



National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science

NPS I&M Standard Operating Procedure: Inventory and Monitoring Boundary Processing for Landscape Dynamics

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Summary

Internal SOP for processing boundaries for use with Landscape Dynamics Protocol.

Version History					
Previous Version No.	Date of Revision	Changes	Made by	Reason	Updated Version No.
1.0	20150825	Initial version	Lisa Nelson		1.1
1.1	20150929	Updated for new NPScape lookup	Lisa Nelson		1.2
1.2	20160805	Updated LD Parks, changed npscape to landscape dynamics	Michelle Kineth		1.3
1.3	20161007	Renamed SOP Landscape Dynamics; removed all references to 'NPScape'	Michelle Kineth	Rebranding NPScape to Landscape Dynamics	2.0
2.0	20171109	Implementation of Change Tracking of LD Boundaries.	Michelle Kineth		2.1

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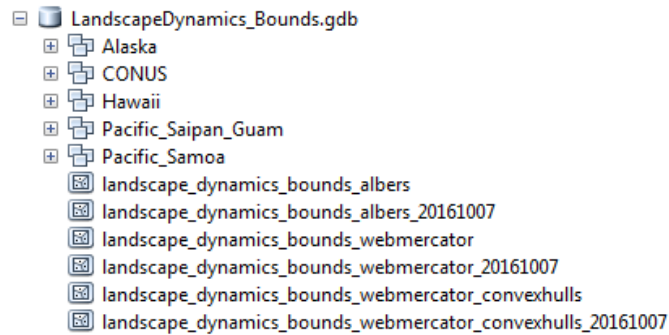
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Overview

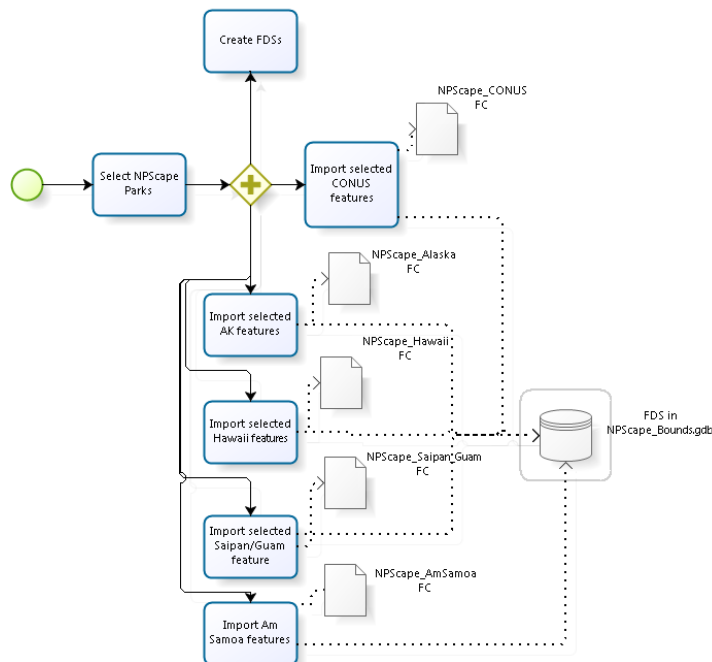
This SOP details the processing logic and steps to produce the landscape_dynamics_bounds datasets for park unit boundaries used in I&M processing, updates to Landscape Dynamics features, and map services.

The datasets are managed in a file geodatabase (ArcGIS version 10.2.2) on the I&M Central Office shared drive ([\\np2300fcsisro1\IMD_Data\ProjectData\Data_Processing](#)).



The LandscapeDynamics_Bounds.gdb datasets are updated as needed, using the most recent release of NPS Administrative Boundaries from NPS Land Resources Division, and incorporating any new I&M Network provided boundary polygons.

