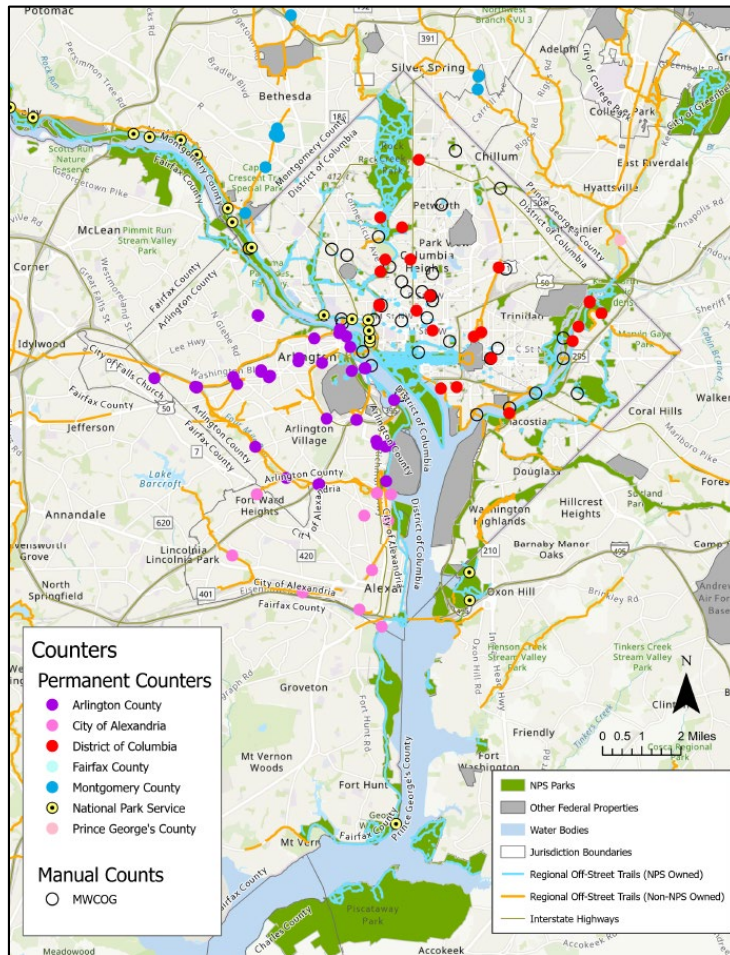




## Scoping a Regional Trail Count Program in the National Capital Area: *Summary Report*



December 2021



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## Report Notes

This report was prepared by the U.S. Department of Transportation John A. Volpe National Transportation Systems Center (Volpe Center), in Cambridge, Massachusetts. The project team was led by Andrew Breck and supported by Eric Englin, Patricia Cahill, and Annisha Borah. Technical oversight was provided by Rachel Chiquoine and Holly Bostrom.

This effort was undertaken in fulfillment of the project agreement, *Coordinated Regional Trails Count Program*. The project statement of work was included in the 2017 Interagency Agreement between the National Park Service National Capital Area and the Volpe Center (agreement P18PG00110).

## Acronyms

This report uses the following terms:

API	Application programming interface
CABI	Capital Bikeshare
CESU	Cooperative Ecosystem Studies Unit
CHOH	Chesapeake and Ohio Canal National Historical Park
DC	District of Columbia
DDOT	District Department of Transportation
DOT	Department of Transportation
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
GWMP	George Washington Memorial Park
LTAP	Local Technical Assistance Program
MD	Maryland
MDOT	Maryland Department of Transportation
MPO	Metropolitan Planning Organization
MWCOG	Metro Washington Council of Governments
NACE	National Capital Area East
NAMA	National Mall and Memorial Par
NCA	National Capital Area
NPS	National Park Service
QA/QC	Quality assurance/quality control
ROCR	Rock Creek Park
TPB	Transportation Planning Board
U.S. DOT	United States Department of Transportation
VA	Virginia
VDOT	Virginia Department of Transportation

# 1 Regional Trail Count Program Summary Report

This document summarizes the key findings of a project that the National Park Service (NPS) and the U.S. Department of Transportation Volpe Center conducted in collaboration with local, regional and federal stakeholders. The project explored the formation of a regional program for measuring pedestrian and bicycle traffic on multi-use trails in the Washington, District of Columbia (DC) metro area. The purpose of the project was to assess how NPS and stakeholder jurisdictions could more closely coordinate the installation, operation, and maintenance of counters and the management, storage, sharing, and analysis of counter data.

The NPS owns nearly 100 miles of multi-use trails within the National Capital Area (NCA), spanning five park units, DC, two states, five counties, and one city. As of 2016, other jurisdictions owned almost 600 trail miles and over 100 bicycle lane miles in the Metropolitan Washington Council of Governments (MWCOC) region, which combined with the NPS trails form one of the most extensive and complex trail networks in the nation. The [National Capital Trail Network](#), including both planned and existing segments, encompasses 1,400 miles. The trail network serves commuting and other utilitarian uses in addition to recreational trips, and usage has continued to increase with ongoing development of residential and employment areas. It is important to track, analyze, and report trail usage in order to understand and communicate the importance of the trails and to project and prioritize investment and maintenance needs.

Stakeholder jurisdictions already operate automated counters to measure pedestrian and bicycle traffic. Some of these are on NPS trails, and others are on non-NPS trails or other non-trail locations. Figure 1 shows the permanent counters inside the I-495 beltway. As of May 2021, the trail and on-road count inventory across all stakeholder jurisdictions includes:

- 126 permanent automated counters
- 16 planned permanent automated counters
- 2 mobile automated counters
- 37 manual count locations

More detail is available in Appendix E: Automated Counter Inventory.

In order to scope a coordinated regional count program, this project engaged stakeholders via interviews and conducted supplementary research from October 2020 to March 2021. A meeting in March 2021 brought all stakeholders together to review findings and agree on a model for a coordinated program. Table 1 summarizes these activities and links to the appendices for more detail.

**Table 1. Summary of Stakeholder Engagement and Other Research**

Source: Volpe Center

Activity	Dates	Description
<b>Supplementary research</b>	Oct 2020 – Mar 2021	Reviewed practices nationwide to identify successful models of multi-jurisdictional count programs, emerging approaches, and best practices. See Appendix F and G for more information.
<b>Stakeholder interviews</b>	Oct 2020 – Mar 2021	<p>Interviewed the five NPS park units, DC, two states, five counties, one city, the metropolitan planning organization (MPO), and some non-profits. Asked questions in the following categories:</p> <ul style="list-style-type: none"> <li>• Organizational Context and Trail Counter Ownership</li> <li>• Past and present experience</li> <li>• Future Vision for Coordination</li> <li>• Recommended sources of information</li> </ul> <p>See Appendix B: Summary of Stakeholder Interviews, for themes from the interviews. See Appendix A: Table of Stakeholders for a list of all stakeholders. See also Appendix H: Sample Special Use Permit for Siting Counter on NPS Trails.</p>
<b>Stakeholder meeting</b>	Mar 24, 2021	Summarized findings to date and requested additional input during the meeting and in follow-up surveys to attain consensus on a model for the coordinated program and related next steps. See Appendix C: Notes from Stakeholder Meeting and Appendix D: Stakeholder Meeting Survey Results for more information.
<b>Interviews with potential hosts</b>	Mar – May 2020	Interviewed possible program hosts identified by stakeholders.

Key findings for this project based on stakeholder engagement and supplementary research from October 2020 to May 2021 are as follows. The appendices contain supporting materials and details, including a complete list of stakeholders.

- **Interest:** Stakeholders confirmed interest in participating in a more centralized count program for the region to address challenges and seize opportunities.

- **Precedents:** There are successful examples of regionally coordinated non-motorized count programs in other parts of the country, with a variety of organizational models on a spectrum from least-to-most centralized. See Appendix F for more detail.
- **Data:** All stakeholders see opportunities for a regionally centralized program to assist with quality control, validation, analysis, and presentation of data.
  - Stakeholders would like to make better use of count data but have limited capacity to do so at this time.
  - Stakeholders are interested in exploring new data sources as part of a centralized program. Big data and other non-traditional sources have great potential and can supplement but will not replace the role of automated counters. See Appendix G for more information.
- **Operations:** Some stakeholders would like operational support from a regionally centralized program, such as maintenance, installation, and procurement assistance. They struggle to keep counters operating consistently, due to procurement and maintenance challenges.
- **Flexibility:** Stakeholders need the flexibility to select from among program elements; not all stakeholders need or want to participate in all elements of a centralized program.
- **Host:** The most feasible arrangement is to use an NPS cooperative agreement mechanism (Cooperative Ecosystem Studies Unit, or CESU) to engage university support for hosting a centralized program.
- **Funding:** NPS is able to provide seed funding for the first two years of a cooperative agreement for university support. Other stakeholder jurisdictions will need to contribute funds in future years in order to sustain the program. Stakeholders have communicated that they likely will be able to contribute financially to a centralized count program that would perform some activities on their behalf.
- **Coverage:** The program could expand in subsequent years to include a broader area and additional counters, pending a successful initial launch, stakeholder interest and funding, and host capacity.

