



West Virginia GIS Technical Center

West Virginia University

Department of Geology and Geography ♣ Eberly College of Arts and Sciences

REPORT ON PAD-US STATE DATA STEWARD GRANT PROJECT

for

West Virginia

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Summary

Nearly twelve percent or 1.8 million acres of West Virginia's 15.5 million-acre land area is publicly owned, conserved, and managed for outdoor recreation. This includes local parks, state wildlife management areas, state parks, state forests, national parks, national rivers, national forests, national wildlife refuges, Army Corps reservoirs and other lakes. In addition, a minimum of eight land trusts work at conserving tens of thousands of acres of private lands in West Virginia through conservation and agricultural easements.

The WV GIS Technical Center at West Virginia University was awarded an FY16 PAD-US State Data Steward Project grant from the U.S. Geological Survey to update the state and local lands in West Virginia. As a state steward, the WV GIS Technical Center oversaw the collections of authoritative, fee-owned state and local protected lands. Specifically, the focus was on the aggregation of state parks, state forests, wildlife management areas, and local parks. The PAD-US update included developing online web collaboration tools for agencies to verify public land boundaries and attributes. The WV GIS Technical Center coordinated meetings among the land managers to resolve overlapping or sliver boundary issues for federal and state lands. A statewide digital tax parcel file and other authoritative sources were utilized to update the protected land boundaries.

The PAD-US update resulted in all state and local protected lands completed at 95% or better. A total of 652 protected land units were updated: 36 state parks, 8 state forests, 109 state wildlife management areas, and 499 local parks. The PAD-US update of state and local lands increased fee-owned protected areas by a total of 67,396 acres and new land units by 516. This updated information will be included in PAD-US 2.0 annual update scheduled to be released at the end of 2017. In addition to the state and local land updates, other protected areas included in PAD-US are the national NGOs/nature preserves, federal lands coordinated through the Federal Lands Workgroup, and easements over fee and private lands collected by other state stewards through the National Conservation Easement Database (NCED).

This interagency project would not be possible without the support of the various land managers. Special thanks to the WV Division of Natural Resources, WV Division of Forestry, Monongahela National Forest, and National Park Service. Lastly, the technical support and documentation from the PAD-US Coordinator and GIS Database Manager of Boise State University were extremely helpful.

PAD-US website	State/Local Lands
Estimated inventory completeness	
100%	State Parks
100%	State Forests
100%	State Wildlife Management Areas
95%	County Parks
95%	City Parks
Year steward delivered update	2017

Table 1. Summary of estimated inventory completeness and anticipated publication year for updates to PAD-US.

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1. Introduction

The purpose of this project was to update the protected areas geodatabase for **West Virginia** that contributes directly to the Protected Areas Database of the United States (PAD-US). It was discovered that many of the state and local land boundaries in the current PAD-US are generalized or missing. A USGS grant was awarded to the WV GIS Technical Center to update the state and local lands, specifically state forests, state parks, state wildlife management areas, county and city parks.

As a state steward, the WV GIS Technical Center worked with the state and local agencies to obtain and validate the public lands at the state and county levels. Digital tax parcels were the primary data source for creating and updating the geometry of the public lands. Both the geometries and attributes of the protected lands were validated by authoritative sources through the use of online interactive mapping applications. Before the PAD-US update, many of the protected state land unit boundaries were generalized and inaccurate; in addition, the local park data had never been inventoried for West Virginia.

The West Virginia GIS Technical Center and its partners updated 100% of the state parks, state forests, and state wildlife managed areas. Local protected lands (county, city, and private parks) were primarily created from tax parcels which allowed the Center to inventory and validate 95% or more of the local parks. Through working with multiple management organizations, the state steward data collection efforts improved interagency capacity for updating protected lands as well as resolving shared/overlapping boundary issues.

PAD-US Update for West Virginia...by the numbers

- 11.8% or 1.8 million acres of West Virginia's 15.5 million-acre land area are protected
- 652 protected land units updated at greater spatial accuracy
 - 36 state parks
 - 8 state forests
 - 109 state wildlife management areas
 - 499 county or city parks
- 95% or better complete inventory of all state and local protected lands
 - 67,396 acres of fee-owned state and local lands added
- Two federal agencies (Monongahela National Forest and National Park Service) and two state agencies (WV DNR and WV DOF) coordinated to resolve shared boundary differences
- 56 web collaboration maps created for updating and validating protected lands
- 1.4 million parcels and other authoritative data sources for updating protected land boundaries

2. Review of PAD-US

The estimated **completeness** of the current PAD-US for state and local lands is as follows:

- State Parks: 90%
- State Forests: 90%
- State WMAs: 85%
- County Lands: 0%
- City Lands: 0%

The spatial accuracy of the 36 **state park** boundaries is of poor quality and generalized. Certain **state forests** are being managed by other agencies, and so the PAD-US attributes require an update. A total of 24 **state wildlife management areas** are absent from the current PAD-US and consist of generalized boundaries. Nearly no **county or local parks** exist in the current PAD-US. Refer to Table 2 for the current PAD-US for West Virginia.

CURRENT PAD-WV		
LAND TYPE	UNIT	GIS ACRES
National Public Lands	109	1,290,014
National Forests	2	1,046,347
Inventoried Roadless Areas	26	201,706
Wilderness Areas	10	119,318
Research Areas	2	4,414
Monument/Landmarks	6	2,539
Scenic and Botanic Areas	4	2,423
National Park Areas	4	83,608
National Wildlife Refuges	2	19,428
USACE Areas	25	140,631
Other National Lands	28	123,203
State Public Lands	130	490,185
State Parks	35	59,437
State Forests	10	77,855
State WMAs	85	352,893
Local Lands	2	2,524
County Lands	2	2,524
City Lands	0	0
Private Local Lands	0	0
Other Protected Lands	282	82,585
Agriculture Easement	141	22,363
Conservation Easement	38	2,264
Private Conservation	50	5,682
Other Easement	43	5,405
Unknown/Not Designated	10	46,871
Overlapping State Lands		-79,594
TOTAL	523	1,785,714

Table 2. Current PAD-US lands for West Virginia

3. Translate to Blank Schema or Use PAD-US Checkout

The WV GIS Technical Center used the “translation to blank schema” method to translate local and state data to the PAD-US template. The Center used the blank **PAD-US schema version 1.4** that was provided to us by PAD-US Coordinator Lisa Johnson. For this update, the use of a blank schema template was effective and intuitive.

The focus of this update was a comprehensive and statewide aggregation of state and local public lands, including state forests, state parks, state wildlife management areas, city and county parks. Table 3 shows the contact information for agencies.