Comment [KMA1]: annually



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The processes in Figure 2 are completed using a Python toolbox,
LandscapeDynamicsBounds_Processing.py

Requirements

Users of this SOP are required to have:

- minimum installation of ArcGIS 10.2.2
- Mapped drive (*inp2300fcsisro1\IMD_Data*) to X:\ and appropriate permissions to drive.
- Read/Write access to Database
Connections\NPScape_Stats.DBO_INPNISCVDBNRSST_IMDGIS.sde\NPScape_Stats

Pre-Processing Requirements

IMD bounds feature class maintenance should be performed prior to running Landscape Dynamics Bounds processing. See the IMD Bounds Processing SOP for details.

Cross check IMDParks with LandscapeDynamicsParks. All parks in LandscapeDynamicsParks must be present in IMDParks.

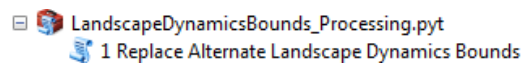
If any new parks have been added/requested by Networks for inclusion (or exclusion) in Landscape Dynamics, add (or remove) them to (from) the LandscapeDynamicsParks table:
Connections\NPScape_Stats.DBO_INPNISCVDBNRSST_IMDGIS.sde\NPScape_Stats.config.LandscapeDynamicsParks

Processing & Procedures

1 Run Replace Alternate Landscape Dynamics Bounds tool

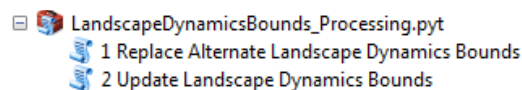
Run the Replace Alternate Landscape Dynamics Bounds tool to replace IMD unit bounds with Network/Park provided Alternate Bounds specific to Landscape Dynamics (Appendix 3).

If any new Alternate LandscapeDynamics Bounds are submitted, edit the Python Toolbox. This tool takes approximately 3-5 minutes to run.



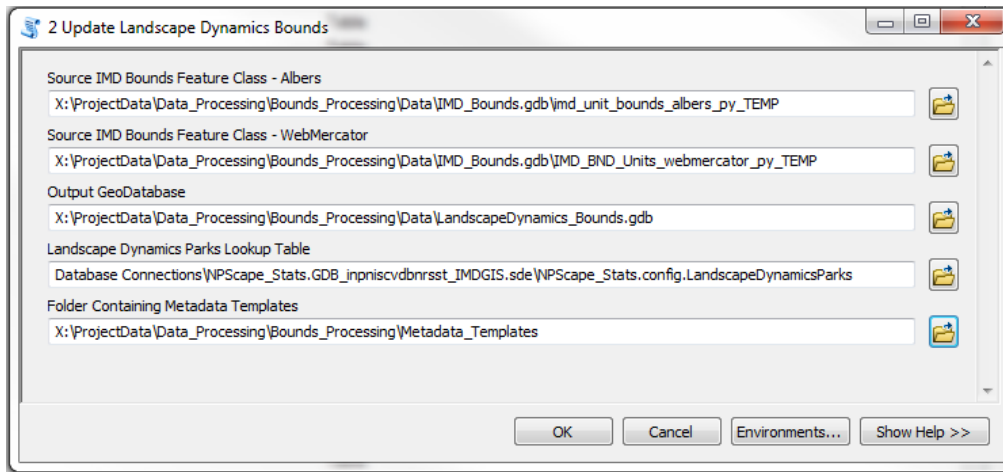
2 Run Update Landscape Dynamics Bounds tool

Run the Update Landscape Dynamics Bounds tool to create the **landscape_dynamics_bounds_albers** and **landscape_dynamics_bounds_webmercator** feature classes and date-stamped feature classes of the previously generated datasets. The tool takes approximately 10 minutes to run.



Note this tool CANNOT be run if "Replace Alternate Landscape Dynamics Bounds" is not run first!

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- Open the **landscape_dynamics_bounds_albers** and **landscape_dynamics_bounds_webmercator** feature classes in ArcMap and visually check select parks.
- Visually check the attribute table, looking for null values in the *Feature_Source* and *Full_Name* attributes.

Post-Processing

Update and Export Metadata and Post Geodatabase to Data Store

If relevant, update the table in Appendix 3 if additional/different features were added or replaced.