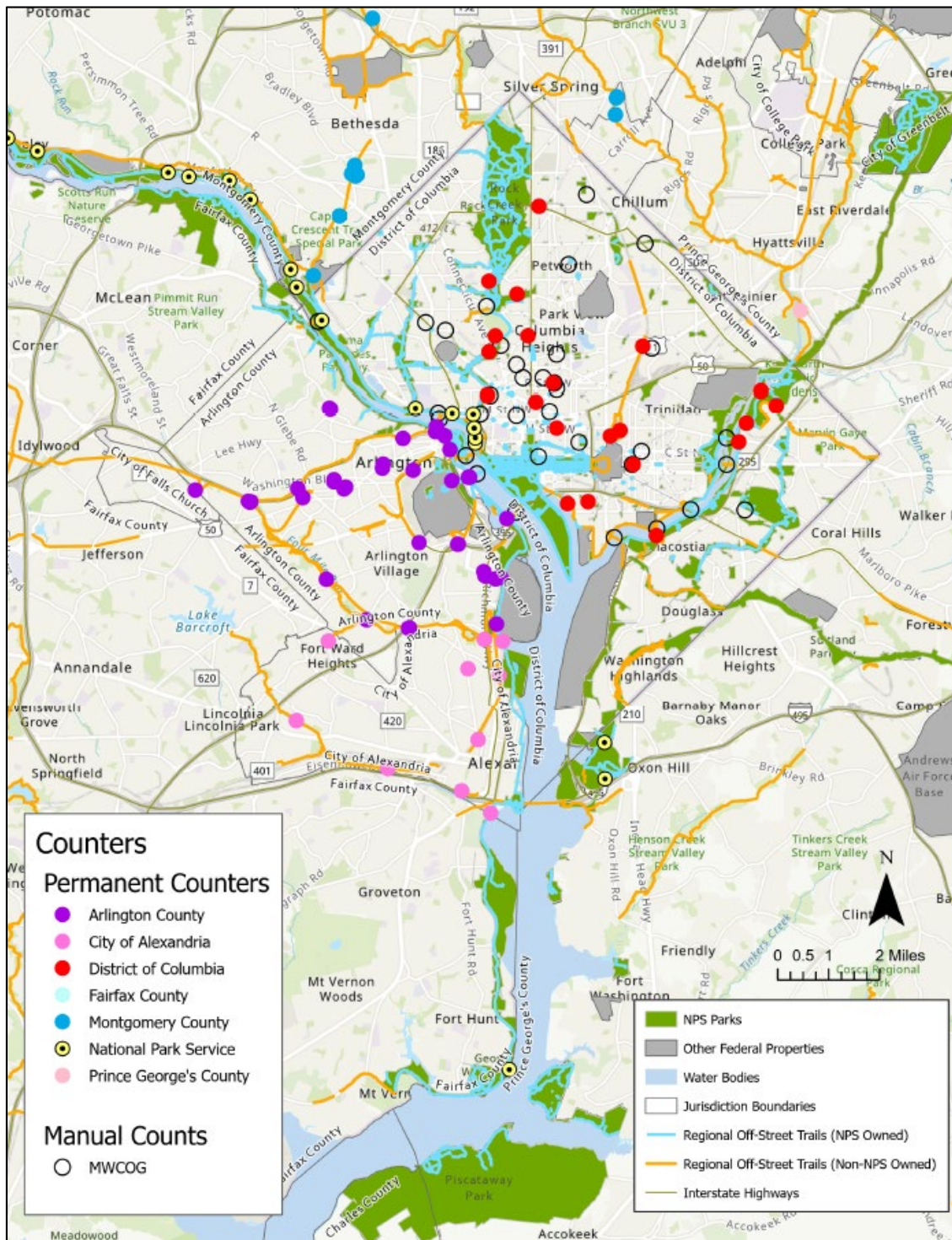
Next steps:

- **Steering Committee:** Stakeholder representatives will participate in a steering committee that will meet regularly to determine the unresolved details of how the coordinated program will operate, such as:
  - How to determine participant funding contributions and commitment mechanisms;
  - What the process will be (and timing) for participants to opt-in and opt-out of program elements in the future; and
  - How communication will work.
- **Cooperative Agreement:** NPS is arranging for university support, finalizing a cooperative agreement with stakeholder input.



**Figure 1: Washington DC Metro Area Counter Inventory Map within the 495 Beltway**

Source: Volpe Center





## 2 Appendices

Appendices are as follows:

- Appendix A: Table of Stakeholders
- Appendix B: Summary of Stakeholder Interviews
- Appendix C: Notes from Stakeholder Meeting
- Appendix D: Stakeholder Meeting Survey Results
- Appendix E: Automated Counter Inventory
- Appendix F: Notes on Successful Precedents from around the Country
- Appendix G: Notes on Emerging Approaches and Big Data
- Appendix H: Sample Special Use Permit for Siting Counter on NPS Trails

## 2.1 Appendix A: Table of Stakeholders

**Table 2. List of Stakeholders**

Source: Volpe Center

Organization	Counter Owner/Potential Financial Contributor	Type
Arlington County DOT	Yes	County
Capital Trails Coalition	No	Non-profit
City of Alexandria DOT	Yes	City
District DOT	Yes	State (or equivalent)
Fairfax County DOT	Yes	County
Maryland DOT	No	State
Montgomery Parks	Yes	County
NPS <ul style="list-style-type: none"> <li>• National Capital Area Office</li> <li>• Park Units <ul style="list-style-type: none"> <li>○ Chesapeake and Ohio Canal National Historical Park (CHOH)</li> <li>○ George Washington Memorial Park (GWMP)</li> <li>○ National Mall and Memorial Parks (NAMA)</li> <li>○ National Capital Area East (NACE)</li> <li>○ Rock Creek Park (ROCR)</li> </ul> </li> </ul>	Yes	Federal
Northern Virginia Transportation Authority	No	State
NOVA Parks	Maybe	Regional
Prince George's County Department of Parks and Recreation	Yes	County
Transportation Planning Board (TPB)/ Metropolitan Washington Council of Governments (MWCOG)	No	MPO
Virginia DOT	Maybe	State

## 2.2 Appendix B: Summary of Stakeholder Interviews

The project team conducted stakeholder interviews with the following goals:

- Update the 2016 trail counter inventory to include all existing and planned trail counters;
- Describe stakeholders' experience of current and past count programs (e.g., technology, maintenance, data analysis and insights, successes and challenges, etc.); and
- Understand stakeholders' visions of a successful multi-jurisdictional coordinated count program, including necessary and desired program components, with a focus on participation, roles, inputs, outputs, and outcomes.

### 2.2.1 Past and Present Experience

#### 2.2.1.1 Technology

Stakeholders wish to continue using the brands and technology that they are already using to maintain consistency, simplify operations/maintenance, and avoid challenges with software integration. The majority of automated counters in use are Eco Counter models. A few stakeholders have other brands supplementing Eco Counter. The NPS Chesapeake and Ohio Canal Historical Park has TRAFx counters and Montgomery County Parks recently purchased many TRAFx counters. The TRAFx counters are cheaper but provide less information (no distinction of pedestrians versus bicyclists and no directionality).

Stakeholder reported challenges with the counter models in use:

- Prone to failure and difficult to maintain, requiring specialized knowledge and time;
- Difficult to procure parts and service; and
- Expensive.

Appendix E contains an automated counter inventory.

#### 2.2.1.2 Use of Data

Stakeholder jurisdictions use counter data in the following ways:

- Demonstrating need for infrastructure improvements (pre-construction) in studies or funding applications.
- Showing the impact of infrastructure improvements (pre-versus post-construction).
- Fulfilling reporting requirements for grant investments.
- Responding to ad-hoc requests from agency decision-makers, researchers, or stakeholders.
- Producing planning analyses and documents.

The Capital Trails Coalition also reported that the data are useful for the following:

- Planning events and programming, and determining optimal timing and location.

- Arguing against hours of operation that would close a trail segment for a certain period during the night. Usage data make the case that these trail assets are necessary transportation, and not just recreation.
- Making the case for funding and investing in trails (using usage as a multiplier for health, economic, and other positive impacts).
- Identifying trail priorities to pursue based on usage.

Many stakeholders indicated that they would like to make better use of the data, but have limited capacity to do so.

## 2.2.2 Future Vision for a Coordinated Regional Count Program

### 2.2.2.1 Participation and Funding

District Department of Transportation (DDOT), the city of Alexandria, and the counties of Arlington, Prince George’s, Montgomery and Fairfax are all interested in a coordinated program and likely able to contribute financially. Virginia DOT and Maryland DOT could provide support via their existing programs.

### 2.2.2.2 Procurement

Stakeholders reported that procurement is challenging and hinders count efforts. Eco Counter is a Canadian-based company and uses proprietary parts, which creates complications and delays, even for basic replacements such as new batteries. A coordinated program could potentially help with procurement, such as procuring equipment on behalf of stakeholders.

### 2.2.2.3 Operations and Maintenance

Some stakeholders are interested in having a regional coordinated program assist with maintenance and operations of their counters. However, one stakeholder expressed that they would want to understand the details of how out-sourcing would impact their autonomy and control, such as their flexibility to move counters.

### 2.2.2.4 Types of Counters

Some stakeholders indicated that it is important to have counters that can provide separate counts for bicycles and pedestrians. This helps monitor congestion-related safety issues and better understand travel patterns and transportation needs. For example, the National Mall needs to ensure separation of pedestrians and bicycles due to the high volume of pedestrians in the area.

### 2.2.2.5 Working with the Data

All stakeholders see opportunities for a regional coordinated program to assist with quality control, validation, analysis, and presentation of data across the regional portfolio of counters.

#### 2.2.2.5.1 Quality Control and Validation

- Must have:
  - Mechanisms for on-going data validation.
  - A dedicated entity responsible for checking that the counters are synchronizing to the cloud dashboard, not just working on the ground.
  - Assurance that data are comparable across the region through consistent collection or adjustments (e.g., if counters record at different intervals, such as 15-minutes versus 1-hour).