Table 3A. State PAD-US Contacts

LAND TYPE	AGENCY	CONTACT
State Wildlife Management Areas	WV Division of Natural Resources	Jessica Perkins, GIS Analyst jessica.d.perkins@wv.gov
State Forests	WV Division of Forestry	Steve Harouff, GIS Specialist steven.e.harouff@wv.gov
State Parks	WVDNR WV Parks and Recreation Section	J. Matt Yeager, District Administrator Matt.j.yeager@wv.gov
County Parks	Multiple sources	County park managers; County GIS specialists
City Parks	Multiple sources	City park managers; City GIS Specialists

Table 3B. Other PAD-US Contacts

LAND TYPE	AGENCY	CONTACT	EMAIL	PHONE NUMBER
Monongahela National Forest	U.S. Forest Service	Tim Brake, Cartographic Tech	tbrake@fs.fed.us	(304) 636-1800 Ext. 193
Monongahela National Forest	U.S. Forest Service	Karen Stevens Forest Planner	karenlstevens@fs.fed.us	304-636-1800 x233
Monongahela National Forest	U.S. Forest Service	Carol Whetsell Land Manager	cwhetsell@fs.fed.us	304-636-1800 x271
Monongahela National Forest	U.S. Forest Service	Sam Lammie, GIS Coordinator	slammie@fs.fed.us	304-636-1800
Gauley River, New River, Bluestone National Parks	National Park Service	Andy Steel, GIS Specialist	andy_steel@nps.gov	(304) 465-6556
National Recreational Areas	USACE	Jim Vassar, GIS Huntington District Lead	James.P.Vassar@usace.army.mil	(304) 399-5208

LAND TYPE	AGENCY	CONTACT	EMAIL	PHONE NUMBER
Harper's Ferry National Historic Park	National Park Service	Andrew Lee, GIS Specialist	Andrew.Lee@nps.gov	(304) 535-6038
Private Easements	The Conservation Fund	Michael Schwartz, Sr. Environmental Associate	mschwartz@conservationfund.org	(304) 870-2237
National Wildlife Refuges	U.S. Fish and Wildlife Service	Jane Harner, GIS Analyst, National Standards and Support Team	jane_harner@fws.gov	608-238-9333 ext.114
National Wildlife Refuges	U.S. Fish and Wildlife Service	Dawn Washington Wildlife Biologist Canaan Valley NWR	dawn_washington@fws.gov	304-866-3858 x3013
National Wildlife Refuges	U.S. Fish and Wildlife Service	Patricia A. Morrison Refuge Biologist USFWS - Ohio River Islands NWR	patricia_morrison@fws.gov	304-375-2923 x124
	U.S. Geological Survey	Craig A. Neidig National Map Liaison for West Virginia	cneidig@usgs.gov	(304) 347-5130 x237

4. Data Standard Review

The PAD-US data schema and standard were clear, contained adequate references, and the attribute information was comprehensive and beneficial for the PAD-US update. We used PAD-US database template version 1.4 but are looking forward to version 2.0 which separates the fee-owned and designated lands into separate feature classes.

The PAD-US data standard has been divided by required and desired attributes. The division of required/desired attributes helped us to focus on obtaining the minimal essential attributes, as it was difficult to get all the attributes from various agencies.

However, there were a few areas that we felt more guidance would have been helpful. More guidance in mitigating national/state shared boundary errors would have been helpful. Additional guidance on authoritative boundary sources may be useful too. Downloading data for a specific state often includes bordering states' lands that erroneously reside in West Virginia (Appendix H).

5. Review and Collection of Protected Areas Data

The WV GIS Technical Center and its partners successfully updated 100% of the state parks, state forests, and state wildlife managed areas. Local protected land boundaries (county, city, and private parks) were updated using digital tax parcel data. For the validation process, the Center published online interactive web applications that the land managers used to validate the local parks. This process helped to add 95% of the local protected lands. Through working with multiple management organizations, the project created interagency capacity in updating state lands and resolving shared/overlapping boundary issues.

- State Parks: 100%
- State Forests: 100%
- State WMAs: 100%
- County Land: 95%
- City Land: 95%

Comments on strengths and weaknesses of your state's protected areas data inventory:

Strengths:

- *Data Completion and Accuracy:* The state steward data collections for this update of 652 units resulted in all state and local lands completed at 95% or better. A statewide parcel database and other authoritative sources resulted in more accurate boundaries as well.
- *PAD-US Program Awareness:* Because of the PAD-US State Data Steward Project grant from the U.S. Geological Survey, the WV GIS Community is more aware of the PAD-US program and its benefits. State (WV Division of Natural Resources, WV Division of Forestry) and federal agencies (Monongahela National Forest, National Park Service) coordinated to resolve shared boundary issues.

Weaknesses:

- Land managers may not always know their definitive boundaries of their units. More definitive boundaries may require deed research.
- Share boundaries don't always align among difference databases (PAD-US, NCED) and data themes.
- Not all federal agency land stewards in West Virginia are familiar with the PAD-US program. The state land GIS contacts were more aware of the PAD-US program than the federal land GIS contacts.
- Three National Park Service units have not been separated by fee-owned and proclamation/designation feature classes.
 - Bluestone Recreation Area & National Scenic River
 - New River Gorge National River
 - Gauley River National Recreation Area

6. Translation and Scope

We did not use any translation tools.

7. Final Published Geodatabase

After the state steward update for this grant project, it is estimated that West Virginia has a total of 1.8 million acres of protected lands or nearly 12% of West Virginia’s 15.5 million-acre land area. Table 4 lists inventoried details of the various national, state, and local protected lands. See Appendix C for a statewide graphic of the updated inventory of protected lands.

CURRENT PAD-WV			STATE STEWARD PAD-WV UPDATE		
LAND TYPE	UNIT	GIS ACRES	LAND TYPE	UNIT	GIS ACRES
National Public Lands	109	1,290,014	National Public Lands	109	1,267,688
National Forests	2	1,046,347	National Forests (USFS)	2	1,046,347
Inventoried Roadless Areas	26	201,706	Inventoried Roadless Areas	26	201,706
Wilderness Areas	10	119,318	Wilderness Areas	10	119,318
Research Areas	2	4,414	Research Areas	2	4,414
Monument/Landmarks	6	2,539	Monument/Landmarks	6	2,539
Scenic and Botanic Areas	4	2,423	Scenic and Botanic Areas	4	2,423
National Park Areas	4	83,608	National Park Areas (NPS)	4	61,282
National Wildlife Refuges	2	19,428	National Wildlife Refuges (USFWS)	2	19,428
USACE Areas	25	140,631	Recreation Management Areas (USACE)	25	140,631
Other National Lands	28	123,203	Other National Lands	28	123,203
State Public Lands	130	490,185	State Public Lands	153	1,581,188
State Parks	35	59,437	State Parks (WVDNR)	36	72,755
State Forests	10	77,855	State Forests (WVDOF)	8	71,700
State WMAs	85	352,893	State WMAs (WVDNR)	109	1,436,733
Local Lands	2	2,524	Local Lands	499	19,909
County Lands	2	2,524	County Lands	118	11,572
City Lands	0	0	City Lands	344	7,459
Private Local Lands	0	0	Private Local Lands	37	878
Other Protected Lands	282	82,585	Other Protected Lands	282	82,585
Agriculture Easement	141	22,363	Agriculture Easement	141	22,363
Conservation Easement	38	2,264	Conservation Easement	38	2,264
Private Conservation	50	5,682	Private Conservation	50	5,682
Other Easement	43	5,405	Other Easement	43	5,405
Unknown/Not Designated	10	46,871	Unknown/Not Designated	10	46,871
Overlapping State Lands		-79,594	Overlapping State Lands		-1,120,585
TOTAL	523	1,785,714	TOTAL	1,043	1,830,785

Red text indicates land types updated by state steward

Table 4. Changes in units and land area between current PAD-US and updated PAD-US for West Virginia

State Parks: Although all **state parks** are listed in the current PAD-US, the boundaries covering the actual lands were mediocre and generalized (Figure 5). Using tax parcel data, digital topographic maps, and deed records, a total of 13,316 acres have been added to PAD-US for state parks which expanded the total acreage by 18%. There are a total 36 state parks but Blennerhassett Island Historical State Park is owned by the private company DuPont instead of the WV Division of Natural Resources. Two state parks, Beech Fork SP and Bluestone SP, overlap completely with United States Army Corps of Engineers lands, meaning these land units should be attributed as designation and not fee owned. The WV Division of Natural Resources validated and submitted the final updates including resolving boundary issues with other state and national protected lands.