After the **landscape_dynamics_bounds_albers** and **landscape_dynamics_bounds_webmercator** feature classes are created, edit metadata using the ArcCatalog editor, updating the processing information section with details on what was added or changed.

Export the metadata to a stand-alone XML file:
Bounds_Processing\Data\landscape_dynamics_bounds_albers.xml and
Bounds_Processing\Data\landscape_dynamics_bounds_webmercator.xml.

Zip the file geodatabase using 7-Zip. LandscapeDynamics_Bounds.gdb should be posted with the Landscape Dynamics AOAs data store reference.
(<https://irma.nps.gov/DataStore/Reference/Profile/2225084?Inv=true>)

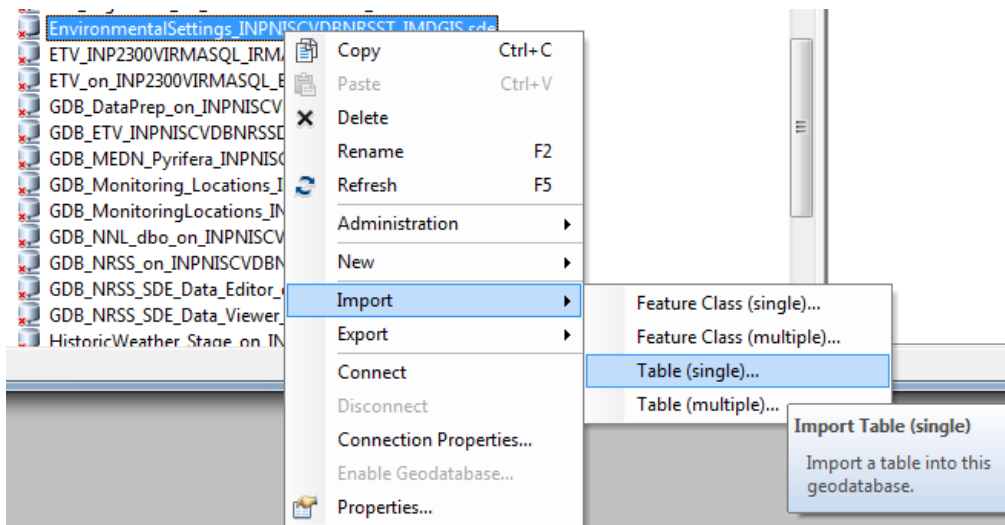
Description: Boundaries used as the basis for AOAs. Derived from I&M Park Boundaries.

Update the Landscape Dynamics Boundary tracking table

The Landscape Dynamics tracking table in the master database contains which boundaries change quarter-to-quarter.

Import into a temporary table in the EnvironmentalSettings database in SQL Server the newly created **landscape_dynamics_bounds_webmercator** table found in LandscapeDynamics_Bounds.gdb.

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A SQL query is used to add records to the master tracking table. See the ManageLDBoundsTracking.sql script (REPO: LandscapeDynamics/Statistics/LandscapeDynamicsDatabaseScripts).

Assign imported table to the temp schema using T-SQL (alter schema transfer).

NOTE: sql script must be edited before running!

Update the Landscape Dynamics park-derived AOA boundaries

The Landscape Dynamics AOA datasets are updated annually (~September). Refer to the LandscapeDynamics_AOA_Boundaries_SOP.doc for details.

- The park-derived features (park, 3km and 30km) depend on the landscape_dynamics_bounds_albers feature class.

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Literature Cited

Nelson, L. and M. Kineth. 2015. NPS I&M Standard Operating Procedure: IMD Boundary Processing.
NPS/NRSS/IMD/SOP-1.0.

