Rare Plant and Vegetation Survey of Potholes State Park and the Potholes Agreement

Pacific Biodiversity Institute

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Executive Summary

Pacific Biodiversity Institute (PBI) conducted a rare plant and vegetation survey of Potholes State Park and the Potholes Agreement (O'Sullivan Site) for the Washington State Parks and Recreation Commission (WSPRC). Potholes State Park covers about 643 acres and the Potholes Agreement covers about 130 acres of land along the Potholes Reservoir (O'Sullivan Reservoir) in Grant County, WA.

Field surveys of the properties were conducted on May 10 and 14 and July 24 and 25, 2008.

42 vegetation community polygons were mapped and visited in the project areas, and 12 vegetation community types were encountered within these polygons. Actual vegetation cover and community conditions were more diverse than the 12 classes suggest. Data on the existing vegetation cover and ecological conditions for each vegetation community patch was collected and attributed to a GIS dataset deliverable.

No rare plants were known to occur on either park property. Habitat for rare plants once known to be in the area does exist within Potholes State Park. Four watch list species were encountered in Potholes State Park during 2008 field surveys.

167 vascular plant species were identified to at least genus during this project. Of these species, 71 species are known to be exotic plants, meaning 42% of the plant species diversity within the park properties is non-native.

12 weeds tracked by the Washington State Noxious Weed Board were encountered within the park properties. The artificial wetlands created by the reservoir and the Frenchman Hills Wasteway in Potholes State Park contain most of the noxious weeds on that property. In the Potholes Agreement, noxious weed infestations occur both in wetland and dry upland sites because it has been highly degraded by human disturbance. Cheatgrass (*Bromus tectorum*) and other exotic invasive species are profuse throughout the Potholes Agreement, and are abundant in some natural communities in Potholes State Park along road systems or around developed sites.

Ecological conditions are good to poor in Potholes State Park. The dry upland shrub-steppe communities are in the best ecological condition, with relatively low exotic plant cover, good soil conditions including presence of biotic crusts, and native plant diversity. Areas closest to road systems and/or other human development sites are the most degraded in the shrub-steppe communities. The wetland sites in the park are mostly in poor condition due to exotic plant infestations, although these artificial wetlands might serve as important habitat elements for some wildlife species, even in poor ecological condition. Ecological conditions in the Potholes Agreement range from fair to poor, with a majority of the landscape in poor ecological condition due to intense human use and disturbances.

The use of restoration resources in the Potholes Agreement and in wetland areas adjacent to the Potholes Reservoir in Potholes State Park are not highly recommended. However, small experiments or trials to determine how to restore these areas cost-effectively may be appropriate. Protection and restoration of native shrub-steppe communities in good and fair condition in Potholes State Park should be given priority because many of these communities are globally insecure and are still in good enough condition to support regionally significant flora and fauna.

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Introduction

Potholes State Park and the Potholes Agreement were surveyed for rare plant occurrences, vegetation communities and characteristics, noxious weeds and ecological condition by PBI in 2008 under contract with WSPRC. This report summarizes the activities and findings of the contracted work.

Potholes State Park and the Potholes Agreement (also known as the O'Sullivan Site) total 643 and 130 acres, respectively, and are located along the south and southeast shorelines of the Potholes (O'Sullivan) Reservoir, in Grant County, Washington. Figure 1 illustrates the locations of the WSPRC properties in the Potholes Reservoir area.

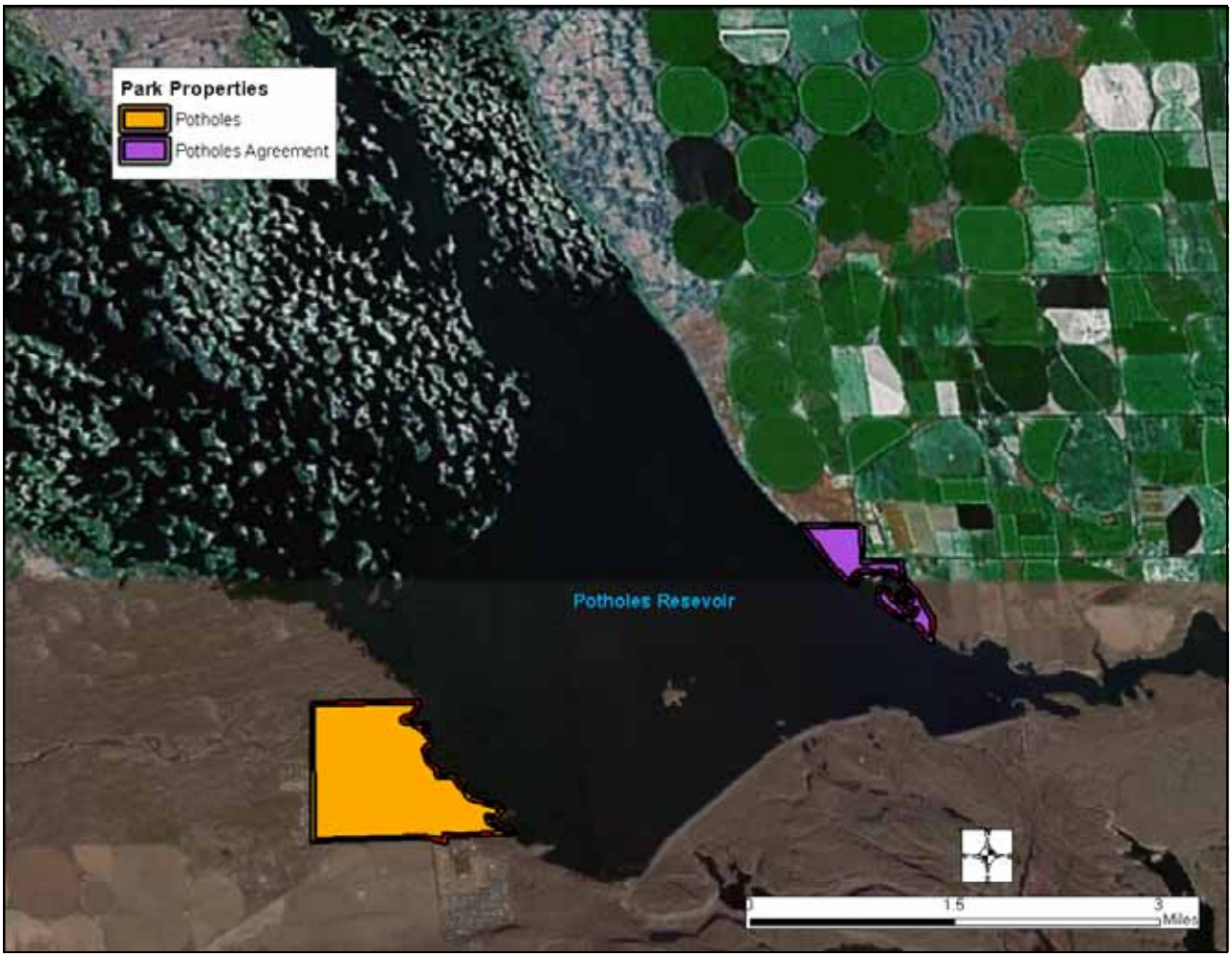


Figure 1. Locations of Potholes State Park and the Potholes Agreement along the Potholes Reservoir in Grant County, WA.