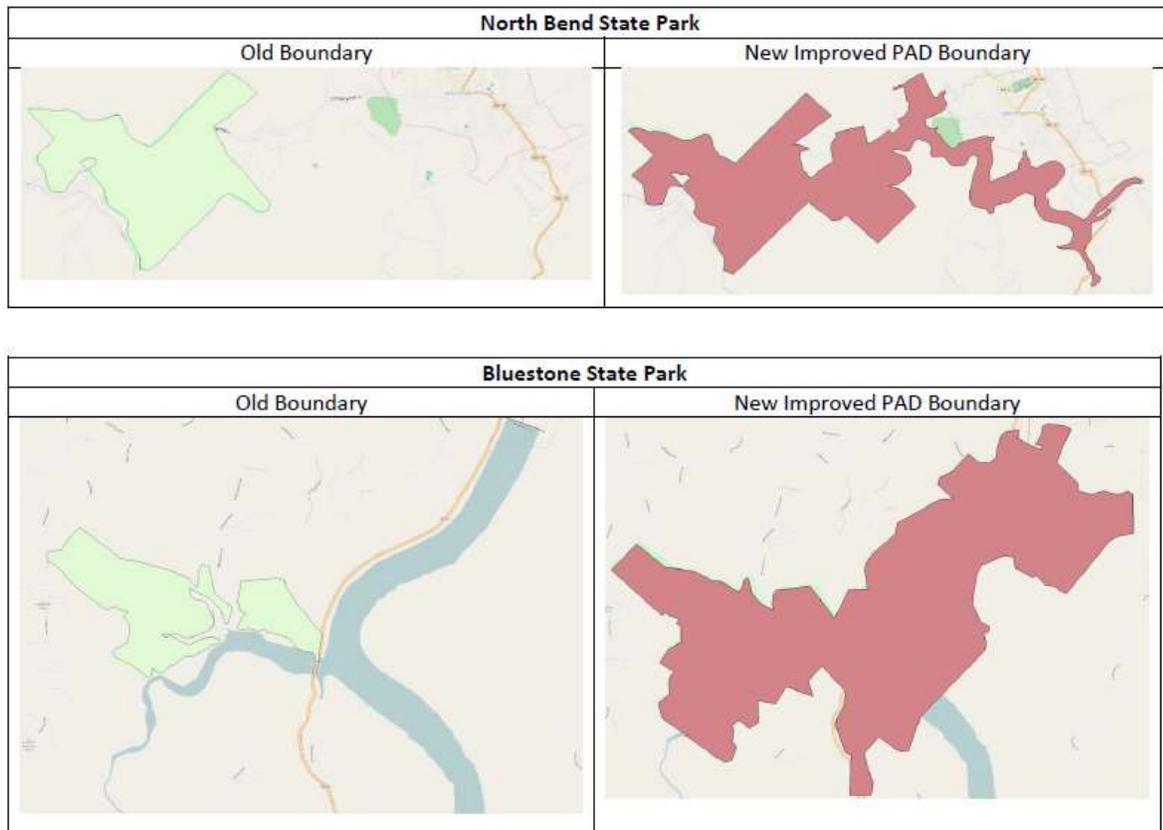


Figure 5. Examples of State Park Boundary Updates

State Forests: Eight **state forests** were inventoried as part of the PAD-US update of state lands. In 2008 the “Panther State Forest” was converted into a wildlife management area along with small tracts of land along Panther Creek designated as a state park. All the Panther State Forest lands are now managed by the WV Division of Natural Resources as a wildlife management area and state park. Eventually the name “State Panther Forest” for the small land tracts will be changed to “Panther State Park” when Chapter 20 of the W.Va. State Code is updated. The WV Division of Forestry coordinated with the WV Division of Natural Resources and Monongahela National Forest to resolve boundary issues. The WV Division of Forestry validated and submitted the final updates.

State Wildlife Management Areas: The update of the **state wildlife management areas** (WMA) in West Virginia revealed notable changes. PAD-US currently lists 85 WMA units totaling 352,893 acres. As a result of the PAD-US update, a total of 24 new WMA's have been added: 13 designations on U.S. National Forest lands and 11 fee-owned WMA's (e.g. Elk Fork Lake and Dents Run). Current WMA's, such as Beech Fork, were reviewed and updated with accurate boundaries (Figure 6). After the state steward update, the PAD-US update lists a total of 109 WMA's: 88 fee-owned WMA's totaling 395,742 acres as well as 13 designations on Monongahela National Forest lands and 8 on U.S. Army Corps of Engineers lands totaling 1,040,991 acres. The WV Division of Natural Resources validated and submitted the final updates.

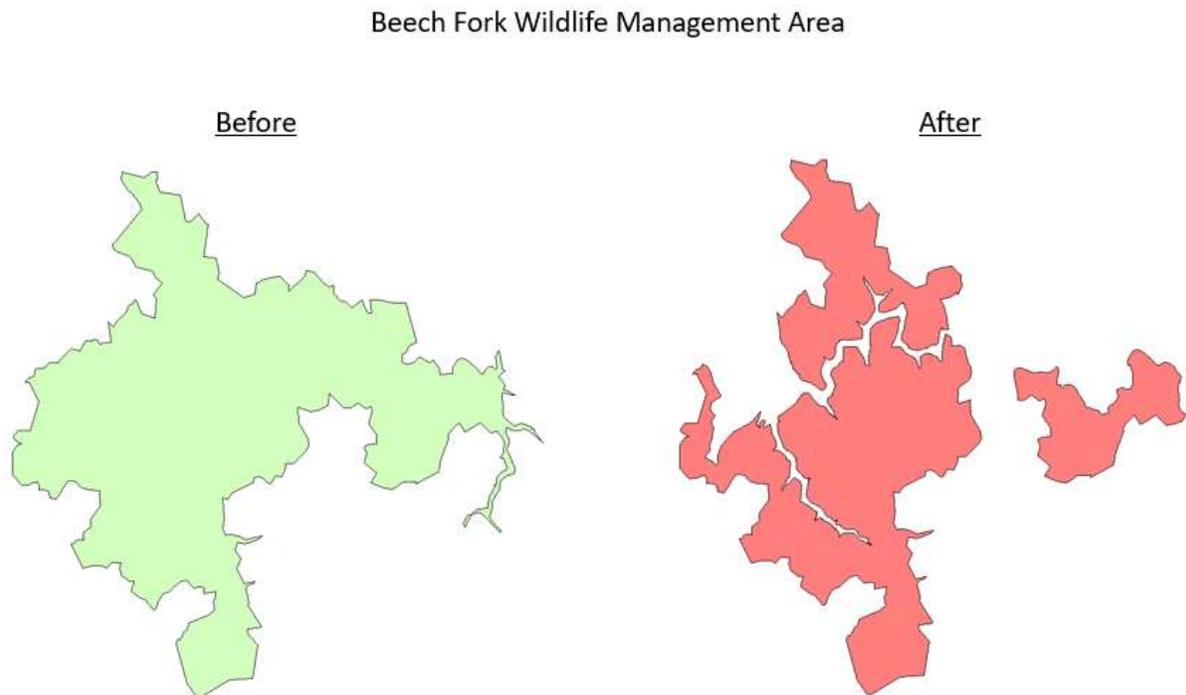


Figure 6. Examples of more accurate boundary update for Beech Fork Wildlife Management Area

Local Lands: The **county and city parks** of West Virginia are mostly missing in the current PAD-US database. Two parks in the current PAD-US, “Mountwood Community Park” and the “Lincoln County Shooting Range,” were updated to include 50 additional acres. A total of 499 local protected land units at 19,909 acres have been inventoried during the PAD-US update. All the county and city park boundaries were validated and submitted by local authorities and land managers.