#### 2.2.2.5.2 Analysis

- Must have:
  - Ability for stakeholders to conduct their own queries on the data.
- Nice to have:
  - Pairing of data from automated counters with big data sources, such as Strava and Streetlight. These big data sources are valuable, but do not replace the need for dedicated counters; analysis is needed to fuse and leverage these new sources with primary sources.
  - Using counter data to infer broader use patterns and connecting experiences (e.g., recreational visitors versus commuters, connecting routes along a network, etc.).
  - Conducting longitudinal analysis.

#### 2.2.2.5.3 Presentation

- Must have:
  - Well-documented, easy-to-use website that presents the data from all the counters, and makes it available for others to do analysis. Stakeholders value the Bike Arlington Dashboard, and suggest that a coordinated program could improve upon it.
  - Understandable information for a general audience. This is especially relevant if there is fusion with big data or other emerging data sources; the source and meaning of the estimates must be understandable.
- Nice to have:
  - Annual report distilling findings from trail counts.
  - A method to associate metadata explaining circumstances for posterity (e.g., one counter location was only counting half of the trail for two years, due to a construction project).
  - Calibration of what is a relatively “low-use” versus “high-use” trail to build public understanding; a few stakeholders expressed reservations that pedestrian and bicycle trips are a small share of overall trips, and worried that showing volumes could have a negative impact unless carefully messaged.



- A way to show raw data separately from validated data. This could allow people to access the raw data as it comes in, recognizing that timely data is sometimes important, and validation takes some time.

#### 2.2.2.6 *Host*

Stakeholders identified a university partner or TPB/MWCOG as the most logical possible hosts for a coordinated regional program, and expressed openness to either option. Stakeholders discussed the possibility of having different organizations manage different portions of a regional program in coordination with one another.

#### 2.2.3 **Other Comments**

It would be beneficial to inform other stakeholder organizations and data users (such as “Friends” groups) during the implementation phase of the project. Park units and other stakeholders can suggest organizations and contacts.

### *2.3 Appendix C: Notes from Stakeholder Meeting*

The project team hosted a stakeholder meeting on March 24, 2021 to achieve the following:

- Present initial findings from the supplemental research and interviews.
- Collect additional feedback to revise findings and inform next steps.

During and after the meeting, stakeholders responded to survey questions. Appendix D contains survey results.

In the meeting, stakeholders reviewed and provided feedback on potential scenarios for a trail count program. Stakeholders agreed on a hybrid model, in which participating jurisdictions would have the option to choose which elements of centralized program they want to join, rather than centralizing all elements for all stakeholders. Stakeholders concurred with the use of an NPS cooperative agreement mechanism to employ university support as the most viable approach for hosting.

Detailed notes follow below.

### 2.3.1 Attendees

**Table 3. Meeting attendees, March 24, 2021**

Source: Volpe Center

Organization	Name	Counter owner/potential financial contributor
City of Alexandria	Alexandria Carroll	Yes
Arlington County	David Patton	Yes
Capital Trails Coalition	Steph Piperno	No – not a counter owner
District of Columbia	Will Handsfield, Mike Goodno	Yes
Fairfax County	Nicole Wynands	Yes
Maryland DOT	Nate Evans	No – not a counter owner
Montgomery County	Darren Flusche	Yes
Northern Virginia Transportation Authority	Mackenzie Love	No – not a counter owner
NOVA Parks	Mark Whaley	Yes
NPS National Capital Area	David Daddio, Laurel Hammig, Ryan Yowell	Yes
NPS National Mall	Eliza Voigt	Yes
NPS Rock Creek Park	Nick Bartolomeo, Dana Dierkes	Yes
NPS Chesapeake and Ohio Historical Park	Anthony Bates, Stephanie Lyons	Yes
NPS George Washington Memorial Parkway	Justin Monetti, Peter McCallum, Aurelia Gracia	Yes
Prince George’s County	Robert Patten, Edith Michel	Yes

Organization	Name	Counter owner/potential financial contributor
Transportation Planning Board (TPB)/Metropolitan Washington Council of Governments (MWCOG)	Charlene Howard, Timothy Canan, Michael Farrell, Martha Kile	No – not a counter owner
Virginia DOT	John Bolecek, Heidi Mitter, Peter Ohlms	No – not a counter owner
Volpe	Andrew Breck, Patricia Cahill, Eric Englin, Rachel Chiquoine	No

### 2.3.2 Next Steps

- NPS will follow up to share meeting notes, Teams chat contents, survey results, and slide deck.
- NPS will scope a cooperative agreement mechanism and draft master cooperative agreement.
- NPS will present about this project during the May 18 TPB Bike/Ped Subcommittee Meeting.
- Stakeholders will contact Laurel Hammig or David Daddio if interested in joining the steering committee.

### 2.3.3 Discussion

#### Geographic scope

Comment from Virginia DOT: Consider expanding the geographic scope to include some counter locations outside the beltway. An exclusive focus inside the beltway will exclude some locations, and we want to avoid having two separate regional non-motorized count systems.

- Prince George’s County: We also would like a program that expands outside the beltway.
- Northern Virginia Transportation Authority: Second the comment.
- Response from NPS: Yes, we can discuss including some counter locations outside the beltway in some or all of the elements of the program. Overall, the rationale for primarily focusing inside the beltway initially is to start small in order to attain success and then scale up from there.

- Maryland DOT: We are already fulfilling some of these coordinated aspects at a statewide-level for Maryland. We already have data set up online at: [http://maps.roads.maryland.gov/itms\\_public/](http://maps.roads.maryland.gov/itms_public/). Also, automated counters are an eligible expense under our program. You could submit them forward and we could integrate those into our dashboard.

### Centralization

Attendees discussed options for how centralized a program may be, ranging from most centralized where a single organization leads all elements of the program to least centralized, where adjacent agencies manage their own programs separately. Stakeholders expressed preference for a hybrid model. Stakeholders need the flexibility to select from among program elements; not all stakeholders need or want to participate in all elements of a centralized program.

### Potential Hosting/Supporting Organizations

Prince George’s County: What about the Transportation Planning Board (TPB)/ Metropolitan Washington Council of Governments (MWCOC)? What role could they play in a coordinated program?

- TPB/MWCOC: We have not internally discussed this yet in order to coordinate an official response. Initial responses from individual staff members:
  - We do not do operations and maintenance.
  - We are interested in being involved on some level to help with the framing; for example, to help synchronize terms (e.g. “national capital trail network” and the definition of the “region”).
  - It makes sense to host the website and the data at TPB/MWCOC.

Stakeholders expressed interest in having a university assist with centralized program elements, and discussed use of an NPS cooperative agreement mechanism (Cooperative Ecosystem Studies Unit, or CESU) to engage university support for hosting a centralized program.

Prince George’s County: What about the Local Technical Assistance Program (LTAP)? Could that support this effort as well?

- NPS: We can look into this.
- Virginia DOT: University of Virginia runs the Virginia LTAP, the Transportation Training Academy. I am not sure this would be a good fit.
- District DOT: The District of Columbia does not have an LTAP because we do not have local jurisdictions below us.

Virginia DOT: Is it possible to have a private entity manage these services? What can the capital bikeshare contract teach us for an effort like this?

- NPS: If it ends up being NPS that creates the central agreement, we are leveraging a cooperative agreement mechanism that would leverage the project management capacity



of the university partner. The university partner may also procure a sub-contract to assist with operations and maintenance.

### Big data

Question from Prince George's County: Our agency is trying to procure big data (from cell phone pings). How reliable will it be for trail usage?

- District DOT and Virginia DOT are supporting a [pooled fund study](#) that will assess the applications of data fusion modeling to combine big data sources with counter data.
- Virginia DOT: The Texas Transportation Institute is also working on what Shawn Turner called a "Big Data Consumer Reports" to give some at-a-glance assessments of products and use cases.

Northern Virginia Transportation Authority: Would the big data sources use aggregated/anonymized data?

- Montgomery County: We are already using StreetLight data and we seem to have received it in an anonymized form.

### Other data considerations

Northern Virginia Transportation Authority: Can this include application programming interface(s) (APIs) that are open to enable easy data sharing with the public and with other agencies in the region? It would be helpful if there were easy specifications to enable transfer of data.

- NPS: Yes, the goal is to make the data easily accessible. One job of the university partner would be to harmonize the data under one standard and make it accessible.

Northern Virginia Transportation Authority: Is there an opportunity to use Capital Bikeshare data, or are there transferrable data specifications?

- NPS: Part of the scope of the program would be to explore alternative data sources that could supplement counter data, such as this example.

### Automated counter makes

Montgomery County: Would this program be restricted to a single technology (Eco-Counter)?

- NPS: No, this is not restricted to one technology. The program could encompass TRAFx, Eco-Counter and other makes.

### Steering committee

NPS: Reach out to David Daddio and Laurel Hammig if interested in participating in a smaller steering committee to guide the development of this effort as it moves forward.

## Siting strategy

Prince George's County: Have you seen examples of centralized entities that helped with strategy and overall framing? For example, a strategy of where to site new counters?

- NPS: Yes, this could be part of the scope that a university partner could provide advisory assistance on these questions.

## 2.4 Appendix D: Stakeholder Meeting Survey Results

This appendix summarizes the results of a two-part survey administered during and following the March 24 stakeholder meeting.