The water capture basin of today's reservoir was formed during the repeated Missoula Flood events, which occurred during the Pleistocene epoch. Predating the reservoir, this area primarily consisted of typical Columbia Plateau shrub-steppe and sand dune communities associated with the great floods' channeled scablands. One of central Washington's largest shifting dune systems was located where the Potholes Reservoir now stands.

The Potholes Reservoir was created in the 1950s, when the U.S. Bureau of Reclamation engineered the O'Sullivan dam to store irrigation water for the Columbia Basin Irrigation Project. Now, along the reservoir shoreline, artificial vegetation communities are present in both state park properties due to the

raised water level caused by the reservoir. The Frenchman Hills Wasteway in the north section of Potholes State Park was created to feed Columbia River water to irrigation crops and to replenish the water level of the O'Sullivan Reservoir. Existing dunes in the State Park have been artificially stabilized by the increased water table caused by the wasteway and the reservoir and are no longer actively shifting.

Besides the creation of the reservoir, intensive agricultural practices have vastly altered the landscape and vegetation community composition in this region. Noxious weeds and exotic invasive plants associated with intensive agriculture are now profuse among the farmlands and the adjacent natural communities. Reservoir development for irrigation also created new recreational opportunities for anglers and boating enthusiasts. With the increased visitation of the reservoir by recreational users, human trampling and off-road driving impacts to the natural vegetation communities closest to the reservoir have increased. While the negative ecological effects of intensive industrial agriculture and off-trail/off-road recreation have not manifested themselves as severely in the remaining native shrub-steppe communities in Potholes State Park, the Potholes Agreement property's natural vegetation communities have been severely degraded by these activities, to the point where much of the Agreement's landscape could be called a wasteland.

Fire risk has increased in the area with the increasing cover of cheatgrass (*Bromus tectorum*) (Link et al. 2006a) and poses an increasing threat to the natural biodiversity (Link et al. 2006b) of Potholes State Park.

Survey Conditions and Survey Routes

The project areas were surveyed by one botanist/ecologist on May 10 and 14, 2008 and on July 24 and 25, 2008. Routesfrom these surveys are illustrated in Figures 2 and 3.

Almost all non-wetland areas of both park properties were easily accessible for survey on foot; however, the stabilized dunes on the north side of the Frenchman Hills Wasteway in Potholes State Park were not accessible via state park property due to a lack of safe crossings. Because of the deep and fast water in the wasteway, these areas were only surveyed by being viewed through binoculars from the south side of the wasteway. In addition, much of the reservoir shoreline in Potholes State Park consists of highly dense willows, shrubs, and vine-like vegetation making access to many areas difficult. The vegetation communities in these areas proved to be highly disturbed. These communities were not surveyed as intensely as other communities in the park were.

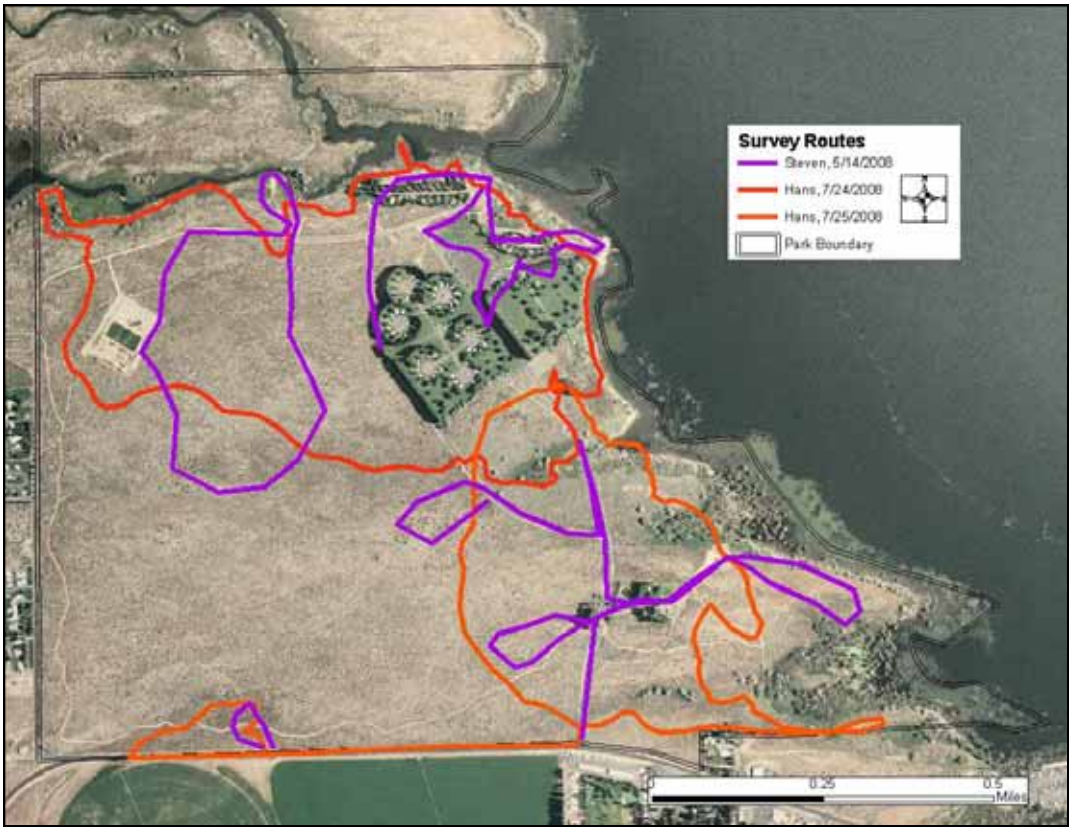


Figure 2. Field survey and routes in Potholes State Park.

Figure 3. Field survey and routes in the Potholes Agreement.

Vegetation Community Surveys

Methods

Pre-field reviews of literature, GIS data, and remote sensing data were conducted early in the season. Maps, GIS data, and remotely sensed data were assembled together into an ArcMap GIS project covering the project area. Topographic maps and digital elevation models (DEMs) were also assembled. Using the gathered spatial data resources, discrete vegetation polygons meant to represent specific plant communities or mosaics of plant communities were manually delineated by staff ecologists as polygon features in an ESRI shapefile format.

Parks were then visited several times during the field season to assure observation of both late spring and summer blooming plant species. The first visit was primarily a reconnaissance of the project area, meant to create a basic plant list for the park and to conduct initial rare plant surveys for late spring bloomers. Later visits focused on collecting field data for the vegetation polygon map and adding more species to the plant list during different times of the season. Before the field season was complete, all vegetation polygons that could be accessed safely were visited and field data was collected.

Plant community data was recorded on a form initially developed by WSPRC (Appendix A). Recorded data included a wide variety of information about the vegetation composition, environmental characteristics, disturbance history and other notes for each polygon. Each polygon was rated for its overall ecological condition according to a simple ranking system (Appendix B). Vegetation community and land cover classifications were assigned using information and keys from standard literature sources cited in the Reference section of this document.

During field visits survey personnel had printed and digital maps available that included high-resolution aerial imagery. Digital maps were accessed in the field using ArcPad software (ESRI 2007) running on pocket PC, GPS enabled devices. Use of ArcPad allowed all survey routes to be mapped on a GPS recorder in real time, and allowed for viewing and editing data directly from field locations, resulting in field-verified attributes for the vegetation polygons.