Federal Land Recommendations:

Awareness of PAD-US Program by Federal Land Units: As mentioned in Section 5, it was discovered that the federal land managers at the unit level in West Virginia were not familiar with the PAD-US program. In fact, the state agencies like the WV Division of Forestry and WV Division of Natural Resources were more aware of the PAD-US program and its benefits. It is recommended that more outreach about the PAD-US program target the various GIS specialists and land stewards that manage federal lands in West Virginia.

Wildlife Management Area Designations on Federal Lands: Thirteen state wildlife management areas (WMA) managed by the WV Division of Natural Resources that reside on U.S. Forest lands and eight wildlife management areas that reside on U.S. Army Corps of Engineers lands have been included in the PAD-US update. These state conservation areas are included with the appropriate attributes (for example, "Owner Name" = USFS, "Owner Type" = FED, "Manager Name" = SDNR, "Manager Type" = STAT, "Designation Type" = SCA and "Local Designation" = State Wildlife Management Area).

United States Army Corps of Engineers: Overlapping issues between USACE lands and fee-owned state lands require more validation. (e.g., USACE's Burnsville Lake Recreation Area and Burnsville Lake State Wildlife Management Area)

- www.protectedlands.net (Burnsville Lake)
http://www.protectedlands.net/map/?x=-80.58583&y=38.81223&z=13&base=Map&padus=padus_by_managertype
- www.mapwv.gov/publiclands (Burnsville Lake)
<http://arcg.is/1ynPn5>

There are three major USACE districts that cover West Virginia: Huntington (65%), Pittsburgh (20%), and Baltimore (14%) districts.

National Park Service Lands: National Park lands (New River Gorge National River, Bluestone National Scenic River, and Gauley River National Recreation Area) located in southern West Virginia are not properly separated by fee-ownership and non-fee ownership (proclamation boundaries, easements, etc.) in the current PAD-US database (Table 5). This causes overlap between National Park Service lands and state lands like the New River Gorge and Babcock State Park, for example. The source data for the three National Park Service lands in southern West Virginia should be properly aggregated and submitted for inclusion in PAD-US 2.0.

In correspondence with Roger Johnson, Chief Cartographer of NPS Land Resources, Fort Collins, CO, and Andy Steel, GIS Specialist for the National Park Service land units in southern West Virginia, it was determined that the NPS Northeast Region Office still uses a legacy CAD system so that it may be years until the NPS land units in southern West Virginia are updated correctly in PAD-US (Appendix G). The WV GIS Technical Center recommends that the National NPS PAD-US aggregator (Roger Johnson) obtain the GIS files directly from Andy Steel and do the aggregation for PAD-US as an interim solution. This still would be an improvement until the Northeast Region Office has the capabilities to efficiently and effectively process the source GIS files from Andy Steel.

Table 5. National Parks Service lands in southern West Virginia need to be separated by fee-owned and designation/proclamation feature classes for PAD-US version 2.0 release. The MapWV.gov links show our attempt at displaying only the NPS fee-owned lands.

NPS Land	ProtectedLands.net	MapWV.gov/PublicLands
New River Gorge National River	http://www.protectedlands.net/map/?x=-81.07224&y=37.91238&z=12&base=Map&padus=padus by managertype	http://arcg.is/Lzvie
Bluestone Recreation Area & National Scenic River	http://www.protectedlands.net/map/?x=-80.96563&y=37.58560&z=13&base=Map&padus=padus by managertype	http://arcg.is/CmqG4
Gauley River National Recreation Area	http://www.protectedlands.net/map/?x=-81.03756&y=38.23454&z=12&base=Map&padus=padus by managertype	http://arcg.is/OOKX8W

The most recent source files for these National Park Service lands were provided by Andy Steel (andy_steel@nps.gov) and can be downloaded from <http://wvgis.wvu.edu/data/dataset.php?ID=57>

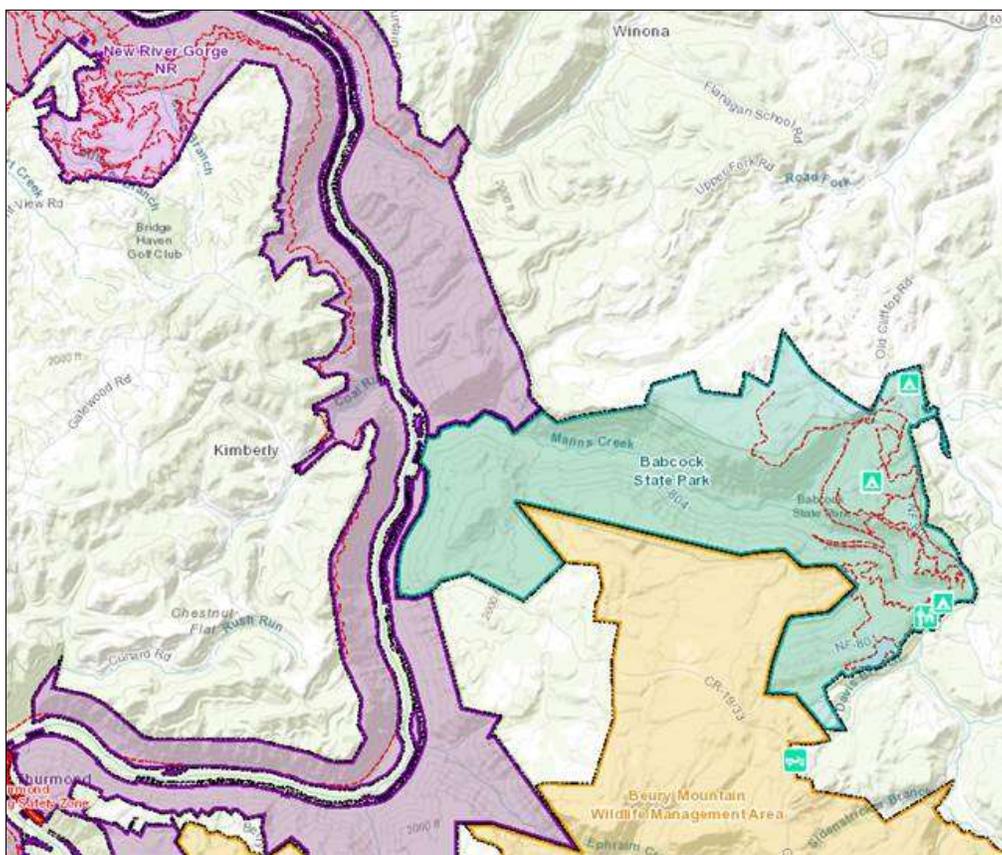


Figure 7. Example of fee-owned New River Gorge NPS land boundary adjacent to state lands, specifically Babcock State Park and Beury Mountain Wildlife Management Area. These unofficial NPS land boundaries will be used from the source land unit files for statewide mapping applications until updated correctly by NPS in PAD-US.

<https://www.mapwv.gov/huntfish/map/?wkid=102100&x=-9017930&y=4575619&l=6&v=hunt>

8. Other Comments

The use of online web applications served as important collaboration tools for submitting local land updates and for resolving shared boundary issues.