**Table 4. Survey respondents**

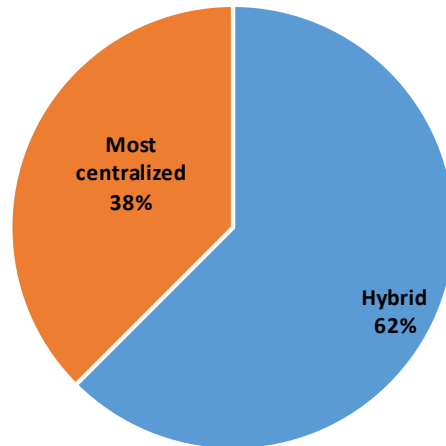
Source: Volpe Center

Organization name	Number of respondents
Arlington County	1
Capital Trails Coalition	1
City of Alexandria	1
Transportation Planning Board/ Metropolitan Washington Council of Governments	4
District Department of Transportation	3
Fairfax County	1
Maryland Department of Transportation	1
Montgomery Parks	1
NPS	6
- Chesapeake and Ohio Canal Historical Park	
- George Washington Memorial Park	
- National Mall and Memorial Parks	
- Rock Creek Park	
- Unknown	
Northern Virginia Transportation Authority	1
NOVA Parks	2
Prince George's County Department of Parks and Recreation	2
Virginia Department of Transportation Research Council	1
<b>Total respondents</b>	<b>25</b>

Question 1: What level of centralization seems appropriate?

Figure 2. Responses to survey question on centralization

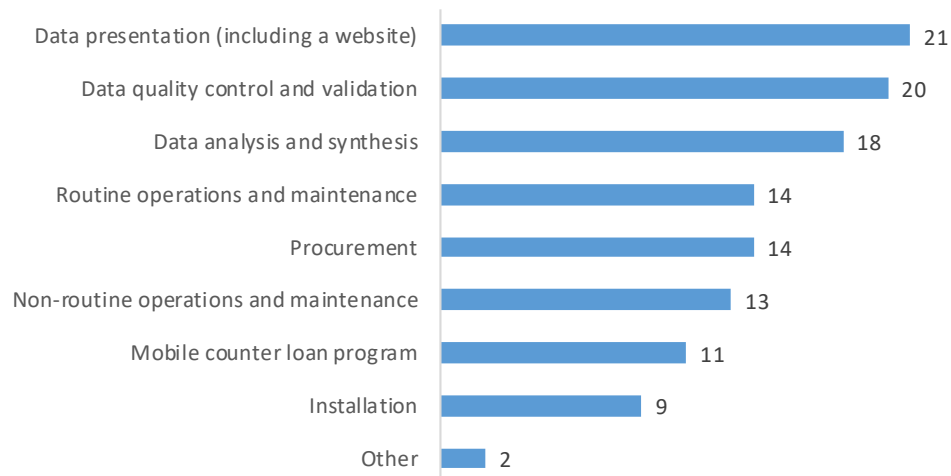
Source: Volpe Center



Question 2: What elements should be centralized, if any? Options include:

Figure 3. Responses to survey question on elements to centralize

Source: Volpe Center

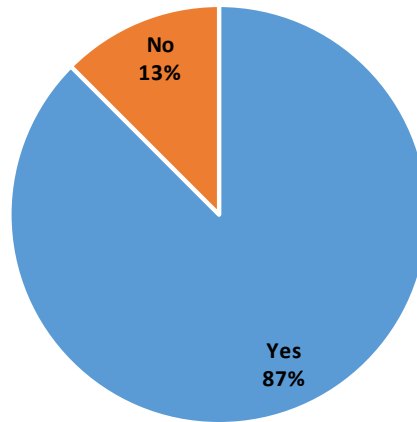


**Question 3: Should stakeholders have the option to participate in some, but not all, elements of a centralized program (e.g. a la carte)?**

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**Figure 4. Survey responses on “a la carte” question**

Source: Volpe Center



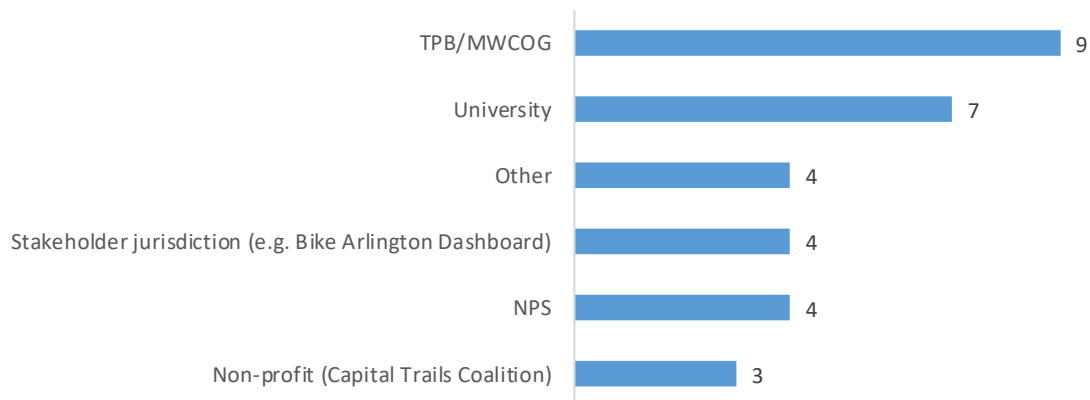
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**Question 4: Where should the website be hosted? Options include:**

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**Figure 5. Survey responses on website hosting question**

Source: Volpe Center



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Those who selected “other,” submitted the following responses:

- Where it is accessible to everyone in a format that can be regularly updated.
- I'm agnostic. Since TPB is not in a position to lead this, the potential to engage a university (-ies) is very positive.



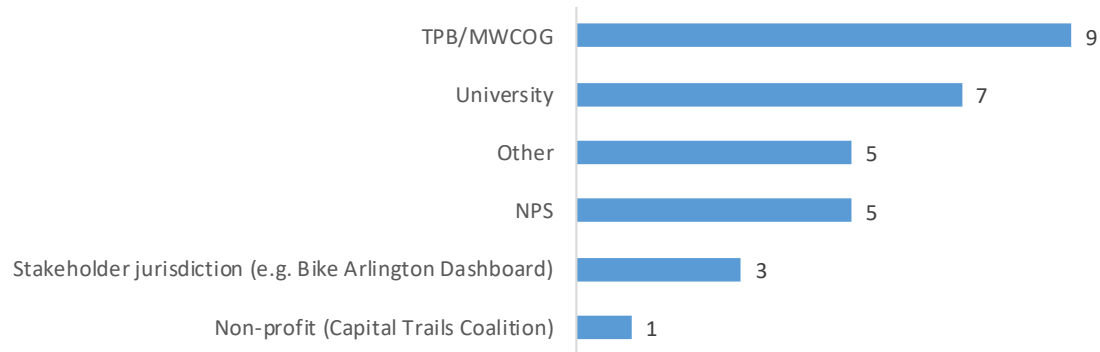
- I'm open to all alternatives.
- No specific preference as long as data access & analysis needs are met.

**Question 5: Where should data be hosted? Options include:**

---

**Figure 6. Survey responses on data hosting question**

Source: Volpe Center




---

Those who selected “other,” submitted the following responses:

- Where it is accessible to everyone in a format that can be regularly updated.
- Within Maryland, we're working to make this happen:  
[http://maps.roads.maryland.gov/itms\\_public/](http://maps.roads.maryland.gov/itms_public/)
- As above, university hosting seems positive.
- All options work for me.
- No specific preference as long as data access & analysis needs are met.

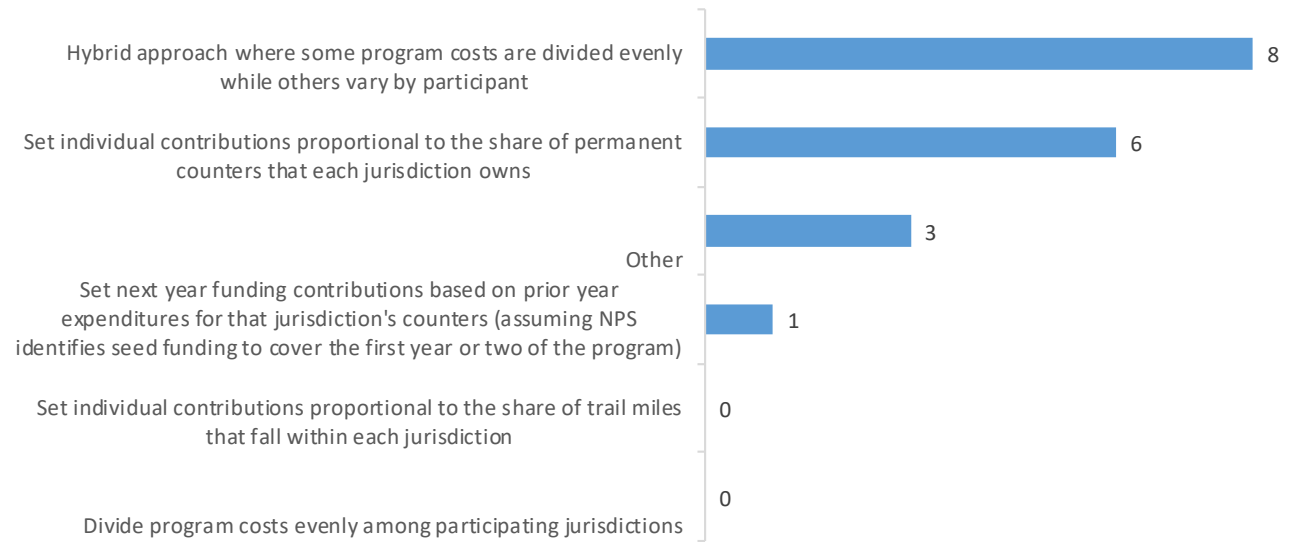
**Question 6 (Open Response): Do you have any input or concerns about where the data or website would be hosted?**