Findings

Vegetation Community Mapping

A total of 42 vegetation community polygons were mapped and visited in Potholes State Park and the Potholes Agreement (Figures 4 and 5). Within these 42 polygons, 12 vegetation community/land cover classes were attributed as, either primary, secondary, or tertiary community types (Table 1). Primary community types are the dominant or matrix vegetation community within a polygon, whereas secondary and tertiary community types are less abundant vegetation community types that occur within the same polygon and were not conducive to being mapped as a separate polygon due to the size, shape, or pattern of the community patches within the polygon.

Figure 4. Map of Potholes State Park showing vegetation community polygons overlaid onto an aerial photo of the park.

Figure 5. Map of Potholes Agreement showing vegetation community polygons overlaid onto an aerial photo of the property.

Table 1. Vegetation community/land cover classes mapped in Potholes State Park and the Potholes Agreement scientific names are in italics

Common Names	Scientific Names	Code	Authority	Global Status
big sagebrush / Sandberg bluegrass	*Artemisia tridentata / Poa secunda*	ARTR2/POSE	Daubenmire, 1970	G4
big sagebrush / needle and thread grass	*Artemisia tridentata / Hesperostipa comata*	ARTR2/HECO26	Daubenmire, 1970	G2
big sagebrush / bluebunch wheatgrass	*Artemisia tridentata / Pseudoroegneria spicata*	ARTR2/PSSP6	Daubenmire, 1970	G5
mountain rush	*Juncus arcticus*	JUARL	Crawford, 2003	G5
rubber rabbitbrush / bluebunch wheatgrass	*Ericameria nauseosa / Pseudoroegneria spicata*	ERNA10/PSSP6	MTNHP, 2002	G3
big sagebrush / western wheatgrass	*Artemisia tridentata / Pascopyrum smithii*	ARTR2/PASM	MTNHP, 2002	G3
antelope bitterbrush / needle and thread grass	*Purshia tridentata / Hesperostipa comata*	PUTR2/HECO26	Daubenmire, 1970	G2
Woods' rose	*Rosa woodsii*	ROWO	Crawford, 2003	G5
broadleaf cattail	*Typha latifolia*	TYLA	Crawford, 2003	G5
Exotic herbs / grasses	Exotic herbs / grasses	Exotic herbs/grasses	PBI	NR
willow / herbs artificial shoreline	Salix spp. / herbs artificial shoreline	SALIX/herbs artificial shoreline	PBI	NR
Developed / Disturbed	Developed / Disturbed	Developed/Disturbed	PBI	

These vegetation community/land cover types represent our best determination of how the existing vegetation and land use patterns observed within the park's landscape relate to vegetation communities, plant associations, and/or land cover categories previously described in existing reference literature (see Appendix C for description of Global Status codes). Table 2 illustrates how existing vegetation patches observed and mapped by PBI were assigned to a particular vegetation community/land cover classification.

Table 2. Relationship of observed vegetation patches to subsequent vegetation community / land cover classification.

Vegetation Community/Plant Association/Land Cover Name (Code)	Existing Vegetation/Land Cover Observed
antelope bitterbrush / needle and thread grass PUTR2/HECO26	PUTR2-ARTR2/HECO26 PUTR2-ARTR2-ERNA10/BRTE-POSE PUTR2-ARTR2-ERNA10/HECO26-POSE
big sagebrush / bluebunch wheatgrass ARTR2/PSSP6	ARTR2-ERNA10/PSSP6-POSE
big sagebrush / needle and thread grass ARTR2/HECO26	ARTR2-ERNA10/BRTE-HECO26 ARTR2-ERNA10/HECO26-POSE ARTR2-ERNA10/HECO26-POSE-BRTE ARTR2-ERNA10/POSE-HECO26 ERNA10-ARTR2/BRTE-HECO26-POSE ERNA10-ARTR2-PUTR2/HECO26-EQHY-POBU
big sagebrush / Sandberg bluegrass ARTR2/POSE	ARTR2/POSE ARTR2/POSE-BRTE-HECO26 ARTR2-ERNA10/BRTE-POSE ARTR2-ERNA10/POSE-BRTE
big sagebrush / western wheatgrass ARTR2/PASM	PASM-JUARL-ASSP
broadleaf cattail TYLA	TYLA-PHAR3
mountain rush JUARL	ELAN/PASM-ERCI-JUARL
rubber rabbitbrush / bluebunch wheatgrass ERNA10/PSSP6	ERNA10/BRTE-HECO26 ERNA10/PSSP6-POSE ERNA10-ARTR2/BRTE
willow / herbs artificial shoreline SALIX/herbs artificial shoreline	ELAN/LELA2-JUARL-CIAR4 LELA2-JUARL SAEX/APCA-JUARL-ERCI SAEX/JUARL-CIAR4-LELA2 SAEX/XAST-BIFR-POPE3 SAEX/XAST-POAM8 SAEX-ELAN/JUARL-CIAR4-LELA2 SALU/SAEX/XAST-POAM8-LYSA2 ULPU/SALIX/LELA2 XAST XAST-POAM8
Woods' rose ROWO	ROWO
Exotic herbs / grasses	BRTE-SIAL2-AGCR PSSP6-AGCR-BRTE SIAL2-BRTE
Developed / Disturbed	Campground and Day Use Area Highly Disturbed Shoreline - camping spots/roads/parking Highly Disturbed Shoreline - mostly gravel/dirt Highly Disturbed Shoreline - mostly gravel/dirt - roads Irrigation Ditch Outflow Lawn and Water Pump House Old Housing Development Ranger Office and Dump Sewage Lagoons

For each vegetation community polygon, at least a primary vegetation community/land cover class was attributed (if not a secondary and tertiary class). Figures 5 and 6 show maps depicting the primary vegetation community/land cover class for each polygon within the WSPRC properties. Appendix D provides a full accounting of all the attributes described for each polygon mapped within the project area.