Local Parks Web Collaboration Tool: An online web tool for validating local lands was very beneficial for the PAD-US update. After using tax parcels and other authoritative sources to locate and extract local parks, online mapping applications using ArcGIS Online were set up for all 55 counties so that the land managers could quickly locate and edit the boundaries and attributes. Approximately ten counties used the online web application for editing the geometries and attributes while the other 45 counties utilized the web tool for viewing and validation. A brochure was generated to assist the local managers on how to use the online tool and to facilitate the exchange of information (Appendix D). See Appendix E for an example online viewer for Harrison County.

Shared Boundaries Collaboration Tool: An online web application (mapwv.gov/publiclands) was created for the state land managers to resolve shared boundaries (Figure 8 and Appendix F). The application was also useful for land managers and for the general public in validating the updated inventory. The online tool includes all the updated protected area lands which should be included in the next PAD-US update.

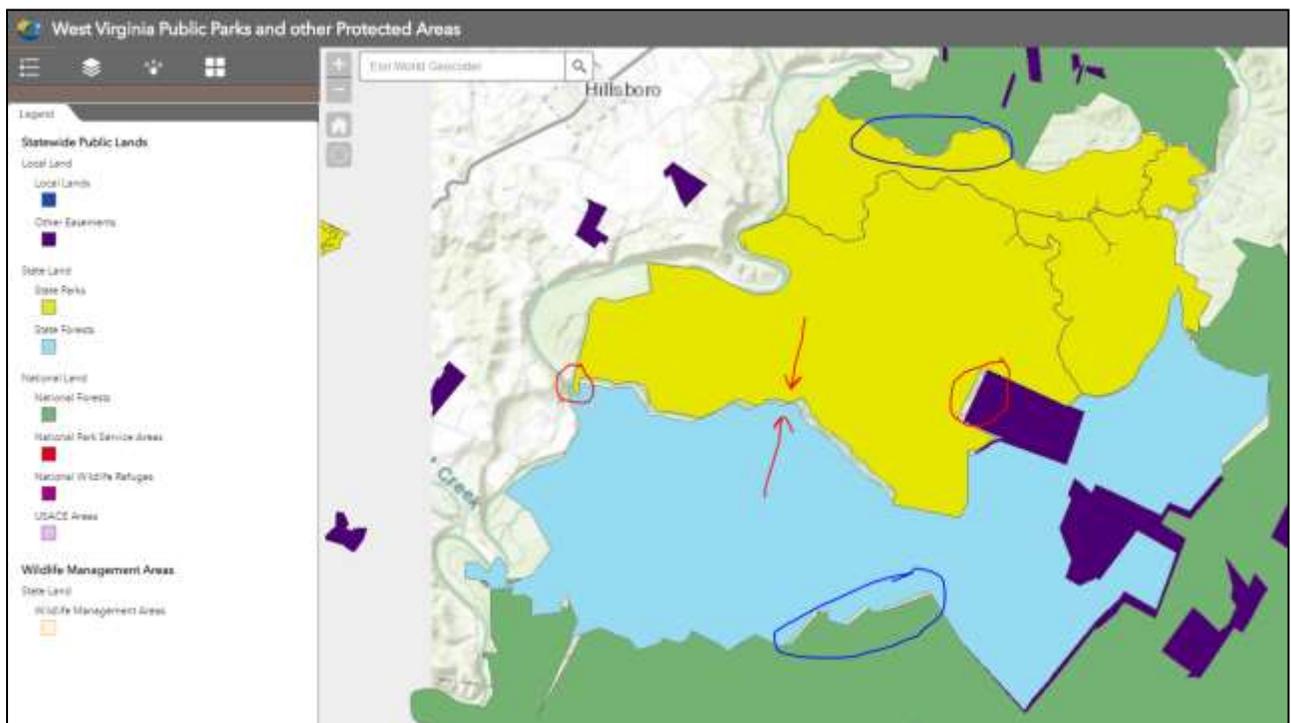


Figure 8. Online application for land managers to resolving boundary issues for federal and state lands (www.mapwv.gov/publiclands)

Reference Datasets: The following state boundary (1:24,000 scale) and parcel reference layers should be used by stewards when updating the PAD-US for West Virginia. Refer to Appendix H regarding state boundary clipping errors.

State Boundary

- State Boundary (1:24,000 Scale) - <http://wvgis.wvu.edu/data/dataset.php?ID=200>

Parcels

- State Parcel Boundary File (fully attributed 1.4 million parcels GIS file that includes owner name, owner address, property address, land use code, appraisal values, etc.) - <http://wvgis.wvu.edu/data/dataset.php?ID=371>

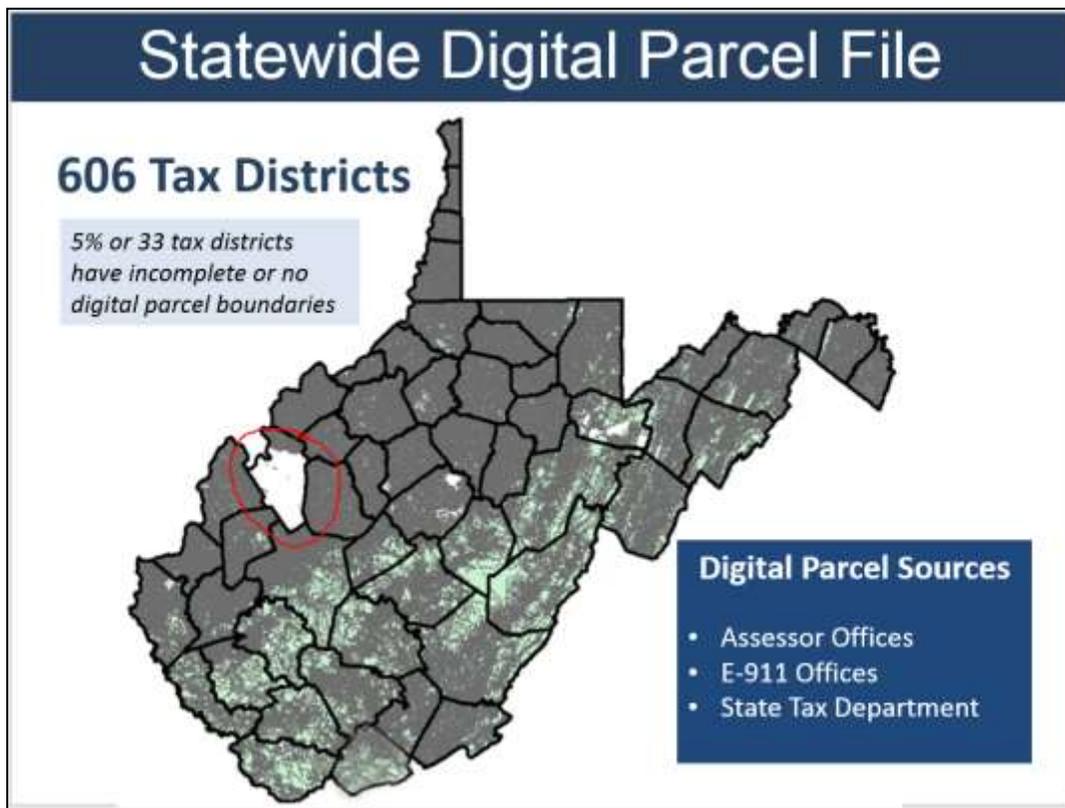


Figure 9. Statewide Digital Parcel File (public access to 1.4 million parcels and attributes)

Appendix A: Resources

ProtectedLands.net

www.protectedlands.net

USGS PAD-US

<https://gapanalysis.usgs.gov/padus/>

Partners (State Steward Information)

<http://www.protectedlands.net/partners/>

PAD-US Overview Presentation (5 Sept 2017)