Appendices (if needed)

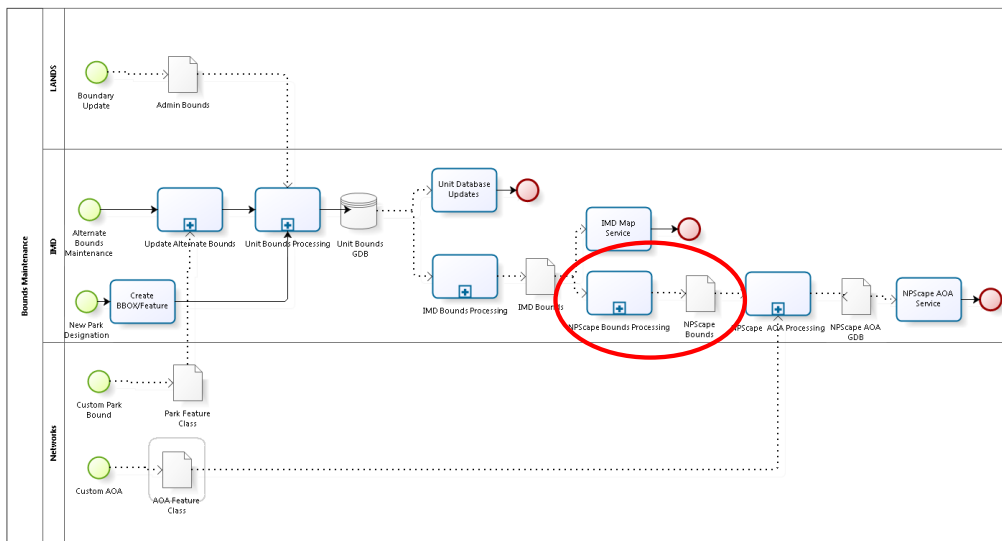
Appendix 1: Known issues

Data availability
Details here.

Additional issues
Details here.

Appendix 2: Boundary Maintenance Process Summary

Unit boundary processing is a component of the overall boundary maintenance conducted by the I&M central office.



Appendix 3: List of Alternate Landscape Dynamics Bounds

List of parks replaced with Alternate Landscape Dynamics Bounds tool:

1. **GRTE** → combined feature of JODR and GRTE. Per Network communications (Rob Daley, Fall 2016, phone conversation), the two units are managed as one and it was requested they be combined for all Landscape Dynamics standard AOAs.

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Appendix 4: List of Landscape Dynamics Parks

Full list Landscape Dynamics Parks:

1	ABLI Abraham Lincoln Birthplace National Historical Park
2	ACAD Acadia National Park
3	AGFO Agate Fossil Beds National Monument
4	ALAG Alagnak Wild River and Preserve
5	ALFL Alibates Flint Quarries National Monument
6	ALKA Ala Kahakai National Historic Trail
7	ALPO Allegheny Portage Railroad National Historic Site
8	AMIS Amistad National Recreation Area
9	AMME American Memorial Park
10	ANIA Aniakchak National Monument and Preserve
11	ANTI Antietam National Battlefield
12	APCO Appomattox Court House National Historical Park
13	APIS Apostle Islands National Lakeshore
14	APPA Appalachian National Scenic Trail
15	ARCH Arches National Park
16	ARPO Arkansas Post National Memorial
17	ASIS Assateague Island National Seashore
18	AZRU Aztec Ruins National Monument
19	BADL Badlands National Park
20	BAND Bandelier National Monument
21	BELA Bering Land Bridge National Preserve
22	BEOL Bent's Old Fort National Historic Site
23	BIBE Big Bend National Park
24	BICA Bighorn Canyon National Recreation Area
25	BICY Big Cypress National Preserve
26	BIHO Big Hole National Battlefield
27	BISC Biscayne National Park
28	BISO Big South Fork National River and Recreation Area
29	BITH Big Thicket National Preserve
30	BLCA Black Canyon of the Gunnison National Park
31	BLRI Blue Ridge Parkway
32	BLUE Bluestone National Scenic River
33	BOHA Boston Harbor Islands National Recreation Area
34	BOWA Booker T. Washington National Monument
35	BRCA Bryce Canyon National Park
36	BUFF Buffalo National River
37	BUIS Buck Island Reef National Monument
38	CABR Cabrillo National Monument
39	CACH Canyon de Chelly National Monument
40	CACO Cape Cod National Seashore
41	CAGR Casa Grande Ruins National Monument
42	CAHA Cape Hatteras National Seashore
43	CAKR Cape Krusenstern National Monument
44	CALO Cape Lookout National Seashore
45	CANA Canaveral National Seashore
46	CANY Canyonlands National Park
47	CARE Capitol Reef National Park
48	CARL Carl Sandburg Home National Historic Site
49	CASA Castillo de San Marcos National Monument
50	CATO Catoctin Mountain Park
51	CAVE Carlsbad Caverns National Park
52	CAVO Capulin Volcano National Monument