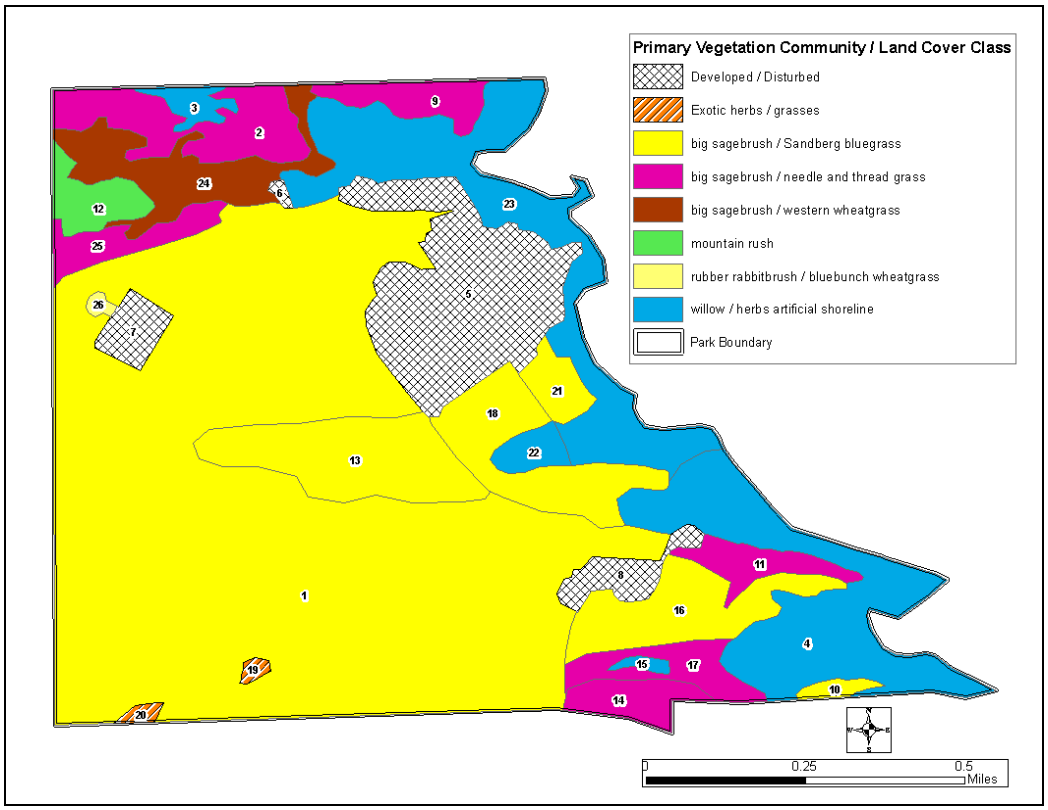


Figure 5. Primary vegetation community/land cover classes attributed to each vegetation polygon in Potholes State Park.

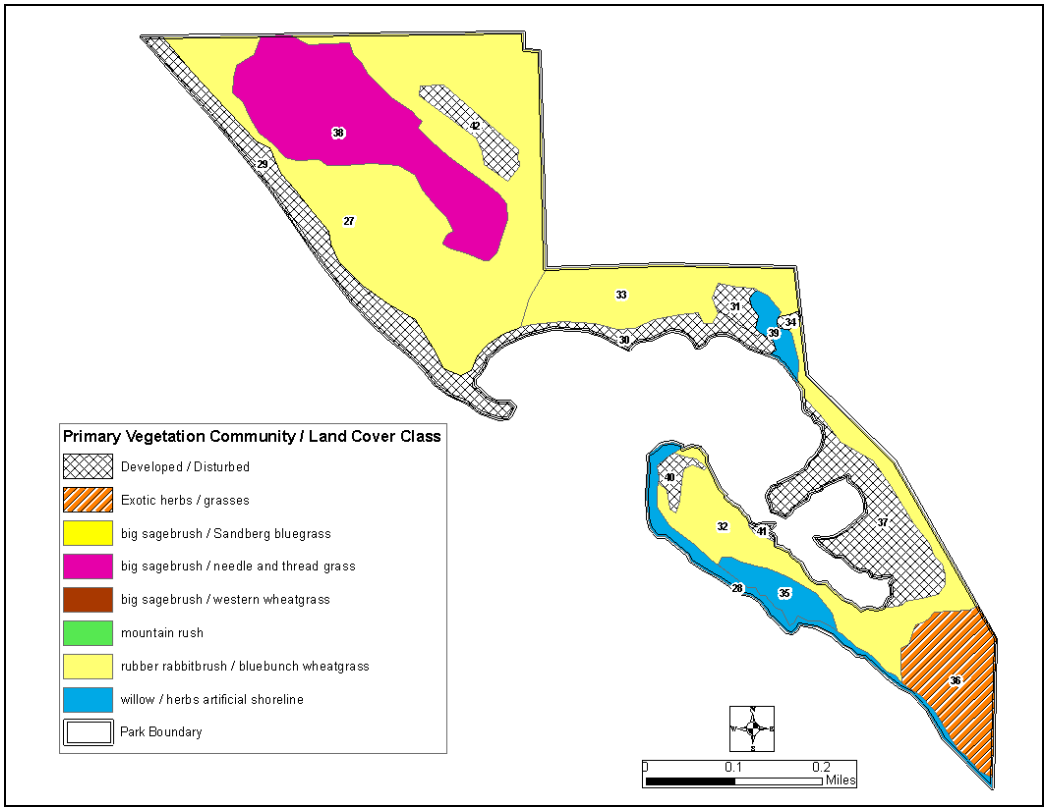


Figure 6. Primary vegetation community/land cover classes attributed to each vegetation polygon in the Potholes Agreement.

Vegetation Community Types

big sagebrush / Sandberg bluegrass ARTR2/POSE G4

This is the most dominant shrub-steppe vegetation community within Potholes State Park. It also occurs to a lesser extent in the Potholes Agreement, but is much more degraded within this area, as are all the vegetation communities occurring there due to intense human disturbances. This community tends to mosaic with the big sagebrush / bluebunch wheatgrass (ARTR2/PSSP6) and the big sagebrush / needle and thread grass (ARTR2/HECO26) vegetation communities. It occurs on sites that are generally calcareous, excessively well-drained, with fine-textured silts or fine sand soils. The two watch list *Astragalus* species, woodypod milkvetch (*Astragalus sclerocarpus*) and Columbia milkvetch (*Astragalus succumbens*), were both found occurring in patches of this community in Potholes State Park. Small cheatgrass (*Bromus tectorum*) and dense silkybent (*Apera interrupta*) infestations occur within the large good condition patches of this community and threaten further invasion. Protection of the biotic crusts developed within undisturbed portions of this community, by limiting off-trail visitor use, may help prevent spread of these annual weedy grasses.

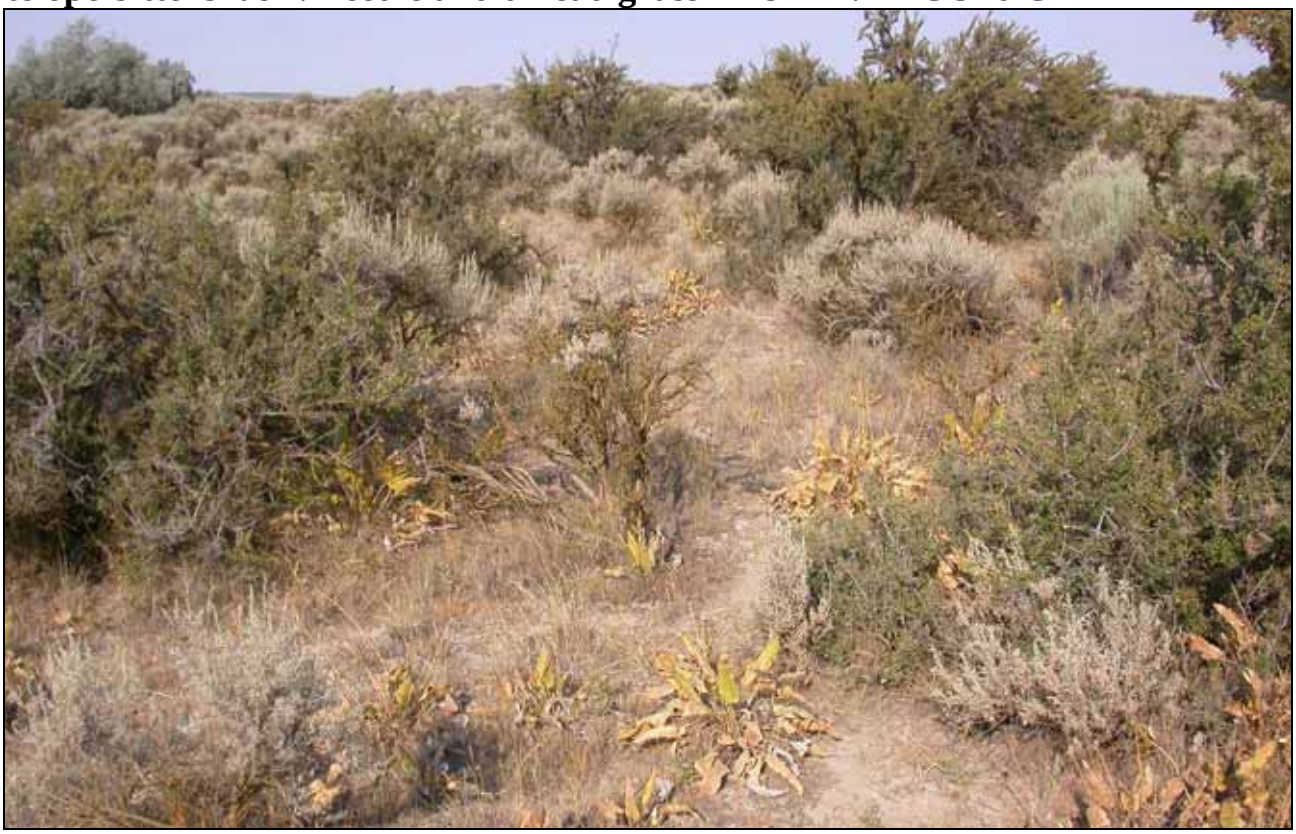
big sagebrush / needle and thread grass ARTR2/HECO26 G2