- Just that it be a neutral space, that it be easily accessible and frequently updated.
- Eco-counter data can live in the jurisdiction's account and be shared across jurisdictions.
- Just so long as it's a neutral party that can't get controlled by picayune interests.
- Please make sure that all jurisdictions have easy access to the data. The Capital Trails Coalition for example "owns" the regional trail network GIS layer and wouldn't share it without a legal agreement.
- Rock Creek Park would like ready-access to this data. Ideally, it would be available to Denver to automatically extract this data for recreational park visitation reporting, too.
- Let's continue to coordinate as our projects progress. MDOT is evaluating protocols and technical needs for system expansion.
- My concerns are more with the quality of the hosting/presentation than with who does the hosting. There are many questions about cleaning/normalizing/patching/reconstructing/harmonizing data from different sources. I'm not a data scientist. This is an area of active research. What we have tried to do in Arlington is host and present data "raw" from the counter equipment, and in some cases, our best estimates of replacement data, based on documented procedures. There needs to be the ability to provide detailed comments, or notes.
- My biggest concern is that a contracting and procurement delay/issue wouldn't prevent access to the data or continuation of a website.
- Wherever the data or website is hosted, the City would like to maintain easy, unlimited access to data for its own counters. Staff should easily be able to retrieve data and conduct its own analysis, as needed, without cumbersome bureaucratic barriers.
- The main issue will likely be ensuring consistency in both data and website going forward. If a university has a short-term contract, or a nonprofit or jurisdiction hosting it has a change in staffing or priorities, there could be problems.
- Data should be open and accessible to both the public and other jurisdictions/agencies/entities, preferably through open APIs. Any potential needs for data anonymization and/or aggregation should be identified in advance and responsibility for this be assigned, to ensure that data privacy and cybersecurity are duly considered.
- I am more concerned about data consistency and accessibility.
- I think it makes sense to host the website and most importantly the data at COG/TPB. A big part of that, which was alluded to on the first survey, is data QA/QC and scrubbing. In addition, even the counters in Arlington all have unique data formats so that could be a pretty big lift.
- I have no real comments on the money side of things other to reiterate that the data checking and cleansing will be a lot of work so it will require funding.

**Question 7: How should future financial contribution from each partner jurisdiction be determined? Options include:**

**Figure 7. Survey responses on financial contribution determination**

Source: Volpe Center



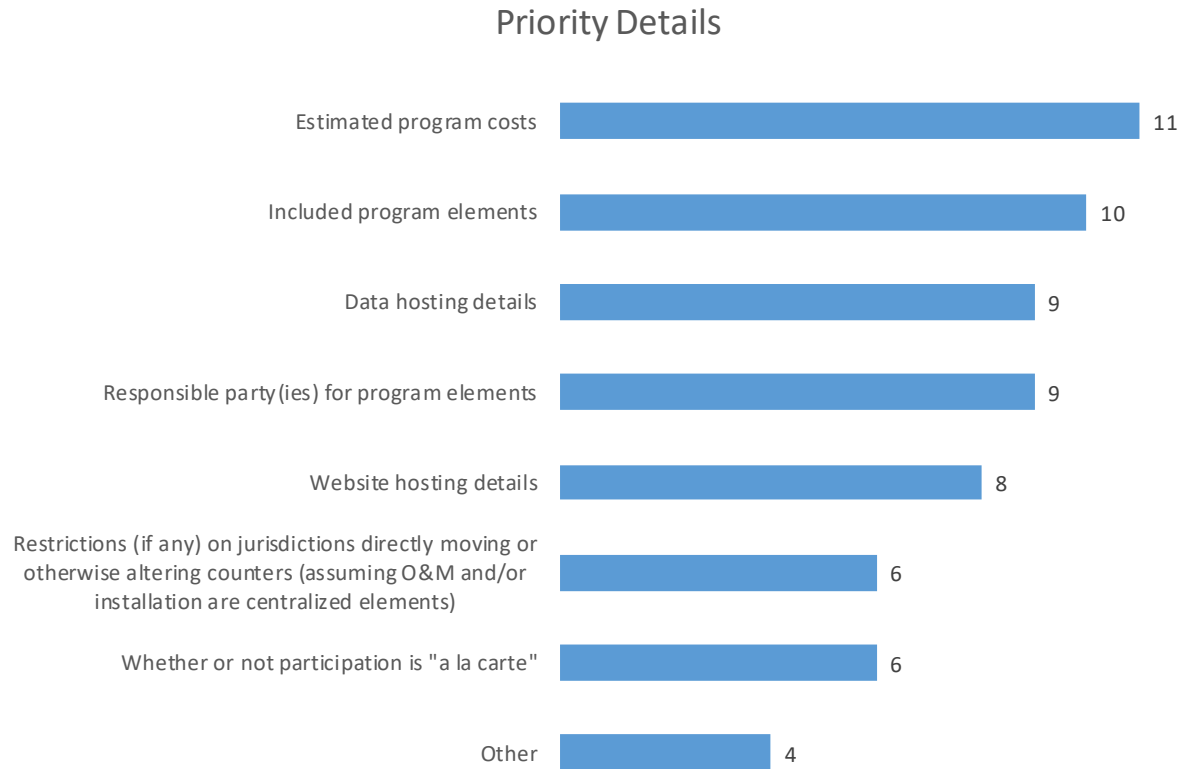
Those who selected “other,” submitted the following responses:

- I haven't given this much thought but am open to best practices in other regions.
- Financial contributions will likely be dependent on the structure of the program (particularly data structure and hosting) and should be evaluated at a later date.

**Question 8: What are the most important details that would need to be settled first in order for your agency to secure a funding commitment? Options include:**

**Figure 8. Survey responses on priority details question**

Source: Volpe Center



Those who selected “other,” submitted the following responses:

- Counter type
- I would hope that something like this would be funded by the National Capital Area office and costs not borne directly by parks. Otherwise, this may not be possible on a park-level.
- The Capital Bikeshare regional agreement might be a model.
- Scope of program (i.e. which types of counters would be included? Would it be only NPS trails? All trails? Would bike lane counters be included?) Also, process for opting in and out should be clear. If a City wants to opt out after initial participation, what does that look like, and how easy would it be to resume control of our counters?

**Question 9 (Open Response): Remaining questions, concerns, and comments included:**

- Just pointing out that there is an equally valid effort for counting pedestrians on trails that we should try to cover with future trail counter tech.
- We currently have very limited funding available for counting efforts. New funding sources would likely need to be identified to support a regional program.
- Who at NPS would fund this? Funds are very tight at the park level.
- I'm very willing to help on a steering committee or equivalent.
- Thanks for taking the lead on this!
- While COG doesn't want to manage a regional count program, I'm hoping that some of the dedicated funding that goes to COG could be earmarked for this effort. Otherwise, each jurisdiction will still have contracting and procurement issues on a regular basis, which could impact the long-term viability of this effort. Plus, for me, the contracting side is the biggest headache which requires an inordinately large consumption of my time.
- The City may be interested in participating in and contributing to a hybrid program, though it's important that we maintain easy access to our own data and have relative autonomy related to adding new counters, relocating counters, etc. The City would also like to know which types of counters would be captured by this program (i.e. would our bike lane Eco-Counter be excluded?). Assistance with maintenance and procurement would be an attractive program component for the City. Also, if the City opted in,
- One-time VTRC implementation funding is unlikely, but a remote possibility. I don't expect to have direct involvement going forward, though.
- How could regional entities participate and what would be required to do so? (Could regional/state entities access information, in raw form, without purchasing counters/infrastructure? Could regional/state entities also purchase counters?)
- Standardized data specifications should be utilized in data collection and storage. Preference given to those standards that are national best practices, those that could synergize with other, existing regional data collection efforts (including CaBi data) and those that would satisfy recurring data needs/use cases (i.e. project planning and funding applications.)
- Care should be taken to ensure that equity is a top consideration in both collection and use of the data. For example; is the Strava user base representative of the general population and/or typical trail user(s)? If not, what best practices can be used to ensure that any analysis that uses the data are done equitably overall?"
- My other concern is the definition of the region. There was a lot of discussion of this in the meeting. I don't think it should be limited to only park trails or to smaller portions of the region. I would argue for including any counters operating within the COG member jurisdictions shown in the attached map.

## 2.5 Appendix E: Automated Counter Inventory

The Volpe Center worked with jurisdictions to create a current inventory of counters. This focused on permanent, automated counters but also included mobile counters and manual counts, when applicable. The inventory includes the owner agency, model, location (trail or on-road), facility name, latitude and longitude coordinates, and date first installed. The inventory also flags whether the counter is currently operational, on an NPS trails or with direct connection, capable of detecting direction, and capable of separating bike and pedestrian traffic. The full inventory is in ArcGIS geospatial shapefiles and tables, and an Excel spreadsheet format. The below summarizes the inventory in tables and maps.