<https://drive.google.com/file/d/0B9PQLQysEaR6WFdXTzZDc2lSZ0E/view>

PAD-US Multiple Feature Class Pilot implementation Presentation (5 Sep 2017)

<https://drive.google.com/file/d/0B9PQLQysEaR6YzkzS3k3dVILVjQ/view>

PAD-US DOI Presentation (9 January 2017)

https://cms.geoplatform.gov/sites/default/files/a16landuse/PADUS%20DOI%20Presentation_Final2017Jan9.2.pptx

PAD-US Webinar Recording (18 November 2016)

<http://www.protectedlands.net/pad-us-webinar-recording-available/>

PAD-US Action Plan

<http://www.protectedlands.net/vision>

PAD-US flyer

<https://pubs.usgs.gov/fs/2013/3086/pdf/fs20133086.pdf>

FGDC Federal Lands Workgroup Contacts and Fact Sheet

<https://cms.geoplatform.gov/sites/default/files/webpages/FedLandsFactSheet2016Dec13.pdf>

<https://cms.geoplatform.gov/a16govunits/FederalLands>

Appendix B: WV Public Land Data Links

On the State Data Clearinghouse are downloadable links to the most current public land boundaries including the surface ownership and designation/proclamation boundary files for Monongahela National Forest and National Park Service lands. The new protected land updates should be integrated and published as PAD-US Version 2.0 by USGS at the end of the calendar year.

STATE AND LOCAL LANDS

- State Forests (NEW) - <http://wvgis.wvu.edu/data/dataset.php?ID=58>
- State Parks (NEW) - <http://wvgis.wvu.edu/data/dataset.php?ID=203>
- Wildlife Management Areas(NEW) - <http://wvgis.wvu.edu/data/dataset.php?ID=59>
- County/City Parks (NEW) - <http://wvgis.wvu.edu/data/dataset.php?ID=472>

NATIONAL LANDS

- National Parks (NEW) - <http://wvgis.wvu.edu/data/dataset.php?ID=57>
- National Forests (NEW) - <http://wvgis.wvu.edu/data/dataset.php?ID=262>
- National Wildlife Refuges - <http://wvgis.wvu.edu/data/dataset.php?ID=236>

State Boundary

- State Boundary (1:24,000 Scale) - <http://wvgis.wvu.edu/data/dataset.php?ID=200>

Parcels

- State Parcel Boundary File - <http://wvgis.wvu.edu/data/dataset.php?ID=371>

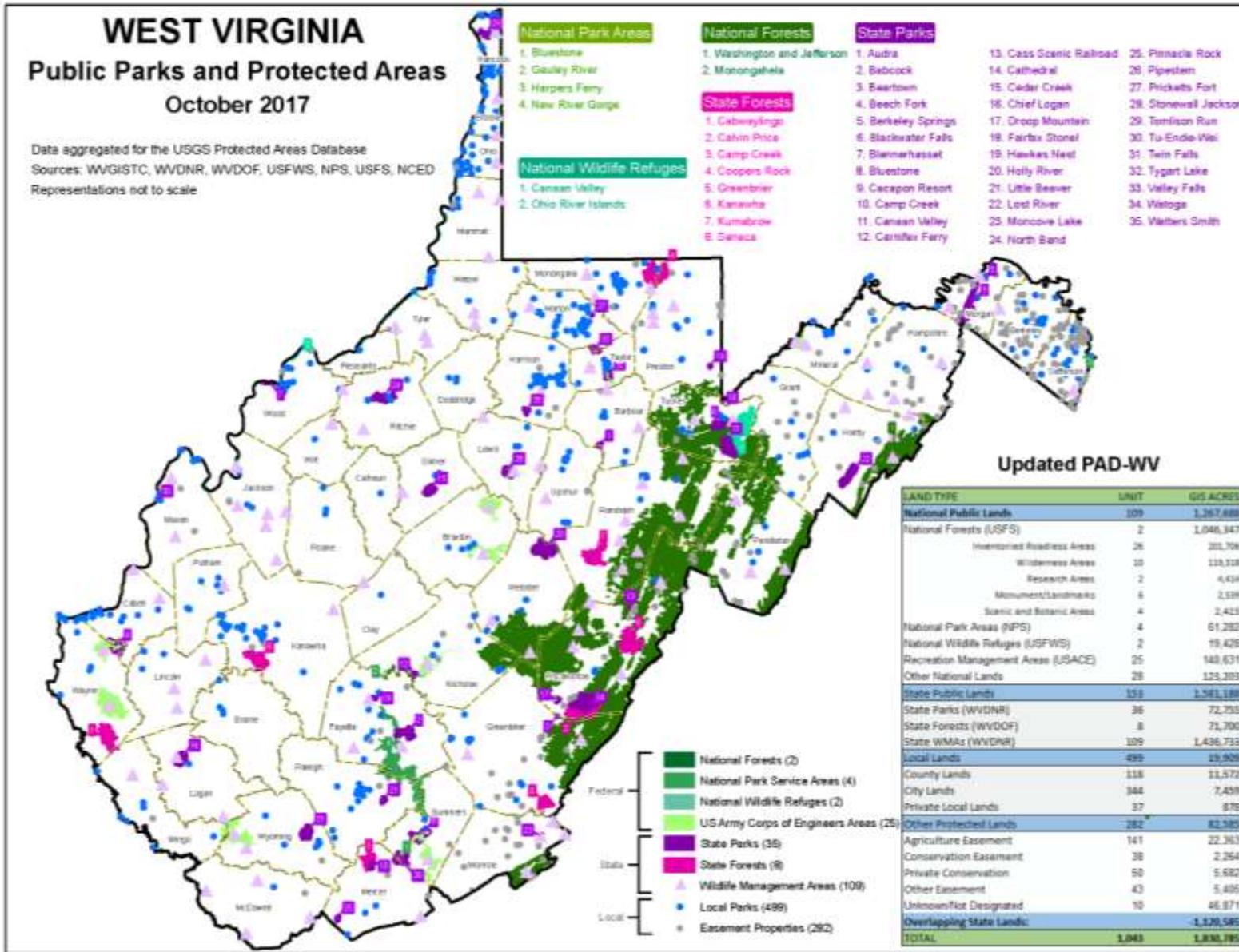


Figure C-1.
 West Virginia protected areas (1.8 million acres)

Appendix D: WV PAD-US Flyer for Local Parks Review

Protected Area Database - Local Parks Review

Advantages in contributing to PAD:

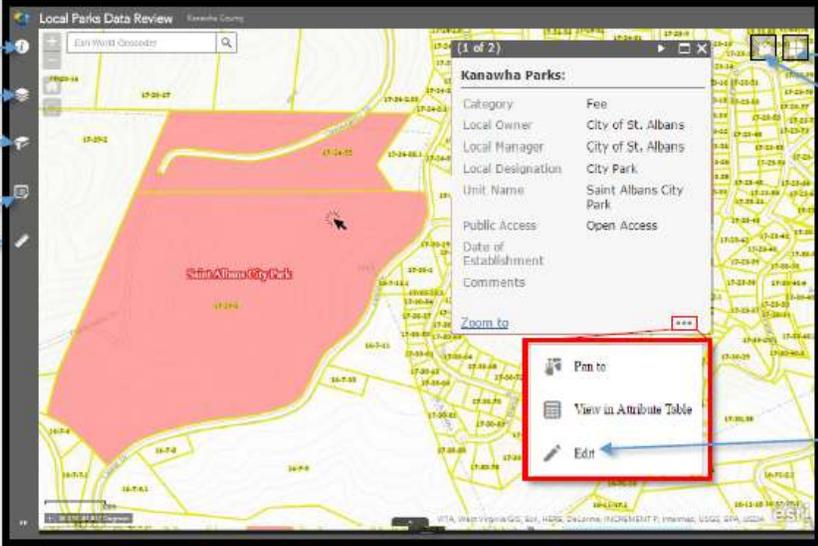
- Public information for recreation, wildlife activities, etc.
- Consistent and accurate information for commercial map viewers
- Federal, state, and local agency coordination and data exchange
- Measurement of conservation accomplishment
- Facility, climate, energy, corridors planning
- Ecological and/or watershed assessments




1 Use Bookmark tab to find parks and review their boundaries with parcels

2 Click park boundary () and edit pop-up menu with correct information

3 Contact WVGISTC with updates and feedback



Red areas represent park boundaries

Yellow outlined areas represent parcels

Information
Description of each tool and contact information.