This community commonly occurs in smaller patches mixed together with the big sagebrush / Sandberg bluegrass (ARTR2/POSE) community within Potholes State Park. In the Potholes Agreement, this community is more common than the ARTR2/POSE community, and it occurs in areas with the least disturbance and weed problems within that property. The ARTR2/HECO26 community is restricted to sandy loam or uniformly high calcareous silt loam soils. In Potholes State Park, it is the dominant non-wetland influenced shrub-steppe vegetation community occurring on the stabilized dunes in the north section of the park. Where this community occurs on the stabilized dunes represents the highest likelihood places for pale bugseed (*Corispermum pallidum* – a state extirpated species) to occur, although it was not encountered during the 2008 surveys. This community has a global ranking of G2, meaning it is globally imperiled, and should be considered an important natural resource for protection and conservation.

big sagebrush / bluebunch wheatgrass ARTR2/PSSP6 G5

The big sagebrush / bluebunch wheatgrass community is a common Columbia Plateau shrub-steppe type; however, it is not common in Potholes State Park and was completely absent from the Potholes Agreement (although it may have occurred there historically). This community occurs in small patches mixed into the big sagebrush / Sandberg bluegrass (ARTR2/POSE) community. It is more representative of sites with slightly higher soil moisture than what maintains the ARTR2/POSE community. Patches of this community were generally in good condition when encountered within the large shrub-steppe polygon (polygon 1), but cheatgrass is known to be highly invasive in this community when human disturbance to the soil has occurred. Soil disturbances within this community caused by recreation and/or development could quickly degenerate the ecological condition within the park.

antelope bitterbrush / needle and thread grass PUTR2/HECO26 G2



This globally imperiled vegetation community is another small patch shrub-steppe community occurring within the big sagebrush / Sandberg bluegrass (ARTR2/POSE) matrix shrub-steppe community in Potholes State Park. It is similar to the big sagebrush / needle and thread grass community except that it has a high cover of antelope bitterbrush (*Purshia tridentata*) along with big sagebrush. Within the park, shrubs within this community tend to be much taller than within the surrounding shrub-steppe vegetation types. The patches of this community mostly occur nearer to the reservoir and developed park infrastructure, so it is possible that an artificially high amount of soil moisture from these landscape elements is allowing antelope bitterbrush to grow extremely robust. As with the other shrub-steppe communities in the park, cheatgrass is abundant in localized patches and threatens to spread further throughout the community if biotic crusts are broken or destroyed by trampling and/or fire (Link et al. 2006a, 2006b).

rubber rabbitbrush / bluebunch wheatgrass ERNA10/PSSP6 G3

This community occurs in one small patch on a strange in-fill landform associated with the sewage lagoons in the northwest section of Potholes State Park. Seemingly, the fill dug from the sewage lagoons was deposited in polygon 26 and successfully revegetated with native shrub-steppe species rubber rabbitbrush (*Ericameria nauseosa*) and bluebunch wheatgrass (*Pseudoroegneria spicata*), which are growing vigorously. Other explanations for this vegetation community and site are also possible. Exotic plant presence is surprisingly low within this site.

big sagebrush / western wheatgrass ARTR2/PASM G3

This community occurs in the stabilized dunes (north) section of Potholes State Park in areas where subsurface water from the Frenchman Hills Wasteway creates wet enough soil conditions. The ARTR2/PASM community occurs in an unorganized mosaic pattern with the mountain rush (JUARL) and the Woods' rose (ROWO) communities in this area. This community seems to occur on stabilized dune sites that are higher than the JUARL and ROWO communities, but still moister and lower on the dunes than the big sagebrush / needle and thread grass (ARTR2/HECO26) community. The presence of this and the other more “native” riparian vegetation types around the Frenchman Hills Wasteway add a high degree of native plant species and vegetation community diversity to the park, although many exotic and noxious species are invading and thriving in this area as well.

mountain rush JUARL G5

This community occurs in the stabilized dunes (north) section of Potholes State Park in areas where subsurface water from the Frenchman Hills Wasteway creates wet enough soil conditions. The mountain rush community occurs in an unorganized mosaic pattern with the big sagebrush / western wheatgrass (ARTR2/PASM) and the Woods' rose (ROWO) communities, although it seems that the JUARL community is more common in the deepest depressions between the stabilized dunes. The presence of this and the other more “native” riparian vegetation types around the Frenchman Hills Wasteway add a high degree of native plant species and vegetation community diversity to the park, although many exotic and noxious species are invading and thriving in this area as well.

Woods' rose ROWO G5

This community occurs in the stabilized dunes (north) section of Potholes State Park in areas where subsurface water from the Frenchman Hills Wasteway creates wet enough soil conditions. This community consists mostly of dense thickets of Woods’ rose. Because of the density of rose cover, this community does not suffer from the same extent of exotic and noxious species invasions as the other riparian community types.

broadleaf cattail TYLA G5

The broadleaf cattail community occurs directly along the banks of the Frenchman Hills Wasteway, where constant flooding and a high water table keeps soils highly saturated. Small patches of the hardstem bulrush (*Schoenoplectus acutus*) wetland community occur within this wetland zone as well. Large infestations of noxious grasses reed canarygrass (*Phalaris arundinacea*) and common reed (*Phragmites australis*) are replacing these native communities in the park. The Frenchman Hills Wasteway drains through hundreds of acres of high-intensity industrial agriculture before reaching the stabilized dune communities in Potholes State Park, making it a vector for the spread of noxious species that thrive in industrial agriculture settings. Conversion of the remaining native wetland communities to noxious and exotic species dominated wetlands seems to be almost complete in the park.