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53	CEBR Cedar Breaks National Monument
54	CHAT Chattahoochee River National Recreation Area
55	CHCH Chickamauga and Chattanooga National Military Park
56	CHCU Chaco Culture National Historical Park
57	CHIC Chickasaw National Recreation Area
58	CHIR Chiricahua National Monument
59	CHIS Channel Islands National Park
60	CHPI Charles Pinckney National Historic Site
61	CIRO City of Rocks National Reserve
62	COLM Colorado National Monument
63	COLO Colonial National Historical Park
64	CONG Congaree National Park
65	CORO Coronado National Memorial
66	COWP Cowpens National Battlefield
67	CRLA Crater Lake National Park
68	CRMO Craters of the Moon National Monument
69	CUGA Cumberland Gap National Historical Park
70	CUIS Cumberland Island National Seashore
71	CURE Curecanti National Recreation Area
72	CUVA Cuyahoga Valley National Park
73	DENA Denali National Park and Preserve
74	DEPO Devils Postpile National Monument
75	DETO Devils Tower National Monument
76	DEVA Death Valley National Park
77	DEWA Delaware Water Gap National Recreation Area
78	DINO Dinosaur National Monument
79	DRTD Dry Tortugas National Park
80	EBLA Ebey's Landing National Historical Reserve
81	EFMO Effigy Mounds National Monument
82	EISE Eisenhower National Historic Site
83	ELMA El Malpais National Monument
84	ELMO El Morro National Monument
85	~~EUON Eugene O'Neill National Historic Site~~
86	EVER Everglades National Park
87	FIIS Fire Island National Seashore
88	FLFO Florissant Fossil Beds National Monument
89	FOBO Fort Bowie National Historic Site
90	FOBU Fossil Butte National Monument
91	FOCA Fort Caroline National Memorial
92	FODA Fort Davis National Historic Site
93	FODO Fort Donelson National Battlefield
94	FOFR Fort Frederica National Monument
95	FOLA Fort Laramie National Historic Site
96	FOLS Fort Larned National Historic Site
97	FOMA Fort Matanzas National Monument
99	FONE Fort Necessity National Battlefield
100	~~FOPO Fort Point National Historic Site~~
101	FOPU Fort Pulaski National Monument
102	FORA Fort Raleigh National Historic Site
103	FOSU Fort Sumter National Monument
104	FOUN Fort Union National Monument
105	FOUS Fort Union Trading Post National Historic Site
106	FOVA Fort Vancouver National Historic Site
109	FRHI Friendship Hill National Historic Site
110	FRSP Fredericksburg and Spotsylvania National Military Park
111	GAAR Gates of the Arctic National Park and Preserve