Measure
Use to measure areas and distances.

Layers
*Choose layers to display.
Parcels Layer: displays zoomed in to 1:6000.
Kanawha Parks Layer: focus of review.*

Boundary Edit
*Experienced GIS users can use this tool to edit park boundaries.
Contact the WVGISTC to coordinate edits.*

Bookmarks
Use this to locate the parks that are managed by your organization.

Add Data
*Add your own data from ArcGIS Online.
Contact the WVGISTC to coordinate edits.*

Basemaps
This tab allows you to choose a different background map.

Figure D-1. Outreach flyer and instructions for local stewards to review and update their city and county parks in West Virginia

Appendix E: Local Parks Web Collaboration Tool

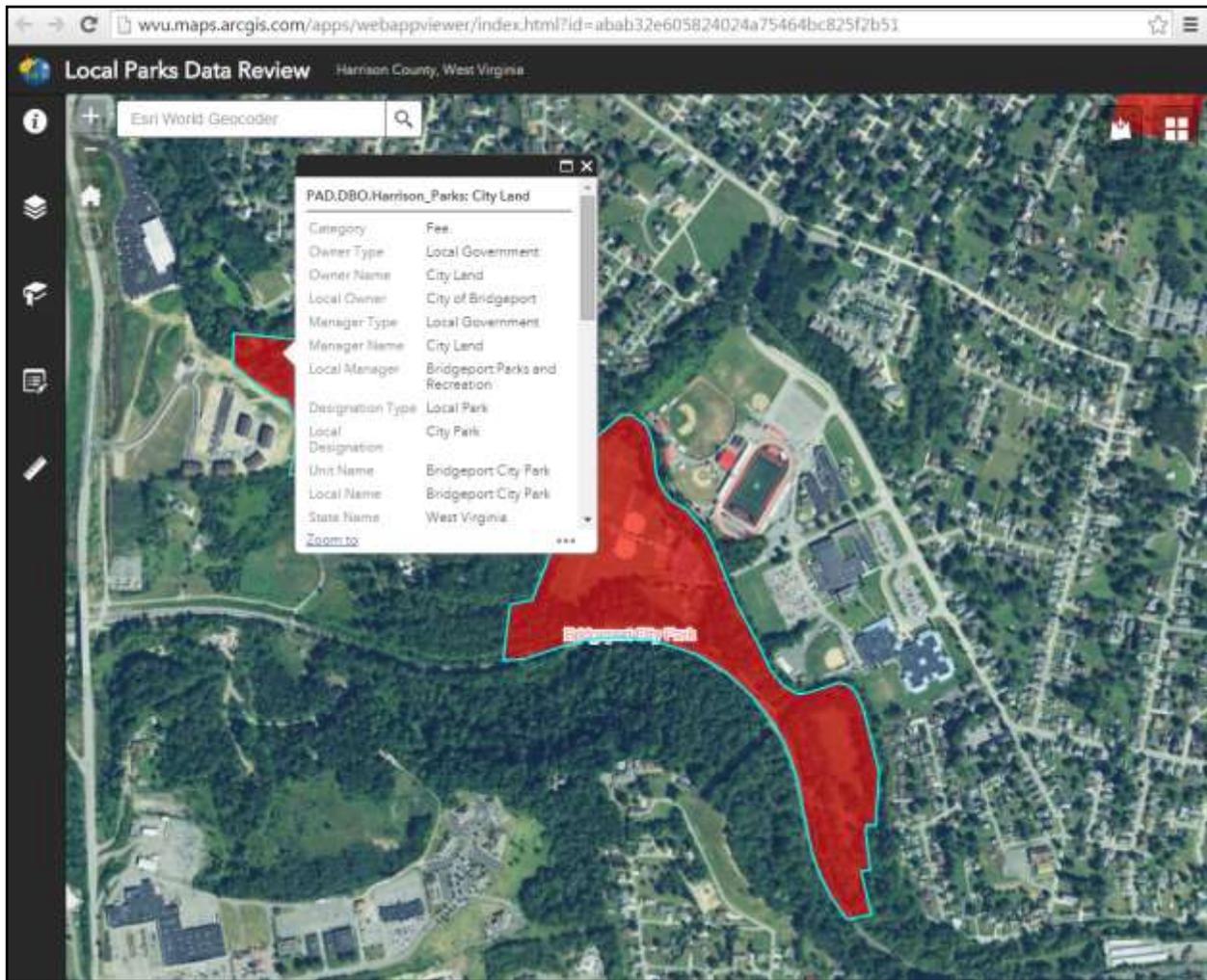


Figure E-1. Online web application for validating local lands for Harrison County. Online viewer example: <http://www.maps.arcgis.com/apps/webappviewer/index.html?id=abab32e605824024a75464bc825f2b51>

