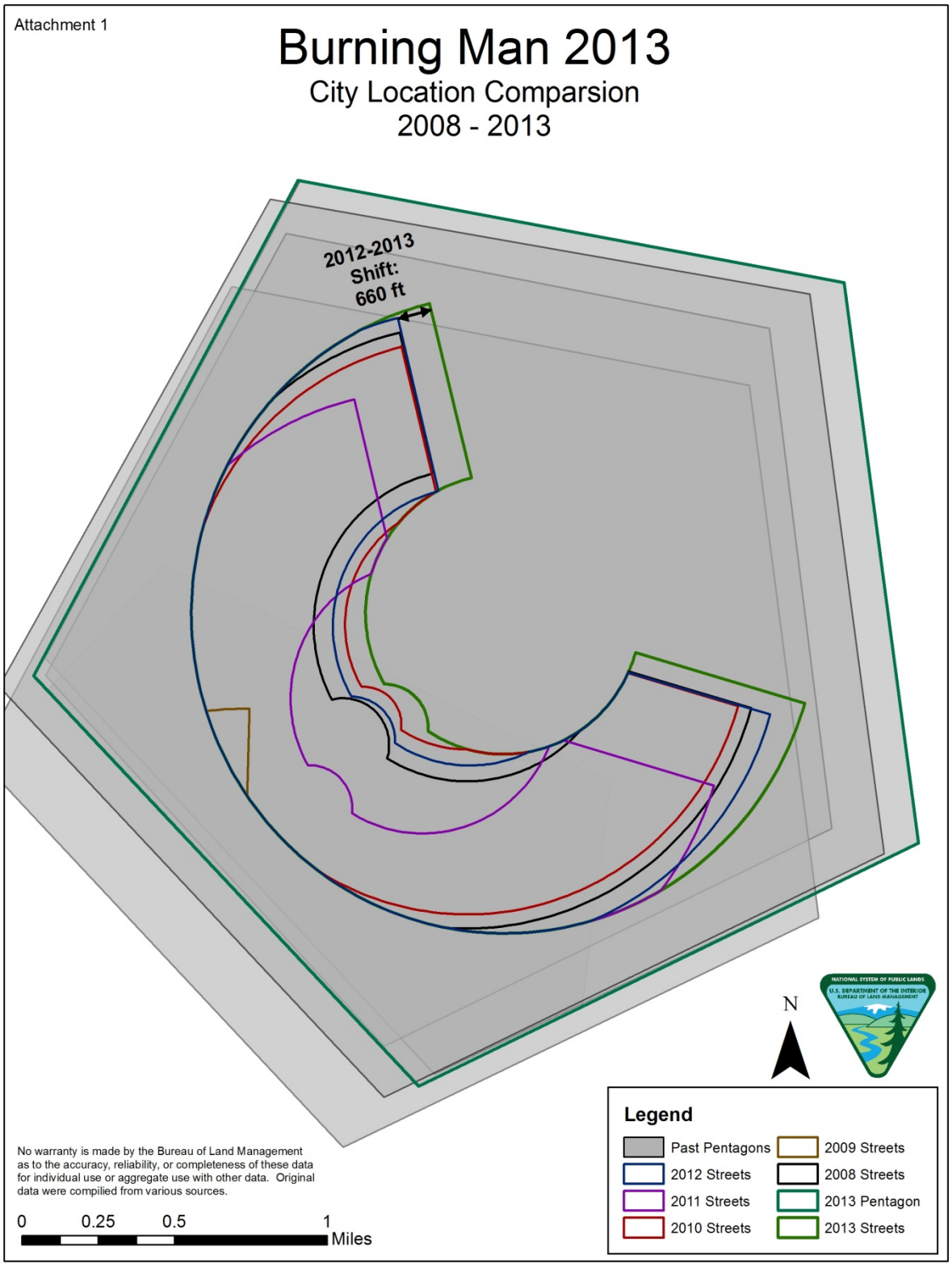
ICP	The level of use and population density of this area during the event make it a point of interest	-119.232075	40.780897
HEAT	The use and storage of heavy equipment in this area make it a point of interest	-119.207801	40.780125

Compliance Team Follow Up:

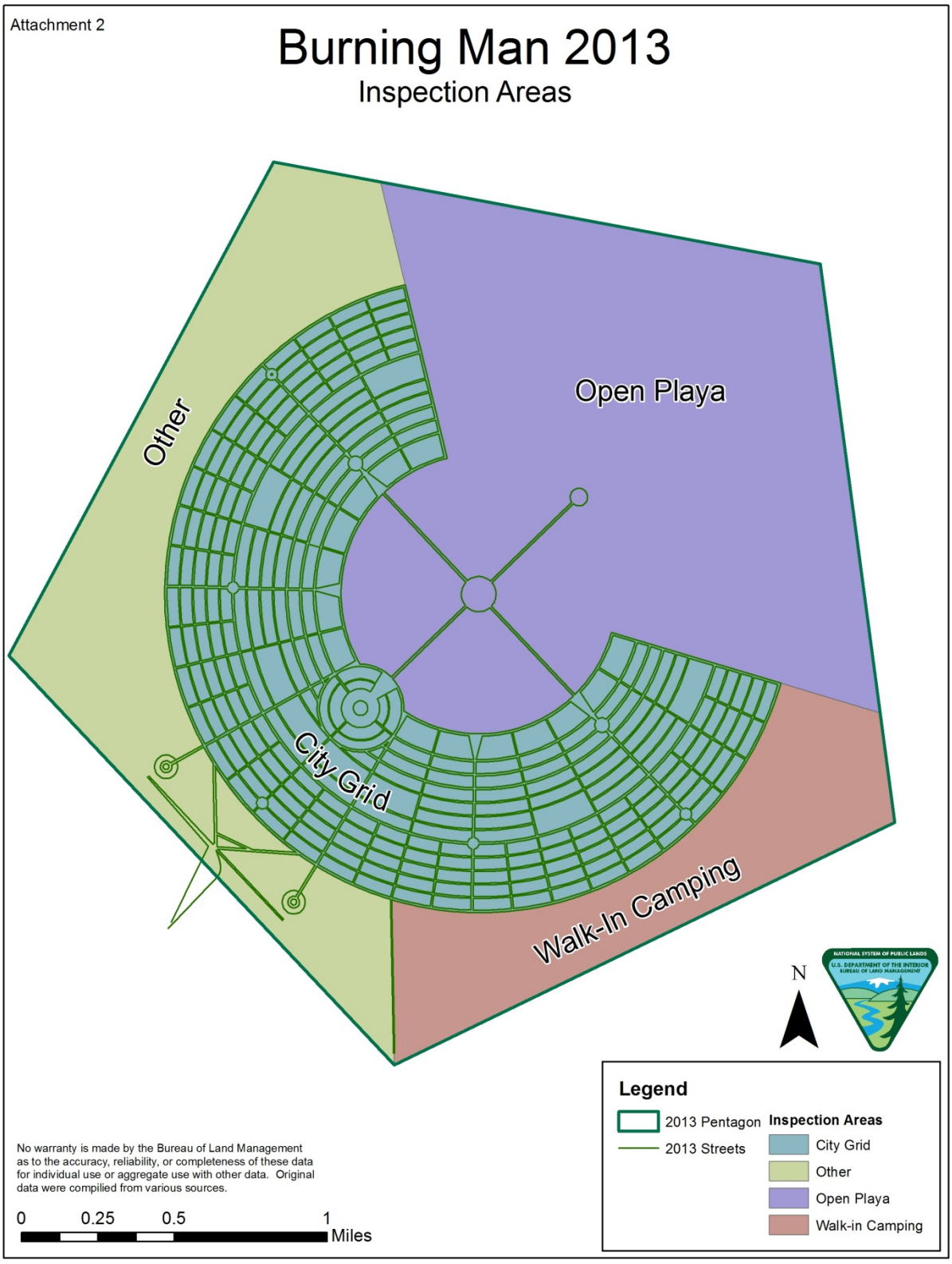
During the 2013 event, the BLM/BRC Joint Compliance Monitoring Team documented 230 violations that were passed to BRC for adjudication. Several of the violations were considered "egregious", and were either sent to BLM Law Enforcement or flagged as areas of concern. Several other sites were deemed "high priority", but follow up did not occur, as compliance staff did not stay past the end of the event. The BLM proposes to select up to 15 of these sites to revisit. Sites would be monitored using the 2013 Environmental Compliance Protocol. This data would be incorporated into the existing compliance database. Results would be provided to BRC, but would not be utilized in the analysis to determine if the measurable cleaning standard has been met.