Exotic herbs / grasses Exotic herbs/grasses

Two small patches of this exotic plant community occur in the southwest section of Potholes State Park. This community type is very common in the ultra-disturbed Potholes Agreement. Cheatgrass and other exotic grasses are pervasive, as are exotic forbs such as tall tumblemustard (*Sisymbrium altissimum*) and prickly lettuce (*Lactuca serriola*). Past disturbances such as fire, grazing, road development, off-road driving, and agricultural cultivation removed most native vegetation from these sites and disturbed soils to the point that the biotic crust was lost.

willow / herbs artificial shoreline SALIX/herbs artificial shoreline

This community type is being used to describe the various highly artificial and weed infested wetland communities that occur alongside the reservoir in both Potholes State Park and the Potholes Agreement. Noxious and exotic species including Canada thistle (*Cirsium arvense*), broadleaved pepperweed (*Lepidium latifolium*), purple loosestrife (*Lythrum salicaria*), reed canarygrass (*Phalaris arundinacea*), rough cocklebur (*Xanthium strumarium*), Russian olive (*Elaeagnus angustifolia*), and spotted ladysthumb (*Polygonum persicaria*) are profuse and dominant vegetation components in these shoreline areas. Narrowleaf and shining willow (*Salix exigua* and *Salix lucida*) are common native willows occurring within these otherwise weed infested areas.

Rare Plant Surveys

Methods

We visited Palouse Falls State Park twice during the 2008 field season to conduct rare plant surveys. We used the Washington Department of Natural Resources Natural Heritage Program's (DNR NHP) rare plant list to determine the conservation status of vascular plants encountered in the field.

Field surveys were conducted on May 10 and 15 and on July 24 and 25. During the field surveys, we were equipped with reference literature; rare plant lists for the area, maps showing rare plant locations from previous surveys, and a portable plant identification lab. We looked for rare plants in habitats previously identified as being likely occurrence sites. So as not to miss a rare plant, all vascular plant species encountered during the inventory were identified on site, at base camp in the portable laboratory, or back at our office.

Survey routes were determined based on the desire to cover efficiently a large proportion of the park's area throughout the field season. We surveyed areas of the park more intensively where rare plants are more likely to occur. Survey routes for the rare plant inventory and rare plant locations were recorded either by hand, on a hardcopy topographic map, or as GPS waypoints and trackpoints, all of which were later compiled into a single GIS data layer, depicted in Figures 2 and 3 (page 8).

Results

No rare plants were known to occur in either Potholes State Park or the Potholes Agreement before our surveys and no new populations were encountered during our 2008 work, although the park has potentially suitable habitat for some rare and/or extirpated plants known to have occurred in the region (Figure 7). The following rare/extirpated plants have habitat potential in Potholes State Park:

Scientific Name	Common Name	Family	Rank
***Corispermum pallidum* Mosyakin**	**pale bugseed**	**Chenopodiaceae**	**Extirpated**
***Erigeron piperianus* Cronquist**	**Piper's fleabane**	**Asteraceae**	**G3 S3 S**

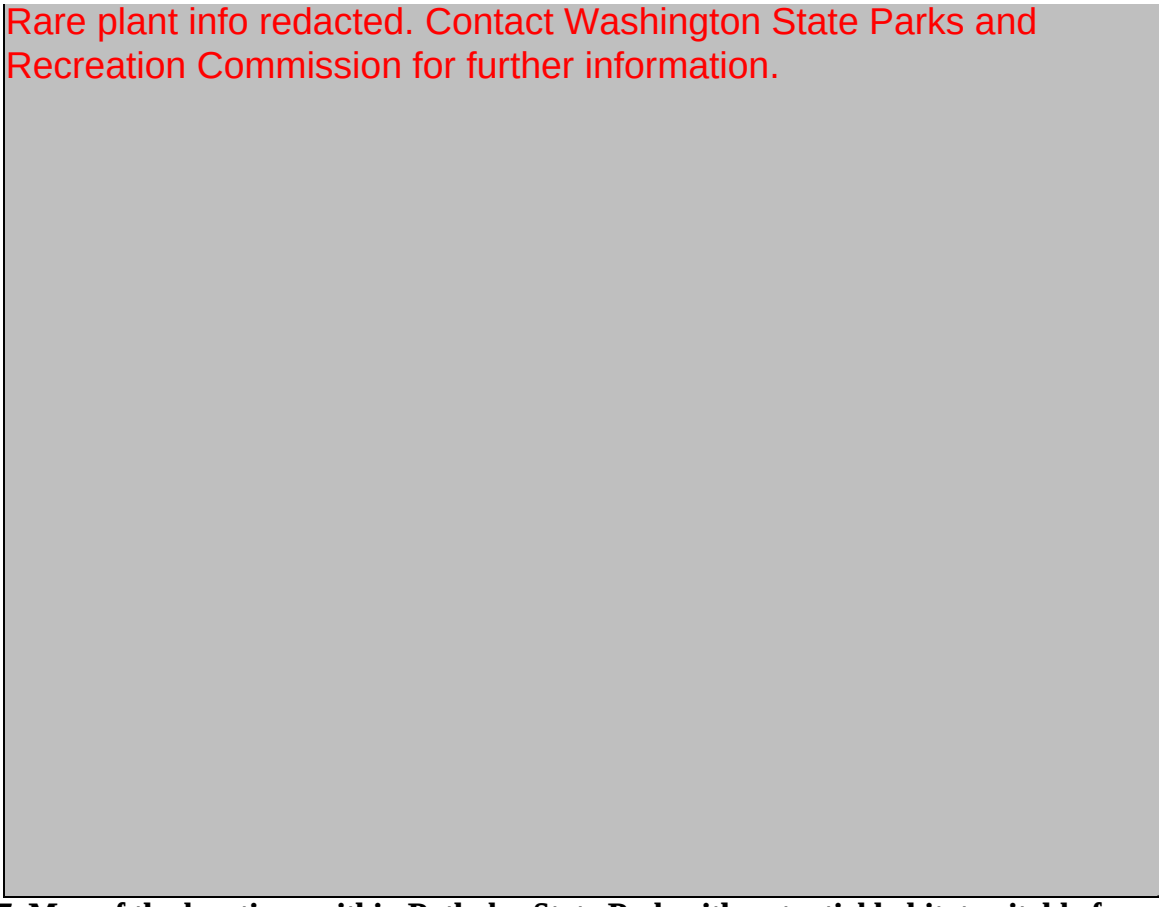


Figure 7. Map of the locations within Potholes State Park with potential habitat suitable for rare plants.

Pale bugseed has not been observed in Washington since 1953. It was an endemic species limited to sand dune habitats in Grant and Douglas Counties. The 1953 sighting of pale bugseed occurred somewhere relatively near to Potholes State Park. It is not likely that this species currently occurs in the park.

Piper's fleabane is a state sensitive species that is endemic to the Washington part of the Columbia Basin and is associated with remnant sagebrush-steppe communities. A sighting of this species was documented near to Potholes State Park in the 1950s. Although this species was not encountered during the 2008 surveys, we suggest repeated surveys targeted in the months of May and June for new populations in the park.

Four watch list plants were found within Potholes State Park during 2008 surveys. The four species are:

Scientific Name	Common Name	Family
***Astragalus lyallii* A. Gray**	**Lyall's milkvetch**	**Fabaceae**
***Astragalus sclerocarpus* A. Gray**	**woodypod milkvetch**	**Fabaceae**
***Astragalus succumbens* Douglas ex Hook.**	**Columbia milkvetch**	**Fabaceae**
Castilleja minor* (A. Gray) A. Gray *ssp. minor	**lesser Indian paintbrush**	**Scrophulariaceae**

Figure 8 shows some locations where these species were found in the park. While not mapped more than provided in Figure 8, each *Astragalus* species was found in other parts of the park's shrub-steppe communities. Lesser Indian paintbrush was only found in this one wetland system within the park.