Appendix F: Shared Boundaries Collaboration Tool

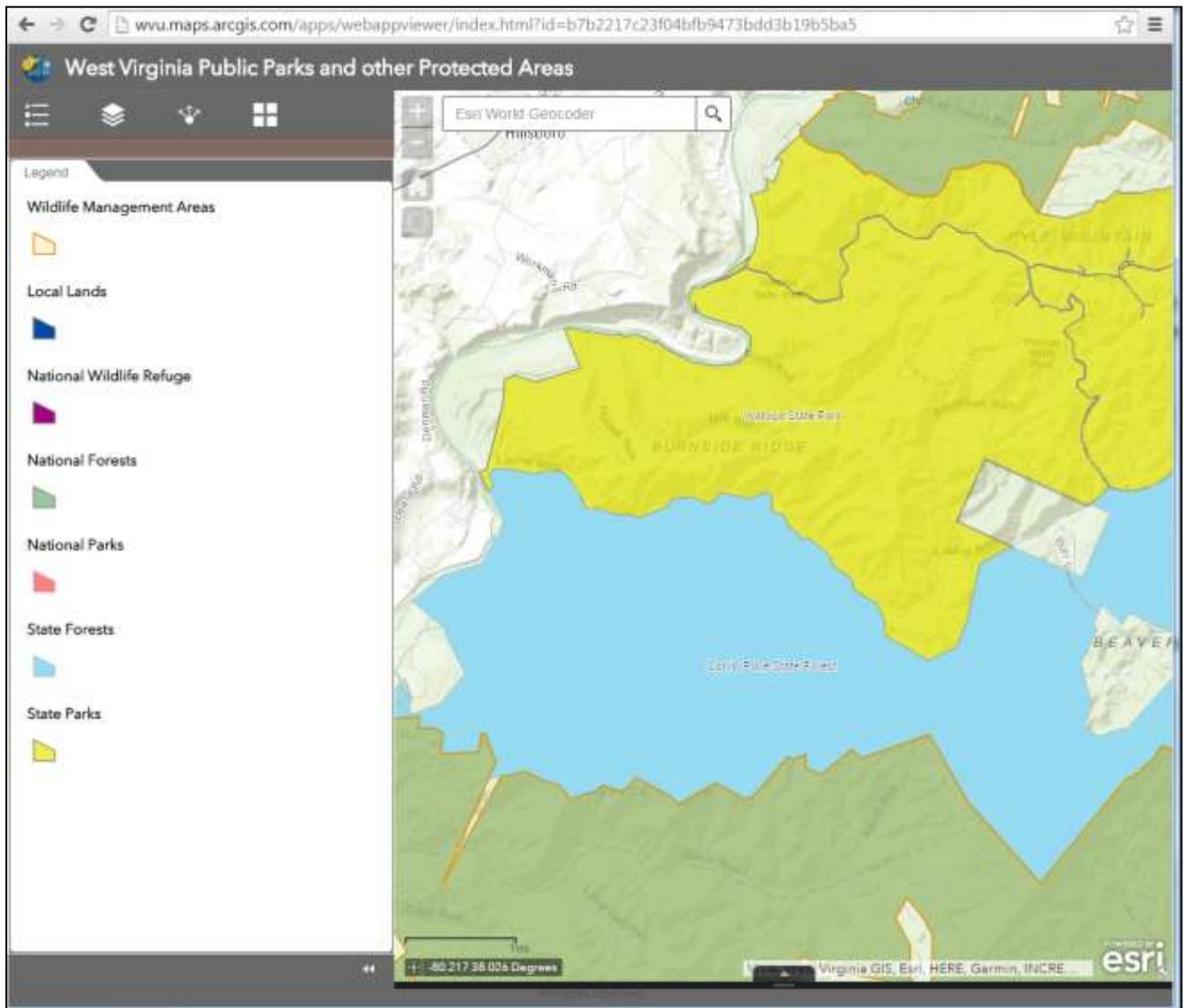


Figure F-1. Online collaboration tool for resolving shared boundary issues by land managers in West Virginia. Online viewer example: <http://arcg.is/0ee805>

Appendix G: NPS Land Update Issues in Southern West Virginia

From: Johnson, Roger [mailto:roger_m_johnson@nps.gov]
Sent: Thursday, October 19, 2017 11:19 AM
To: Kurt Donaldson <Kurt.Donaldson@mail.wvu.edu>
Cc: Jean M Olson <Jean_M_Olson@nps.gov>; Jennifer Cherry <jennifer_cherry@nps.gov>
Subject: Re: Update of NPS Lands in West Virginia for PAD-US 2.0

Hi Kurt,

Thank you for the email. NPS has already submitted our best available data for the PAD-US 2.0 update. Unfortunately Bluestone Recreation Area & National Scenic River, New River Gorge National River and Gauley River National Recreation Area are all still legacy data. This means that the Land Resources Program boundary/ownership GIS data has not been approved for public release at this point in time. I copying the Jean Olson and Jennifer Cherry on my response. They are our Cartographer and Chief for the Northeast Region. They have ultimate responsibility for the creation/release of the GIS data for all 3 units and work with Andy Steel.

Even though these units won't be included in the initial release of PAD-US 2.0 I do provide quarterly updates to NPS boundary and ownership data. I've recently started to provide these quarterly updates in the PAD-US geodatabase format so they can be used to update PAD-US in between the annual publication. In other words once the data is approved for public release by the region I will make it available for users to easily update PAD-US.

On Thu, Oct 19, 2017 at 7:07 AM, Kurt Donaldson <Kurt.Donaldson@mail.wvu.edu> wrote:

Hi Roger,

You are listed as the National Park Service agency contact for the PAD-US. The WV GIS Technical Center at West Virginia University was awarded an FY16 PAD-US State Data Steward Project grant from the U.S. Geological Survey to update the state and local lands in West Virginia. As a state steward, the WV GIS Technical Center oversaw the collections of authoritative, fee-owned state and local protected lands. Specifically, the focus was on the aggregation of state parks, state forests, wildlife management areas, and local parks. The new protected land updates should be integrated and published as PAD-US Version 2.0 by USGS at the end of the calendar year.

We worked with Any Steel of the National Park Service in West Virginia on shared boundary issues. We noticed that in PAD-US Version 1.4 the National Park Service lands in southern West Virginia have not been separated by fee-owned and proclamation/designation feature classes.

- o Bluestone Recreation Area & National Scenic River
- o New River Gorge National River
- o Gauley River National Recreation Area

Below is an extract for our State Stewardship Report on page 10.

National Park Service Lands: National Park lands (New River Gorge National River, Bluestone National Scenic River, and Gauley River National Recreation Area) located in southern West Virginia are not properly separated by fee-ownership and non-fee ownership (proclamation boundaries, easements, etc.) in the current PAD-US database (Table 5). This causes overlap between National Park Service lands and state lands like the New River Gorge and Babcock State Park, for example. The source data for the three National Park Service lands in southern West Virginia should be properly aggregated and submitted for inclusion in PAD-US version 2.0.

Table 5. National Parks Service lands in southern West Virginia need to be separated by fee-owned and designation/proclamation feature classes for PAD-US version 2.0 release. The MapWV.gov links show our attempt at displaying only the NPS fee-owned lands.

NPS Land	ProtectedLands.net	MapWV.gov/PublicLands
New River Gorge National River	http://www.protectedlands.net/map/?x=-81.07224&y=37.91238&z=12&base=Map&padus=padus_by_managertype	http://arcg.is/Lzvie
Bluestone Recreation Area & National Scenic River	http://www.protectedlands.net/map/?x=-80.96563&y=37.58560&z=13&base=Map&padus=padus_by_managertype	http://arcg.is/CmqG4
Gauley River National Recreation Area	http://www.protectedlands.net/map/?x=-81.03756&y=38.23454&z=12&base=Map&padus=padus_by_managertype	http://arcg.is/0OKX8W

The most recent source files for these National Park Service lands were provided by Andy Steel (andy_steel@nps.gov) and can be downloaded from <http://wvgis.wvu.edu/data/dataset.php?ID=57>

I was hoping that your office could work with Andy Steel to properly aggregate the fee-owned and designated lands for PAD-US version 2.0 to be released at the end of the year. Andy should have all the source file information you need for the New River, Bluestone River, and Gauley River park service lands.

Andrew Steel
 GIS Specialist
 New River Gorge National River
 P.O. Box 246, 104 Main Street
 Glen Jean, WV 25846
 Office: 304-465-6556
andy_steel@nps.gov

Thank you for your assistance.

Sincerely,

Kurt Donaldson, GISP
 Manager
 WV GIS Technical Center
 West Virginia University
 (304) 293-9467
<http://wvgis.wvu.edu>

Appendix H: State Boundary Clipping Issues

State	Lands Intersecting
Maryland	Fort Frederick State Park Potomac State Forest
Ohio	Ohio River Lock & Dam 21
Pennsylvania	Quebec Wilderness Area Greene County Land PA Game Commission State Land 302
Virginia	T.M. Gathright Wildlife Management Area

Table H-1. Seven lands units from other states appear when extracting West Virginia specific PAD-US dataset from PAD-US Data Download Center. Clipping the national dataset with West Virginia's 24K boundary fixes the issues with Pennsylvania and some Virginia lands. The other lands must be corrected by the appropriate state steward so as not to extend erroneously into West Virginia.



Figure H-1. A sliver of Quebec Wilderness Area falls within the West Virginia if using boundary with 100k resolution but not the boundary with 24k resolution.