**Table 5. Counter Inventory by Jurisdiction**

Source: Volpe Center

<b>Jurisdiction</b>	<b>Counters on NPS trail or with direct connection</b>	<b>Counters on other locations</b>	<b>Total counters</b>	<b>Notes</b>
<b>Arlington County</b>	12	29	41	
<b>NPS</b>	35	--	35	Includes 29 maintained by CHOH, which are TRAFx
<b>Montgomery</b>	11	17	28	21 counters are TRAFx
<b>DDOT</b>	10	11	21	
<b>Alexandria</b>	3	8	11	
<b>Fairfax County</b>	--	4	4	Counters not installed
<b>Prince George's County</b>	2	--	2	

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**Table 6. Planned automated counters**

Source: Volpe Center

<b>Owner Agency</b>	<b>Facility Name</b>	<b>Number of Planned Counters</b>
Arlington County	Washington and Old Dominion Trail	1
DDOT	Rock Creek Trail	5
NPS	Mount Vernon Trail	1
NPS	Oxon Hill Trail	2
NPS	Kennedy Center	3
Fairfax County	Not installed	4

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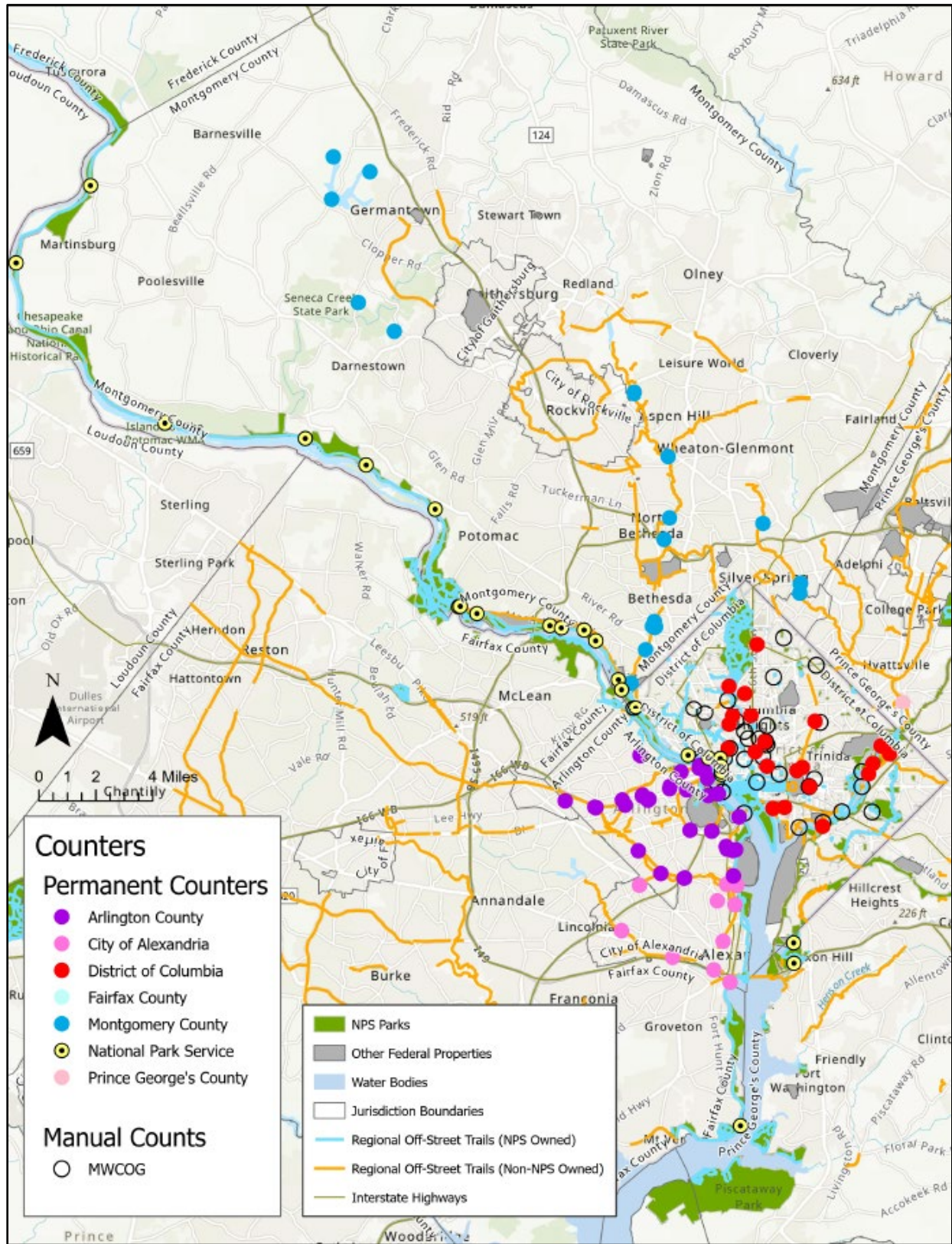






**Figure 10: Washington DC Metro Area Automated Trail Counters, Full Extent**

Source: Volpe Center



## 2.6 Appendix F: Notes on Successful Precedents from around the Country

The Volpe Center reviewed regional trail count programs across the United States. This review started by identifying successful regional count programs and understanding key components that made these programs work well. With this task, Volpe identified key decision points and differences in four general areas: governance, data collection, data management, and funding structures.

### Governance

In the most centralized examples, a single agency did all of the major tasks associated with an automated counter program. In other cases, multiple organizations shared centralized responsibilities and/or the scope of the centralized program included some but not all counter-related activities.

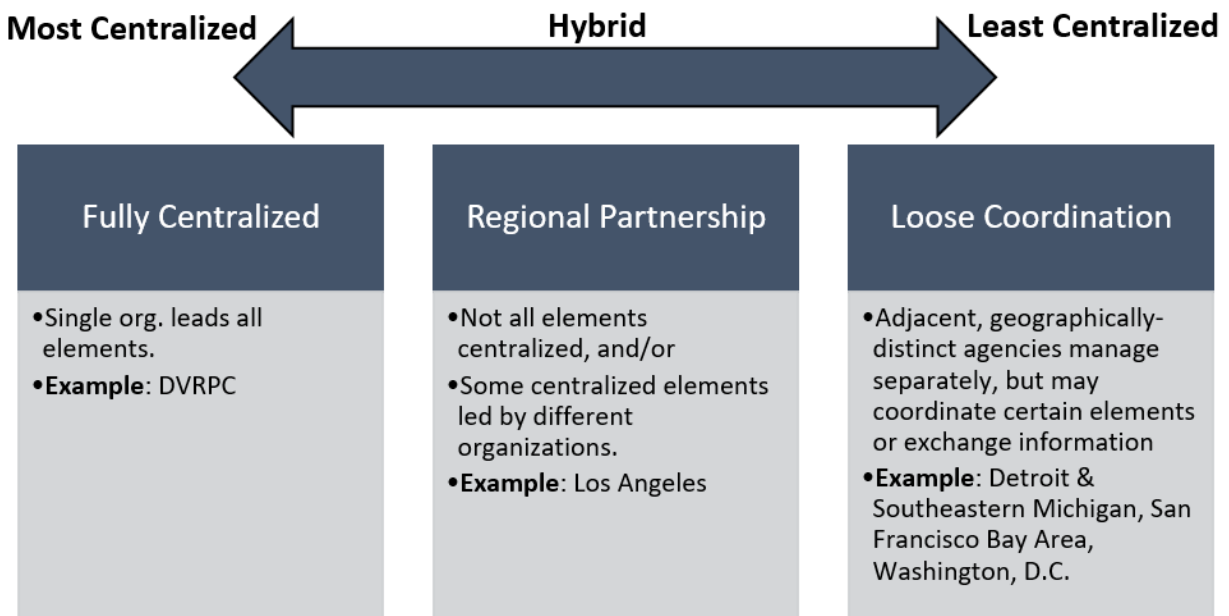
### **Examples:**

- **Fully centralized (MPO-led)** – Delaware Valley Regional Planning Commission (DVRPC)
- **Fully centralized (MPO-led) with academic partnership** – North Central Texas Council of Governments (NCTCOG) (in partnership with Texas A&M/Texas Transportation Institute)
- **Regional partnership** – Los Angeles (partnership between Southern California Association of Governments (SCAG), Los Angeles Metro Transportation Authority, and the University of California – Los Angeles (UCLA))
- **Dispersed, Collaborative** – Southeast Michigan
- **Dispersed, Loose Coordination** – San Francisco Bay Area Counties/MPO

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**Figure 11. Spectrum of centralization for coordinated count programs**

Source: Volpe Center



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### Data Collection

Regional count programs are using a variety of methods to collect data on pedestrian and bicycle traffic volumes.

#### Examples:

- **Permanent Eco-Counters** – DVRPC
- **Short Duration Mobile Eco-Counters Shared Across the Region** - NCTCOG
- **Video Counting/Automatic Detection** – City of San Francisco
- **Manual Count** – Portland, Los Angeles, City of San Jose
- **Permanent Eco-Counter + Manual Count to determine margin of error**– State of Connecticut
- **Additional Survey to Glean Demographic Data** – Portland (manual count + survey)
- **Counting Other User Types** – Los Angeles (skateboarders), Portland (people in wheelchairs)

### Data Management

Regional count programs are using different methods of managing, visualizing, and analyzing the counter data.

#### Examples:

- **Continuously-uploaded data**– DVRPC, BikeArlington

- **Data merged with other relevant datasets** – Los Angeles Clearinghouse, Los Angeles Active Transportation Database (UCLA)
- **Estimating network volumes** – Oregon DOT and Washington State DOT
- **Data visualization examples** – DVRPC, San Francisco Bay Area
- **University role examples:**
  - UCLA – created a data pipeline (database, data quality checks), and built a data visualization website
  - Texas A&M – provided data visualization to communicate data across multiple jurisdictions (<https://mobility.tamu.edu/bikepeddata/>)
  - University of Tennessee – conducted data analysis to find larger health/economic impacts of trails
  - Portland State – created data visualization to communicate with the public and aggregate data from many jurisdictions across the U.S.

### Funding Structures

Count programs have used a variety of creative approaches to fund count program elements.

#### **Examples:**

##### Initial counter purchase

- **Nonprofit donates counter** – Portland, Southeast Michigan
- **MPO buys counter for regional use** – NCTCOG
- **Individual transportation entity buys counters for their use** – DVRPC

##### Operations and maintenance

- **MPO leads regional maintenance** – DVRPC
- **Individual transportation entity leads their own maintenance** – SF Bay Area Counties
- **Academic/nonprofit or other partner leads regional maintenance** – no clear examples of this taking place

## 2.7 Appendix G: Notes on Emerging Approaches and Big Data

Stakeholders are interested in exploring new data sources as part of a centralized program. An overarching finding is that emerging sources such as big data can supplement but will not replace the role of automated counters. Sources such as Streetlights and Strava have significant biases. There is no simple method to infer unbiased total volumes based on these sources. Data fusion models do hold great promise for modeling volumes network-wide, even where there are no counters. However, the state of the practice is still immature.