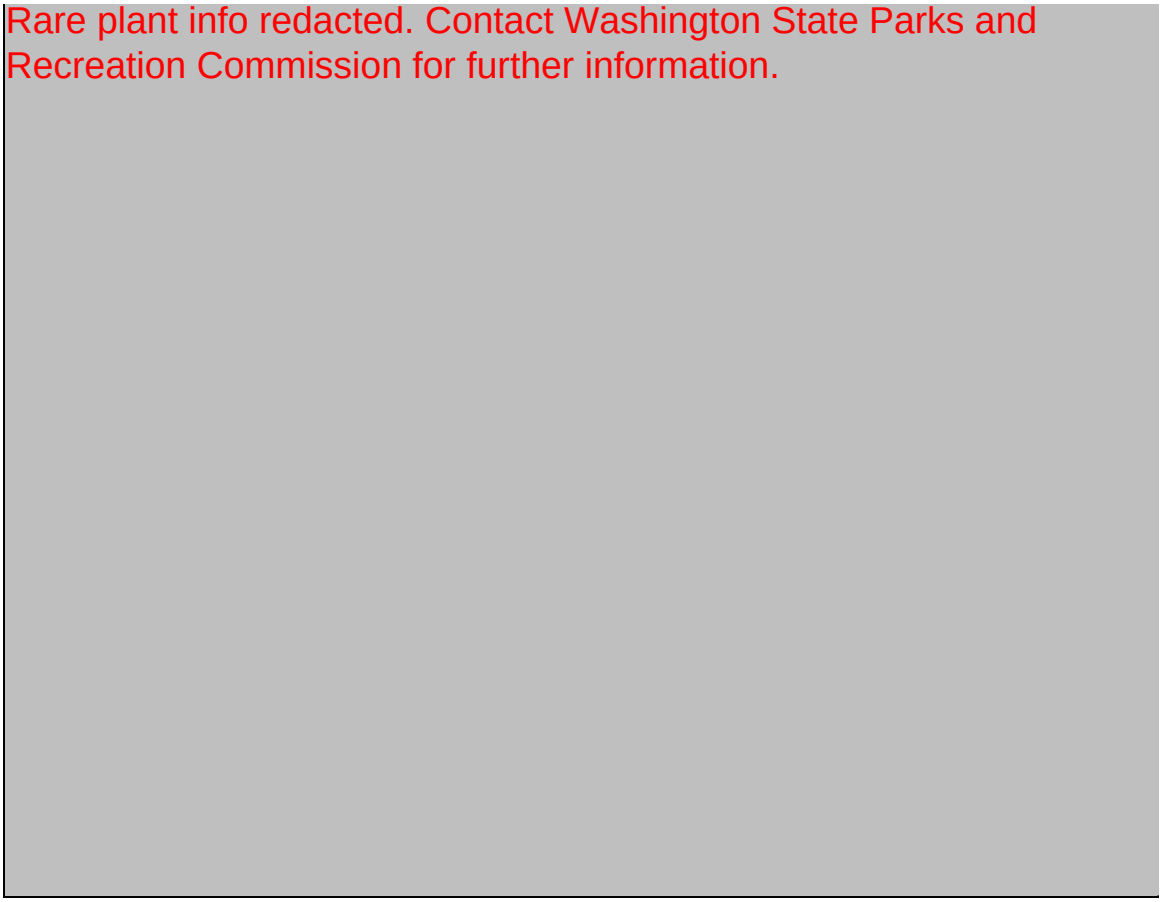


Figure 8. Locations of watch list plant species in Potholes State Park.

Vascular Plant List for the 2008 Project Areas

167 vascular plant species were identified to at least genus within the project areas in 2008. Of these species, 71 species are known to be exotic plants, meaning 42% of the plant species diversity within the park is non-native. Table 3 provides the list of all 167 species encountered within Palouse Falls State Park.

Key to Vascular Plant Species Lists

Column 1: "Symbol": Four-letter plant code as shown on the USDA PLANTS database.
Column 2: Scientific name as shown on the USDA PLANTS database.
Column 3: Common name as shown on the USDA PLANTS database.
Column 5: Status as exotic to Washington State according to USDA PLANTS database.

Table 3. List of plants identified within Potholes State Park and the Potholes Agreement during 2008 field surveys.

Code	Scientific Name with Author	National Common Name	Family	Exotic	State Status
ACPL	Acer platanoides L.	Norway maple	Aceraceae	yes	
ACMI2	Achillea millefolium L.	common yarrow	Asteraceae	yes	
ACHY	Achnatherum hymenoides (Roem. & Schult.) Barkworth	Indian ricegrass	Poaceae		
ACRE3	Acroptilon repens (L.) DC.	hardheads	Asteraceae	yes	
AGCR	Agropyron cristatum (L.) Gaertn.	crested wheatgrass	Poaceae	yes	
AGGI2	Agrostis gigantea Roth	redtop	Poaceae	yes	
AMRE	Amaranthus retroflexus L.	redroot amaranth	Amaranthaceae	yes	
AMAL2	Amelanchier alnifolia (Nutt.) Nutt. ex M. Roem.	Saskatoon serviceberry	Rosaceae		
AMTE3	Amsinckia tessellata A. Gray	bristly fiddleneck	Boraginaceae		
ANDI2	Antennaria dimorpha (Nutt.) Torr. & A. Gray	low pussytoes	Asteraceae		
APIN	Apera interrupta (L.) P. Beauv.	dense silkybent	Poaceae	yes	
APCA	Apocynum cannabinum L.	Indianhemp	Apocynaceae		
ARTR2	Artemisia tridentata Nutt.	big sagebrush	Asteraceae		
ASSP	Asclepias speciosa Torr.	showy milkweed	Asclepiadaceae		
ASOF	Asparagus officinalis L.	garden asparagus	Liliaceae	yes	
ASPR	Asperugo procumbens L.	German-madwort	Boraginaceae	yes	
ASLY	Astragalus lyallii A. Gray	Lyall's milkvetch	Fabaceae		Watchlist
ASPU9	Astragalus purshii Douglas ex Hook.	woollypod milkvetch	Fabaceae		
ASSC6	Astragalus sclerocarpus A. Gray	woodypod milkvetch	Fabaceae		Watchlist
ASSU7	Astragalus succumbens Douglas ex Hook.	Columbia milkvetch	Fabaceae		Watchlist
BACA3	Balsamorhiza careyana A. Gray	Carey's balsamroot	Asteraceae		
BASA3	Balsamorhiza sagittata (Pursh) Nutt.	arrowleaf balsamroot	Asteraceae		
BASC5	Bassia scoparia (L.) A.J. Scott	burningbush	Chenopodiaceae	yes	
BEPA	Betula papyrifera Marsh.	paper birch	Betulaceae		
BIFR	Bidens frondosa L.	devil's beggartick	Asteraceae		
BRTE	Bromus tectorum L.	cheatgrass	Poaceae	yes	
BUDA2	Buddleja davidii Franch.	orange eye butterflybush	Buddlejaceae	yes	
CAMA5	Calochortus macrocarpus Douglas	sagebrush mariposa lily	Liliaceae		
CADR	Cardaria draba (L.) Desv.	whitetop	Brassicaceae	yes	
CADO2	Carex douglasii Boott	Douglas' sedge	Cyperaceae		
CAPR5	Carex praegracilis W. Boott	clustered field sedge	Cyperaceae		
CAMIM6	Castilleja minor (A. Gray) A. Gray ssp. minor	lesser Indian paintbrush	Scrophulariaceae		Watchlist
CEDI3	Centaurea diffusa Lam.	diffuse knapweed	Asteraceae	yes	
CETE5	Ceratocephala testiculata (Crantz) Roth	curveseed butterwort	Ranunculaceae	yes	
CHDO	Chaenactis douglasii (Hook.) Hook. & Arn.	Douglas' dustymaiden	Asteraceae		