Attachments:

Attachment 1: City Location Comparison Map



Attachment 2: Inspection Areas



Attachment 3: Playa Inspection Form

PLAYA INSPECTION RECORD

BLACK ROCK DESERT-HIGH ROCK CANYON EMIGRANT TRAILS NATIONAL CONSERVATION AREA

ID # _____ Northing: _____ Easting: _____

Date: (mm/dd/yyyy) _____ Observer(s): _____ Category: _____

Debris Found: ☐ No ☐ Yes (if yes, complete applicable shaded boxes below)

Materials to be Removed from Site		
Code (use remainder of space for notes on specific identity of items) See code definitions on reverse	Number of items	Surface area of debris (to nearest 0.05 square inch). *Optional in Field*

Other Information as applicable:

☐ Fire scar diameter (feet): _____ ☐ Racetrack rock

☐ Surface rock (____small, ____ medium, ____large)

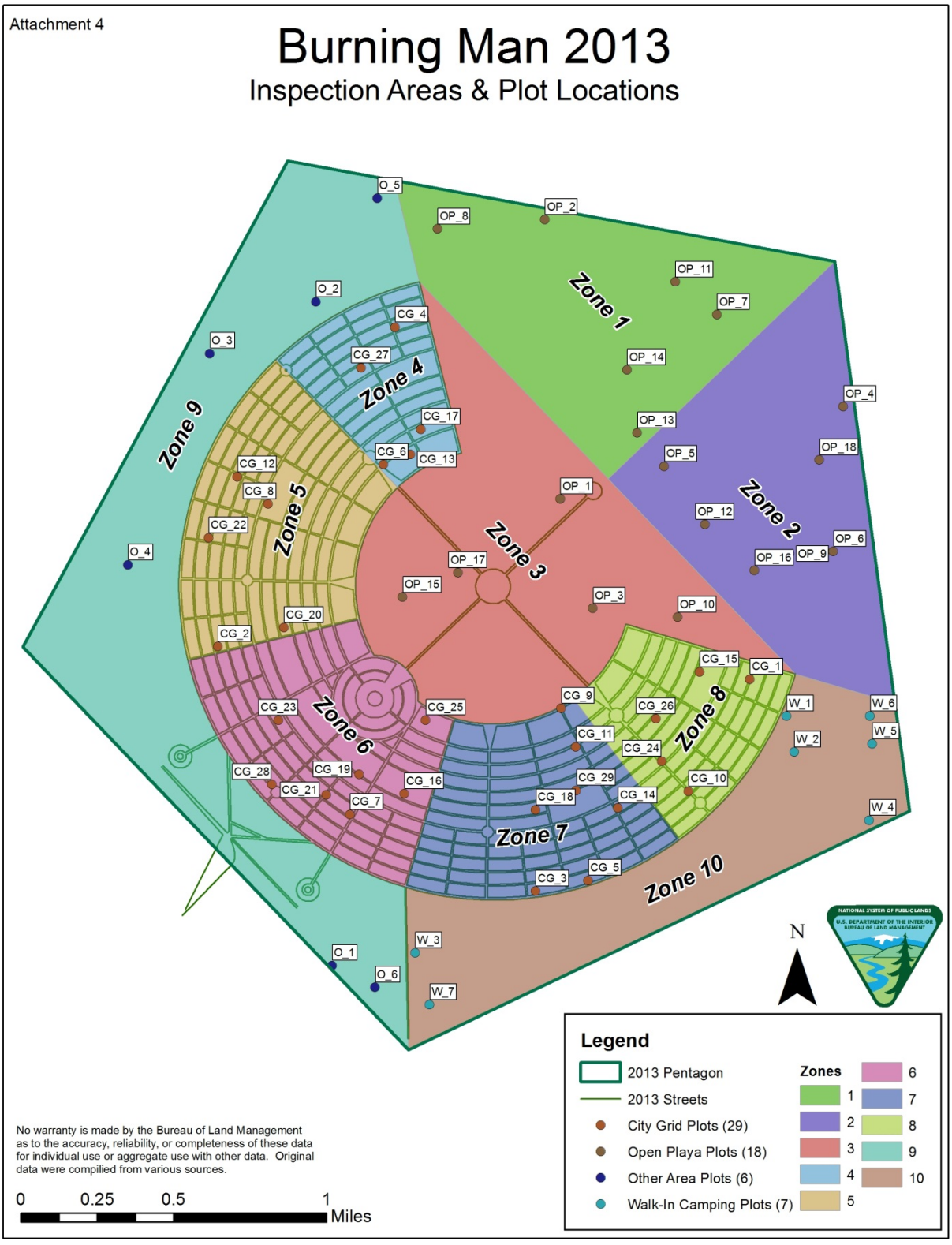
☐ Wet weather vehicle disturbance ☐ Transient Dune (% of plot)