Maryland DOT is working on a similar effort to create a coordinated count program throughout the state. They conducted research to inform a “best practices scan,” which is now evolving into a program guide, with information on how to set up infrastructure, including data protocols. Aside from the integration of big data sources, another promising emerging approach may be the use of artificial intelligence with video-based sensors. These kinds of counters have benefits over the loop, tube, and infrared types because they tend to be more durable and reliable and can capture more types of data. These may be especially beneficial at intersections.

On February 17, 2021 the Volpe Center convened an interview and group discussion with Josh Roll from Oregon DOT (ODOT) on emerging approaches for combining counter data with other data sources. The purpose was to understand the current state of the practice and possible implications for a coordinated count program in the NCA. A list of attendees and bulleted notes from this discussion follow below.

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**Table 7. Meeting Attendees, February 17, 2021**

Source: Volpe Center

Attendee	Agency
Heidi Mitter	Virginia DOT
John Bolecek	Virginia DOT
Yuan Han	Virginia DOT
Josh Roll	ODOT
Laurel Hammig	NPS
Ryan Yowell	NPS
David Daddio	NPS
Stephanie Dock	District DOT
Sharada Strasmore	District DOT
Eric Englin	Volpe Center
Andrew Breck	Volpe Center

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### Notes:

- **Relevant studies**
  - Portland State University and the University of Texas at Arlington are currently conducting a Pooled Fund study, [Exploring Data Fusion Techniques to Derive](#)



[Bicycle Volumes on a Network](#), meant to inform future work in this area. A draft report is expected in June 2021.

- Sponsored by the Federal Highway Administration (FHWA) and Oregon Department of Transportation (ODOT), ODOT and the Bend Metropolitan Planning Organization (MPO) completed a [report](#) on a non-motorized traffic data collection program for the Bend MPO. The report demonstrates use of various modeling techniques to combine counter data with other sources.
- **Insights thus far and expected results from the above studies**
  - So far, research is finding that bike share data has limited value. It is not clear what issues are limiting this.
  - The goal by June 2021 is to have a recipe book for using all of the different types of non-traditional data sources.
  - Strava started providing its data free of charge because jurisdictions were asking for significant cleaning. ODOT found that Strava is not using very sophisticated methods for cleaning their data – there is a need for users to understand acceptable levels of precision if they are using Strava for analysis.
- **Oregon DOT background and work on regional active transportation counts**
  - ODOT is in a similar situation to the DC area, trying to set up a coordinated regional count program.
  - ODOT is working on new performance indicators for active transportation – bicycle and pedestrian miles traveled. The agency is working on methods to estimate those performance measures. A key question is how much ODOT should depend on (1) traditional methods like automatic counters versus (2) non-traditional methods. Both of the studies linked above investigate the potential for using non-traditional methods. ODOT is leaning towards relying heavily on non-traditional methods to create a statewide non-motorized traffic count. ODOT is also considering this for motorized traffic monitoring.
  - One research project is building on a Utah DOT effort to record pedestrian activation of traffic push buttons (at intersection crosswalks) to estimate pedestrian travel using a specific factor. ODOT has about 300 signals with traffic push buttons, so they are thinking about normalizing and factoring these signals to make pedestrian travel estimates.

2.8 Appendix H: Sample Special Use Permit for Siting Counter on NPS Trails



**George Washington Memorial Parkway**  
**700 George Washington Memorial Parkway**  
**McLean, Virginia, 22101**  
**(703)-289-2500**



Park Alpha Code \_\_\_\_\_

Type of Use \_\_\_\_\_ Other \_\_\_\_\_

Name			
Company/Organization			
Street Address			
City	State	Zip Code	Country
Telephone Number		Cell Phone Number:	
Fax Number			
Email Address			

is hereby authorized to use the following described land or facilities in \_\_\_\_\_:

The area must be restored to its original condition at the end of the permit.

The permit begins at \_\_\_\_\_ am /pm on \_\_\_\_\_. The permit expires at \_\_\_\_\_ am /pm on \_\_\_\_\_.

SUMMARY OF PERMITTED ACTIVITY: (see attached sheets for additional information and conditions) PEPC# \_\_\_\_\_

*Continued long term use and maintenance of existing trail counting equipment on the \_\_\_\_\_ Trail. Any inspection, maintenance, repair, data collection, or replacement of count equipment will be responsibility of the permittee and be accessed by foot. Permittee shall maintain counting equipment in good order and maintain routine data sharing with NPS for the duration of the permit term.*

Person on site responsible for adherence to the terms and conditions of the permit (include contact information)

Authorizing legislation or other authority

54 U.S.C. 100101

APPLICATION FEE	<input type="checkbox"/> Received	Amount
	<input checked="" type="checkbox"/> Not Required	\$
PERFORMANCE BOND	<input type="checkbox"/> Received	
Amount	<input checked="" type="checkbox"/> Not Required	\$
LIABILITY INSURANCE	<input checked="" type="checkbox"/> Received	
Amount	<input type="checkbox"/> Not Required	\$ 3
million		
COST RECOVERY	<input type="checkbox"/> Received	Amount
	<input checked="" type="checkbox"/> Not Required	\$
LOCATION FEE	<input type="checkbox"/> Received	
Amount	<input checked="" type="checkbox"/> Not Required	\$

ISSUANCE of this permit is subject to the attached conditions. The undersigned hereby accepts this permit subject to the terms, covenants, obligations, and reservations, expressed or implied herein.

\_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_  
PERMITTEE Signature

\_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_  
Authorizing NPS Official



## CONDITIONS OF THIS PERMIT

Failure to comply with any of the terms and conditions of this permit may result in the immediate suspension or revocation of the permit. [36 CFR 1.6(h)]

1. The permittee is prohibited from giving false information; to do so will be considered a breach of conditions and grounds for revocation: [36 CFR 2.32(a)(3)].
2. This permit may not be transferred or assigned without the prior written consent of the Superintendent.
3. The permittee shall exercise this privilege subject to the supervision of the Superintendent or designee, and shall comply with all applicable Federal, State, county and municipal laws, ordinances, regulations, codes, and the terms and conditions of this permit. Failure to do so may result in the immediate suspension of the permitted activity or the revocation of the permit. All costs associated with clean up or damage repairs in conjunction with a revoked permit will be the responsibility of the permittee.
4. The permittee is responsible for making all necessary contacts and arrangements with other Federal, State, and local agencies to secure required inspections, permits, licenses, etc.
5. The park area associated with this permit will remain open and available to the public during park visiting hours. This permit does not guarantee exclusive use of an area. Permit activities will not unduly interfere with other park visitors' use and enjoyment of the area.
6. This permit may be revoked at the discretion of the Superintendent upon 24 hours notice.
7. This permit may be revoked without notice if damage to resources or facilities occurs or is threatened, notwithstanding any other term or condition of the permit to the contrary.
8. Hold Harmless/Indemnification statement and liability insurance requirement:  
Permittee will indemnify, save, and hold harmless and defend the United States against all fines, claims, damages, losses, judgments, and expenses arising out of or from any omission or activity of the permittee, or its employees, to the extent allowable under law.

To the extent that work undertaken is performed by other than permittee employees, the permittee shall require such person or corporation to:

- a. Carry general liability insurance against claims occasioned by the action or omissions of the permittee, its agents and employees in carrying out the activities and operations authorized by this permit. The policy shall be in the amount of \$ 3 million and underwritten by a United States company naming the United States of America as additionally insured. The permittee agrees to provide the Superintendent with a Certificate of Insurance with the proper endorsements prior to the effective date of the

permit.

- b. Pay the United States the full value for all damages to the lands or other property of the United States caused by the said person or organization, its representatives, or employees.
  - c. Indemnify, save and hold harmless, and defend the United States against all fines, claims, damages, losses, judgments, and expenses arising out of, or from, any omission or activity of the said person or organization, its representatives, or employees.
9. Permittee agrees to deposit with the park a bond in the amount of \$ 0.00 from an authorized bonding company or in the form of cash or cash equivalent, to guarantee that all financial obligations to the park will be met.
10. Costs incurred by the park as a result of accepting and processing the application and managing and monitoring the permitted activity will be reimbursed by the permittee. Administrative costs and estimated costs for activities on site must be paid when the permit is approved. If any additional costs are incurred by the park, the permittee will be billed at the conclusion of the permit. Should the estimated costs paid exceed the actual costs incurred; the difference will be returned to the permittee.
11. The person(s) named on the permit as in charge of the permitted activity on-site must have full authority to make any decisions about the activity and must remain available at all times. He/she shall be responsible for all individuals, groups, vendors, etc. involved with the permit.
12. Nothing herein contained shall be construed as binding the Service to expend in any one fiscal year any sum in excess of appropriations made by Congress or administratively allocated for the purpose of this permit for the fiscal year, or to involve the Service in any contract or other obligation for the further expenditure of money in excess of such appropriations or allocations.
13. If any provision of this permit shall be found to be invalid or unenforceable, the remainder of this permit shall not be affected and the other provisions of this permit shall be valid and be enforced to the fullest extent permitted by law.
14. Permittee's activities under this permit are subject to the supervision of the Superintendent and or designated representative, and shall comply with all applicable laws and regulations of the area (e.g., codes, ordinances), including those pertaining to health, safety, sanitation, and the protection/preservation of natural/cultural/historical resources.
15. The NPS reserves the right to halt any operation within its jurisdiction, in part or whole, which is determined to be detrimental to the public interest. If such right is exercised, the NPS will determine when, if ever, work may resume. Work will be permitted to resume only if a proper method can be devised to prevent such detrimental behavior from reoccurring.
16. This permit does not authorize interference with any existing or proposed Federal projects that may be undertaken by the United States or with the management or administration of the National Park

Service lands. This permit is subject to the right of the NPS to establish trails, roads, and other improvements and betterments over, upon or through Permittee's worksite described herein, and further to the use by travelers and others of existing or future roads, trails, and other improvements.