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112	GARI	Gauley River National Recreation Area
113	GATE	Gateway National Recreation Area
114	GETT	Gettysburg National Military Park
115	GEWA	George Washington Birthplace National Monument
116	GICL	Gila Cliff Dwellings National Monument
117	GLAC	Glacier National Park
118	GLBA	Glacier Bay National Park and Preserve
119	GLCA	Glen Canyon National Recreation Area
120	GOGA	Golden Gate National Recreation Area
121	GOSP	Golden Spike National Historic Site
122	GRBA	Great Basin National Park
123	GRCA	Grand Canyon National Park
125	GRKO	Grant-Kohrs Ranch National Historic Site
126	GRPO	Grand Portage National Monument
127	GRSA	Great Sand Dunes National Park and Preserve
128	GRSM	Great Smoky Mountains National Park
129	GRTE	Grand Teton National Park
130	GUCO	Guilford Courthouse National Military Park
131	GUIS	Gulf Islands National Seashore
132	GUMO	Guadalupe Mountains National Park
133	GWCA	George Washington Carver National Monument
134	GWMP	George Washington Memorial Parkway
135	HAPE	Harpers Ferry National Historical Park
136	HAFO	Hagerman Fossil Beds National Monument
138	HALE	Haleakala National Park
139	HAVO	Hawaii Volcanoes National Park
140	HEHO	Herbert Hoover National Historic Site
141	HOBE	Horseshoe Bend National Military Park
142	HOCU	Hopewell Culture National Historical Park
143	HOFU	Hopewell Furnace National Historic Site
144	HOME	Homestead National Monument
145	HOSP	Hot Springs National Park
146	HOVE	Hovenweep National Monument
147	HUTR	Hubbell Trading Post National Historic Site
148	INDU	Indiana Dunes National Lakeshore
149	ISRO	Isle Royale National Park
150	JECA	Jewel Cave National Monument
151	JELA	Jean Lafitte National Historical Park and Preserve
152	JODA	John Day Fossil Beds National Monument
153	JOFL	Johnstown Flood National Memorial
154	JOMU	John Muir National Historic Site
155	JOTR	Joshua Tree National Park
156	KAHO	Kaloko-Honokohau National Historical Park
157	KALA	Kalaupapa National Historical Park
158	KATM	Katmai National Park and Preserve
159	KEFJ	Kenai Fjords National Park
160	KEMO	Kennesaw Mountain National Battlefield Park
161	KIMO	Kings Mountain National Military Park
162	KLGO	Klondike Gold Rush National Historical Park
163	KNRI	Knife River Indian Villages National Historic Site
164	KOVA	Kobuk Valley National Park
165	LABE	Lava Beds National Monument
166	LACL	Lake Clark National Park and Preserve
167	LAKE	Lake Mead National Recreation Area
168	LAMR	Lake Meredith National Recreation Area
169	LARO	Lake Roosevelt National Recreation Area

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170	LAVO	Lassen Volcanic National Park
171	LEWI	Lewis and Clark National Historical Park
172	LIBI	Little Bighorn Battlefield National Monument
173	LIBO	Lincoln Boyhood National Memorial
174	LIRI	Little River Canyon National Preserve
175	LYJO	Lyndon B. Johnson National Historical Park
176	MABI	Marsh-Billings-Rockefeller National Historical Park
177	MACA	Mammoth Cave National Park
178	MANA	Manassas National Battlefield Park
179	MANZ	Manzanar National Historic Site
180	MEVE	Mesa Verde National Park
181	MIMA	Minute Man National Historical Park
182	MISS	Mississippi National River and Recreation Area
183	MNRR	Missouri National Recreation River
184	MOCA	Montezuma Castle National Monument
185	MOCR	Moore's Creek National Battlefield
186	MOJA	Mojave National Preserve
187	MONO	Monocacy National Battlefield
188	MORA	Mount Rainier National Park
189	MORR	Morristown National Historical Park
190	MORU	Mount Rushmore National Memorial
191	MUWO	Muir Woods National Monument
192	NABR	Natural Bridges National Monument
193	NATR	Natchez Trace Parkway and National Scenic Trail
194	NAVA	Navajo National Monument
195	NEPE	Nez Perce National Historical Park
196	NERI	New River Gorge National River
197	NIOB	Niobrara National Scenic River
198	NISI	Ninety Six National Historic Site
199	NOAT	Noatak National Preserve
200	NOCA	North Cascades National Park
201	NPSA	National Park of American Samoa
202	OBRI	Obed Wild and Scenic River
203	OCMU	Ocmulgee National Monument
204	OLYM	Olympic National Park
205	ORCA	Oregon Caves National Monument
206	ORPI	Organ Pipe Cactus National Monument
207	OZAR	Ozark National Scenic Riverway
208	PAAL	Palo Alto Battlefield National Historical Park
209	PAIS	Padre Island National Seashore
210	PARA	Grand Canyon-Parashant National Monument
211	PECO	Pecos National Historical Park
212	PEFO	Petrified Forest National Park
213	PERI	Pea Ridge National Military Park
214	PETE	Petersburg National Battlefield
215	PETR	Petroglyph National Monument
216	PINN	Pinnacles National Park
217	PIPE	Pipestone National Monument
218	PIRO	Pictured Rocks National Lakeshore
220	PISP	Pipe Spring National Monument
222	PORE	Point Reyes National Seashore
223	~~PRSF~~	~~Presidio of San Francisco~~
224	PRWI	Prince William Forest Park
225	PUHE	Pu'ukohola Heiau National Historic Site
226	PUHO	Pu'uhonua o Honaunau National Historical Park
227	RABR	Rainbow Bridge National Monument