Comments:

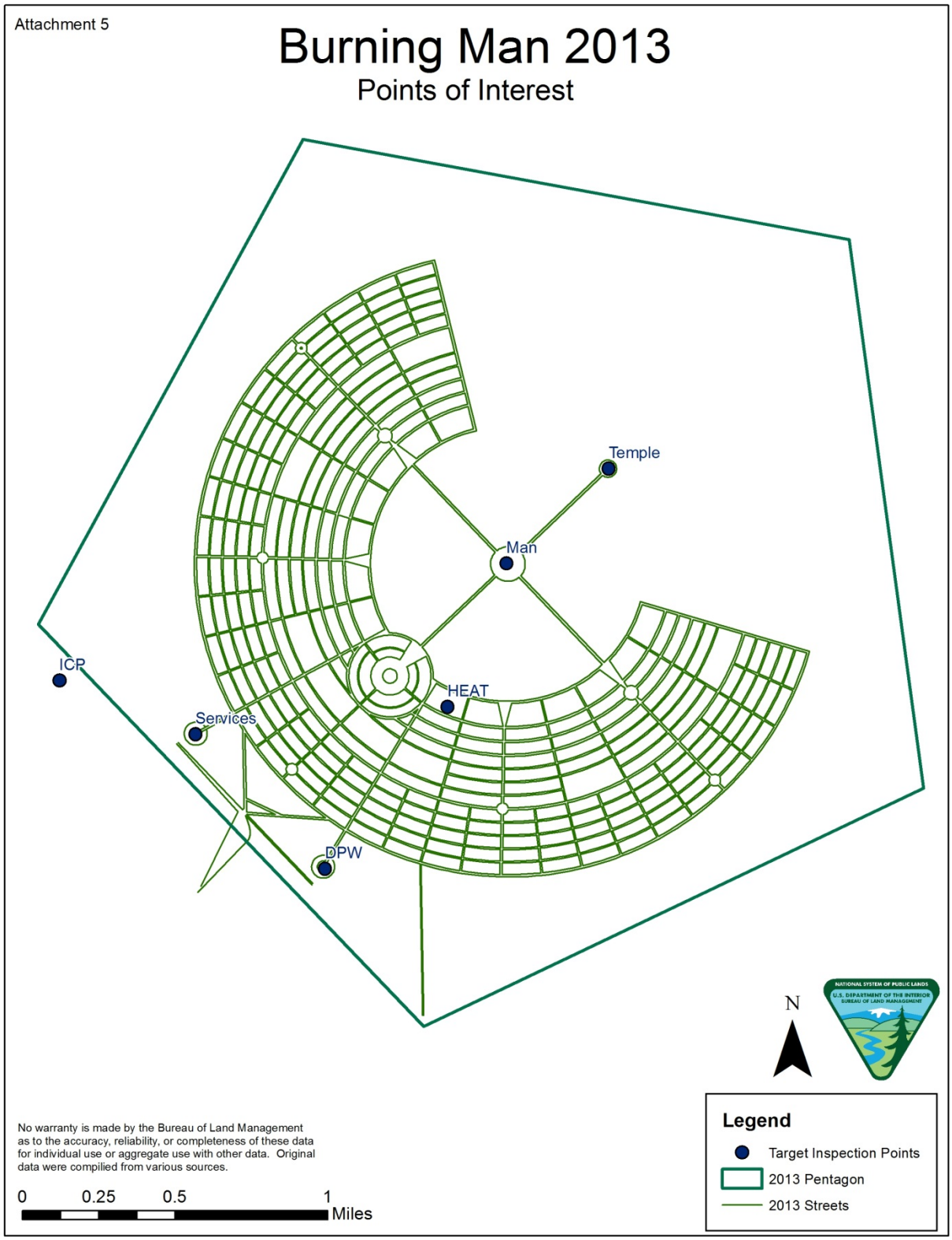
Notes:

All transects located using UTM coordinates in Zone 11, NAD83.
Wet weather vehicle disturbance where ruts > 3 in deep or mud clods > 3 in remain on surface.