17. NPS Coordination: The Permittee shall coordinate the performance of all activities associated with this permit with the Superintendent or the Superintendent's designated representative. The designated NPS representative shall be on the distribution lists for meetings, the work schedule, and other communications as needed to track the project. NPS shall notify Permittee of any changes in designated representative.
18. NPS Permit: A copy of this permit including all exhibits, amendments and explanatory notes shall be kept by the Permittee onsite at all times. The Permittee shall comply with all State and Federal laws applicable to the purpose for which this permit is approved. Permittee will comply with all instructions issued by the United States Park Police and other representative(s) of the Park Superintendent.
19. Non-NPS Permits: Prior to commencement of activities on parkland, the Permittee shall have received all necessary permits required by outside agencies for work to be performed under this permit. Copies shall be provided to the NPS, and contact information for each permit.
20. Limits of authority of this permit - The issuance of this permit neither obligates nor implies consent on the part of the National Park Service to allow construction on, or related to the use of, the park-administered land. Any action desired by the permittee beyond the scope of work described within this permit must be considered as separate actions requiring thorough analysis of the impacts upon National Park Service administered land, according to applicable law and regulation.
21. This Permit may be terminated for any reason, without cause at the discretion of the NPS or Permittee upon sixty (60) days written notice. Permittee expressly acknowledges the revocable nature of this Permit and NPS shall not be liable for any cost, expenses, damages, claims or the like caused by arising out of NPS discretionary termination or revocation of this Permit.
22. All vehicles are authorized to operate on the NPS administered roadways only for the purpose stated on page 1. The permittee and vehicle operators shall comply with all local and Federal laws applicable to the purpose for which this permit is approved. A copy of this permit will be carried in each vehicle, at all times, while operating on the parkway administered roadways.
23. Management of traffic on the trail: Work zones shall be flanked by warning signs, including dismount signs should ongoing work affect the travel way of the trail. Visitors shall be directed to dismount and walk around the ongoing work. Such work within the travel way of the trail shall not begin before 9am, due to large volume of early morning use of the trail.
24. Management of traffic plans shall be submitted to the National Park Service, with provisions for both the trail, and if necessary, parkways. Lane closure requirements will be made available to permittee if scope of work requires specific access requirements to the counters.
25. Workers shall exercise caution while on the trail, wear safety vests, and abide by trail rules (keep

right/ do not block the trail).

26. The worksite shall be kept free of trash and construction debris at all times. All foreign debris is to be cleaned and removed from the worksite on a daily basis.
27. Before commencement of work, Permittee will provide the NPS with copies of any and all documentation utilized in the planning of the work, including diagrams, schematics, pictures, drawings, and/or plans of any kind (e.g., architectural drawings, security plans, storm water management plans, and erosion & sediment control measures). In the event that such documentation changes, Permittee will promptly submit updated copies to the NPS.
28. Public Access: Permittee shall not restrict public access to the park at any time during the activity. Permittee shall maintain the travel way of the trail and/or connection open and free from obstruction. Closure of park areas required by the permittee for construction related work must be pre-approved in writing by the Superintendent through a Record of Determination.
29. Emergency Access route to the activity or project area must be maintained at all times. Permittee and contractor shall coordinate with law enforcement, fire, and emergency medical services as necessary.
30. All accidents or damage of any kind happening at or around the worksite, directly or indirectly caused, witnessed or otherwise learned of by Permittee (or its representatives or employees), must be reported to the Park POC immediately. These include injuries to people or to flora or fauna.
31. The Permittee may not store any tools, supplies, materials, equipment, or vehicles (unattended) on park property without the prior review and approval of a staging plan submitted with the application or prior written consent of the Superintendent.
32. Permittee hereby agrees to be fully responsible for the management, performance, use and safety of all operations conducted by or on behalf of the Permittee upon NPS administered property. Work not specifically authorized by this permit shall not be performed without prior written authorization from the Superintendent. Additionally:
  - a) Permittee shall be responsible for provision and maintenance of proper signs, barricades, and fence to secure any hazardous work area(s) to protect public health.
  - b) Permittee agrees it shall require that all work be performed in a safe and responsible manner and to OSHA standards to avoid accidents and injury to all workers, government employees, and park visitors. Permittee agrees it shall require safety measures to be installed and maintained where risks or potential hazards are likely or evident.
  - c) Permittee is responsible for all reimbursement costs for damages to land and facilities caused by permitted activity. Examples of such damages might include, but are not limited to, damages to drains, signs, curbing, road surfaces, vegetation, turf and historic structures.
33. The Permittee shall take responsibility for all vehicles used during this permitted activity including any and all releases and/or discharges of hazardous substances, petroleum products, and non-hazardous wastes into the environment resulting from project activities.

The Permittee will assume responsibility for immediate clean-up for any such releases and discharges.

34. Any waste entering on park land shall be removed and the affected property cleaned, stabilized, or restored, to the satisfaction of NPS. This restoration shall take place within the time period directed by NPS.
35. All accidents must be reported to NPS point of contact and USPP immediately after stabilization.
36. Occupational Safety Health Administration regulations must be followed at all times.
37. The permittee is responsible for the cost and repairs to any structures, facilities, installation, sod, soils, or landscape vegetation on park land damaged by the work authorized under this permit and shall, at the direction of the NPS, submit detailed plans for the repair, restoration and/or replacement of such. All parkland and structures disturbed by the work authorized by this permit will be restored to the satisfaction  
  
of the Superintendent or their designee. Restoration of turf areas shall be according to the NPS specifications for Turf Restoration.
38. Archeological discoveries - The Permittee will halt any activities and notify the NPS point of contact upon discovery of archeological findings. These findings may include, but are not limited to, single or multiple discoveries of:
  - a. Whole objects or partial artifacts such as arrowheads, ceramic dinnerware shards, glass bottles and fragments, oyster shell and bone, metallic objects like coins or nails, etc.; or
  - b. Structural remains such as stone or brick and mortar building foundation ruins, fence-line post remains, old terra cotta or fired clay utility pipes, etc.; or
  - c. Unusual soil conditions such as dark or unusually colored soil stains possibly indicating graveshafts, privy pits or wells, etc.

All archeological findings unearthed remain the property of the park. If artifacts are discovered, the artifact is to remain in place as is. The permittee shall not resume work in the area until instructed to do so by the NPS.

39. No vegetation may be cut, altered or destroyed without first obtaining approval. Any vegetation that must be removed shall be mitigated as specified by the Superintendent or designee. Uses of pesticides or herbicides are not authorized.
40. Temporary paint markings are to be kept to an absolute minimum. Paint markings are not allowed on permanent structures, pavements, rocks, trees or landscaped areas unless it is impossible to use a removable flag or ribbon. Under no circumstances are paint markings to be applied to buildings, decorative park features, bricks, monuments, wooden bridges, bridge railings, light poles, signs, signposts, or bulletin boards. If paint is used on a hard surface such as

asphalt, concrete, bridge abutment, etc., the Permittee must contact the NPS for guidance on application and removal of paint. Any paint used, must be water-base. Flagging tape or lumber crayons are preferred.

41. **Wildlife protection:** The Permittee shall notify the NPS designated representative of any unforeseen concerns pertaining to wildlife within the permitted area. Care shall be taken not to disturb any wildlife species (reptiles, migratory birds, raptors, or bats) found nesting, hibernating, estivating, or otherwise living in, or immediately nearby worksites. Collecting “take” of any living fauna, or shed from any living fauna (such as antlers or snake-skin) is illegal. The NPS Natural Resource Manager shall respond to concerns of trapped or injured wildlife.
  
42. Nothing in the preceding paragraphs shall be deemed to limit any authority of the United States, (a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to or minimize an actual or threatened release of hazardous substances on, at, or from the permitted area, or (b) to direct or order such action, or seek an order from the requisite Court, to protect human health and the environment or to prevent, abate, respond to or minimize an actual or threatened release of hazardous substances on, at or from the Site.
  
43. **Public Notice and Communication:** The Permittee and the NPS shall coordinate to advise area residents and park patrons of the timeframe for permitted activities and to address ongoing public involvement. Permittee is responsible for notification through various methods such as press releases, posted signs, variable message boards, website updates, and partnering meetings.

**Communication Plan:**

**IN CASE OF  
EMERGENCY DIAL 911  
FIRST**

**In addition contact**

**U.S. Park Police 24 hour Emergency Dispatch at (202) 610-7500**

Notify NPS designated representative of all emergencies as soon as possible. Include the NPS on all distribution lists for meetings, work schedule changes, and other communications as needed to track the incident or accident.

Permittee must identify any agents/representatives/contractors/subcontractors (e.g., names, phone numbers, etc.) retained to perform the above-mentioned work. Additionally, Permittee will provide the name and contact information of the worksite supervisor prior to the commencement of any work. If any of this information changes, Permittee will notify the NPS immediately and provide updated information. NPS and Permittee shall notify each other of staff changes and contact information, to keep contact information current.

**Contact Information**

**National Park Service**

**Permittee**

<b>NPS Authority:</b> _____ Superintendent _____ Park Unit <u>Contact number:</u> Office: <u>Address:</u>	
<b>Primary NPS Point Of Contact:</b>	<b>Contact Person in charge</b>

**REPORT DOCUMENTATION PAGE**

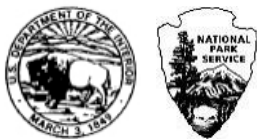
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As the nation’s principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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