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228	REDW	Redwood National Park
229	RICH	Richmond National Battlefield Park
230	RIGR	Rio Grande Wild and Scenic River
231	ROMO	Rocky Mountain National Park
232	ROVA	Roosevelt-Vanderbilt Headquarters
233	RUCA	Russell Cave National Monument
234	SAAN	San Antonio Missions National Historical Park
235	SACN	Saint Croix National Scenic Riverway
236	SAGA	Saint-Gaudens National Historic Site
237	SAGU	Saguaro National Park
238	SAHI	Sagamore Hill National Historic Site
239	SAIR	Saugus Iron Works National Historic Site
240	SAJH	San Juan Island National Historical Park
241	SAMO	Santa Monica Mountains National Recreation Area
242	SAND	Sand Creek Massacre National Historic Site
243	SAPU	Salinas Pueblo Missions National Monument
244	SARA	Saratoga National Historical Park
245	SCBL	Scotts Bluff National Monument
246	SEKI	Sequoia and Kings Canyon National Parks
247	SHEN	Shenandoah National Park
248	SHIL	Shiloh National Battlefield
249	SITK	Sitka National Historical Park
250	SLBE	Sleeping Bear Dunes National Lakeshore
251	STRI	Stones River National Battlefield
252	SUCR	Sunset Crater Volcano National Monument
253	TAPR	Tallgrass Prairie National Preserve
254	THRO	Theodore Roosevelt National Park
255	THST	Thomas Stone National Historic Site
256	TICA	Timpanogos Cave National Monument
257	TIMU	Timucuan Ecological and Historic Preserve
258	TONT	Tonto National Monument
259	TUMA	Tumacacori National Historical Park
260	TUZI	Tuzigoot National Monument
261	UPDE	Upper Delaware Scenic and Recreational River
262	VAFO	Valley Forge National Historical Park
263	VALR	World War II Valor in the Pacific National Monument
264	VICK	Vicksburg National Military Park
265	VIIS	Virgin Islands National Park
266	VOYA	Voyageurs National Park
267	WABA	Washita Battlefield National Historic Site
268	WACA	Walnut Canyon National Monument
269	WAPA	War in the Pacific National Historic Park
270	WEFA	Weir Farm National Historic Site
271	WHIS	Whiskeytown-Shasta-Trinity National Recreation Area
272	WHMI	Whitman Mission National Historic Site
273	WHSa	White Sands National Monument
274	WICA	Wind Cave National Park
275	WICR	Wilson's Creek National Battlefield
276	WOTR	Wolf Trap Farm Park National Park
277	WRBR	Wright Brothers National Memorial
278	WRST	Wrangell-St. Elias National Park and Preserve
279	WUPA	Wupatki National Monument
280	YELL	Yellowstone National Park
281	YOSE	Yosemite National Park
282	YUCH	Yukon-Charley Rivers National Preserve
283	YUHO	Yucca House National Monument

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284	ZION	Zion National Park
1002	CHOH	Chesapeake and Ohio Canal National Historical Park
1003	NACE	National Capital Parks-East
1004	ROCR	Rock Creek Park
1006	KAWW	Katahdin Woods and Waters National Monument
1007	HONO	Honouliuli National Monument
1008	CAMO	Castle Mountains National Monument
1009	TUSK	Tule Springs Fossil Beds National Monument