Attachment 4: Inspection Areas & Plot Location Map



Attachment 5: Points of Interest



Attachment 6: Random Point Names and Coordinates

Point Name	Longitude	Latitude	zone	X-UTM	Y-UTM
OP_11	-119.193374	40.801611	1	314975.1906	4519049.2049
OP_13	-119.195511	40.794419	1	314774.9116	4518255.2659
OP_14	-119.196245	40.797390	1	314721.2820	4518586.5782
OP_2	-119.201614	40.804407	1	314287.8951	4519377.0194
OP_7	-119.190719	40.800112	1	315195.0112	4518877.1749
OP_8	-119.208291	40.803834	1	313722.9933	4519327.5942
OP_12	-119.191133	40.790165	2	315132.5283	4517773.7403
OP_16	-119.187976	40.788053	2	315393.0420	4517532.6236
OP_18	-119.184104	40.793358	2	315734.3960	4518113.4563
OP_4	-119.182694	40.795915	2	315860.4563	4518394.3000
OP_5	-119.193773	40.792869	2	314917.2902	4518079.5414
OP_6	-119.183100	40.789040	2	315807.1527	4517631.9272
OP_9	-119.185814	40.788873	2	315577.7068	4517619.1387
OP_1	-119.200210	40.791202	3	314369.4563	4517908.0560
OP_10	-119.192706	40.785749	3	314987.4973	4517286.7872
OP_15	-119.209890	40.786357	3	313539.2101	4517390.7238
OP_17	-119.206465	40.787586	3	313831.6272	4517519.8235
OP_3	-119.198009	40.786066	3	314540.9047	4517333.1811
CG_13	-119.209607	40.793127	4	313582.0432	4518141.7358
CG_17	-119.208996	40.794328	4	313636.9023	4518273.7195
CG_27	-119.212832	40.797168	4	313321.1843	4518597.1423
CG_4	-119.210781	40.799132	4	313499.7269	4518810.8842
CG_6	-119.211274	40.792610	4	313439.9377	4518087.8833
CG_12	-119.220380	40.791863	5	312669.4543	4518024.3345
CG_2	-119.221323	40.783798	5	312567.2399	4517131.0182
CG_20	-119.217237	40.784772	5	312914.7412	4517230.3709
CG_22	-119.222075	40.788933	5	312518.2198	4517702.7185
CG_8	-119.218409	40.790606	5	312832.2627	4517880.5701
CG_16	-119.209476	40.777050	6	313548.1047	4516356.6038
CG_19	-119.212319	40.777924	6	313310.5829	4516459.6699
CG_21	-119.214326	40.776912	6	313138.3706	4516351.6000
CG_23	-119.217435	40.780381	6	312885.6985	4516743.3895
CG_25	-119.208245	40.780565	6	313661.8219	4516744.1489
CG_28	-119.217738	40.777330	6	312851.5973	4516405.3289
CG_7	-119.212836	40.776008	6	313261.6300	4516248.0394
CG_11	-119.198849	40.779474	7	314451.6856	4516603.1816
CG_14	-119.196137	40.776636	7	314672.6530	4516282.3200

CG_18	-119.201245	40.776445	7	314241.0429	4516271.9143
CG_29	-119.198759	40.777415	7	314453.5109	4516374.3980
CG_3	-119.201136	40.772596	7	314239.4898	4515844.3636
CG_5	-119.197873	40.773166	7	314516.4563	4515900.7990
CG_9	-119.199826	40.781285	7	314374.2325	4516806.2487
CG_1	-119.188106	40.782887	8	315367.7522	4516959.3609
CG_10	-119.191764	40.777505	8	315044.0866	4516369.6364
CG_15	-119.191247	40.783175	8	315103.4709	4516997.9199
CG_24	-119.193466	40.778901	8	314904.3515	4516528.1112
CG_26	-119.193901	40.780896	8	314873.2245	4516750.5589
O_1	-119.213704	40.768835	9	313168.2538	4515453.6266
O_2	-119.215756	40.800243	9	313083.1310	4518944.8122
O_3	-119.222289	40.797668	9	312524.7802	4518672.8259
O_4	-119.227062	40.787560	9	312093.6015	4517560.9566
O_5	-119.212082	40.805220	9	313407.0496	4519489.4722
O_6	-119.210984	40.767847	9	313395.0473	4515338.1480
W_1	-119.185762	40.781186	10	315560.8351	4516765.5564
W_2	-119.185233	40.779485	10	315600.7380	4516575.6623
W_3	-119.208550	40.769529	10	313605.2181	4515519.6525
W_4	-119.180440	40.776350	10	315996.5836	4516217.5056
W_5	-119.180383	40.779963	10	316011.4021	4516618.5732
W_6	-119.180549	40.781285	10	316001.0091	4516765.5909
W_7	-119.207561	40.767103	10	313681.8618	4515248.1793