Code	Scientific Name with Author	National Common Name	Family	Exotic	State Status
CHAL7	Chenopodium album L.	lambsquarters	Chenopodiaceae	yes	
CHTE2	Chorispora tenella (Pall.) DC.	crossflower	Brassicaceae	yes	
CHVI8	Chrysothamnus viscidiflorus (Hook.) Nutt.	yellow rabbitbrush	Asteraceae		
CIAR4	Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae	yes	
COUM	Comandra umbellata (L.) Nutt.	bastard toadflax	Santalaceae		
COCA5	Conyza canadensis (L.) Cronquist	Canadian horseweed	Asteraceae		
COSE16	Cornus sericea L.	redosier dogwood	Cornaceae		
CRAT	Crepis atribarba A. Heller	slender hawksbeard	Asteraceae		
CUSCU	Cuscuta L.	dodder	Cuscutaceae		
DENU2	Delphinium nuttallianum Pritz. ex Walp.	twolobe larkspur	Ranunculaceae		
DEPI	Descurainia pinnata (Walter) Britton	western tansymustard	Brassicaceae		
DESO2	Descurainia sophia (L.) Webb ex Prantl	herb sophia	Brassicaceae	yes	
DISP	Distichlis spicata (L.) Greene	saltgrass	Poaceae		
ECCR	Echinochloa crus-galli (L.) P. Beauv.	barnyardgrass	Poaceae	yes	
ELAN	Elaeagnus angustifolia L.	Russian olive	Elaeagnaceae	yes	
ELPA3	Eleocharis palustris (L.) Roem. & Schult.	common spikerush	Cyperaceae		
ELEL5	Elymus elymoides (Raf.) Swezey	squirreltail	Poaceae		
ELLAL	Elymus lanceolatus (Scribn. & J.G. Sm.) Gould ssp. lanceolatus	thickspike wheatgrass	Poaceae		
ELRE4	Elymus repens (L.) Gould	quackgrass	Poaceae	yes	
ELWA2	Elymus wawawaiensis J. Carlson & Barkworth	Snake River wheatgrass	Poaceae		
EQHY	Equisetum hyemale L.	scouringrush horsetail	Equisetaceae		
ERCI	Eragrostis cilianensis (All.) Vign. ex Janchen	stinkgrass	Poaceae	yes	
ERNA10	Ericameria nauseosa (Pall. ex Pursh) G.L. Nesom & Baird	rubber rabbitbrush	Asteraceae		
ERLI	Erigeron linearis (Hook.) Piper	desert yellow fleabane	Asteraceae		
ERPO2	Erigeron poliospermus A. Gray	purple cushion fleabane	Asteraceae		
ERPU2	Erigeron pumilus Nutt.	shaggy fleabane	Asteraceae		
ERNI2	Eriogonum niveum Douglas ex Benth.	snow buckwheat	Polygonaceae		
ERCI6	Erodium cicutarium (L.) L'Hér. ex Aiton	redstem stork's bill	Geraniaceae	yes	
EUOC4	Euthamia occidentalis Nutt.	western goldentop	Asteraceae		
GAAP2	Galium aparine L.	stickywilly	Rubiaceae		
GRSP	Grayia spinosa (Hook.) Moq.	spiny hopsage	Chenopodiaceae		
GRCO	Grindelia columbiana (Piper) Rydb.	Columbia River gumweed	Asteraceae		
GYPA	Gypsophila paniculata L.	baby's breath	Caryophyllaceae	yes	
HEAN3	Helianthus annuus L.	common sunflower	Asteraceae	yes	
HECU3	Heliotropium curassavicum L.	salt heliotrope	Boraginaceae		
HECO26	Hesperostipa comata (Trin. & Rupr.) Barkworth	needle and thread	Poaceae		
HOUM	Holosteum umbellatum L.	jagged chickweed	Caryophyllaceae	yes	
HOJU	Hordeum jubatum L.	foxtail barley	Poaceae		
HOMUL	Hordeum murinum L. ssp. leporinum (Link) Arcang.	hare barley	Poaceae	yes	
JUARL	Juncus arcticus Willd. ssp. littoralis (Engelm.) Hultén	mountain rush	Juncaceae		
JUSC2	Juniperus scopulorum Sarg.	Rocky Mountain juniper	Cupressaceae		
KOMA	Koeleria macrantha (Ledeb.) Schult.	prairie Junegrass	Poaceae		
LASE	Lactuca serriola L.	prickly lettuce	Asteraceae	yes	
LATA	Lactuca tatarica (L.) C.A. Mey.	blue lettuce	Asteraceae		
LAOCC	Lappula occidentalis (S. Watson) Greene var. cupulata (A. Gray) Higgins	flatspine stickseed	Boraginaceae		
LELA2	Lepidium latifolium L.	broadleaved pepperweed	Brassicaceae	yes	
LEPE2	Lepidium perfoliatum L.	clasping pepperweed	Brassicaceae	yes	
LIDA	Linaria dalmatica (L.) Mill.	Dalmatian toadflax	Scrophulariaceae	yes	
LOAR5	Logfia arvensis (L.) Holub	field cottonrose	Asteraceae	yes	

Code	Scientific Name with Author	National Common Name	Family	Exotic	State Status
LOMA3	Lomatium macrocarpum (Nutt. ex Torr. & A. Gray) J.M. Coult. & Rose	bigseed biscuitroot	Apiaceae		
LOTR2	Lomatium triternatum (Pursh) J.M. Coult. & Rose	nineleaf biscuitroot	Apiaceae		
LYAM	Lycopus americanus Muhl. ex W. Bartram	American water horehound	Lamiaceae		
LYJU	Lygodesmia juncea (Pursh) D. Don ex Hook.	rush skeletonplant	Asteraceae		
LYSA2	Lythrum salicaria L.	purple loosestrife	Lythraceae	yes	
MACA2	Machaeranthera canescens (Pursh) A. Gray	hoary tansyaster	Asteraceae		
MANE	Malva neglecta Wallr.	common mallow	Malvaceae	yes	
MAPA5	Malva parviflora L.	cheeseweed mallow	Malvaceae	yes	
MAVE2	Marsilea vestita Hook. & Grev.	hairy waterclover	Marsileaceae		
MESA	Medicago sativa L.	alfalfa	Fabaceae	yes	
MEOF	Melilotus officinalis (L.) Lam.	yellow sweetclover	Fabaceae	yes	
MELA2	Mentzelia laevicaulis (Hook.) Torr. & A. Gray	smoothstem blazingstar	Loasaceae		
MOAL	Morus alba L.	white mulberry	Moraceae	yes	
MUAS	Muhlenbergia asperifolia (Nees & Meyen ex Trin.) Parodi	scratchgrass	Poaceae		
NECA2	Nepeta cataria L.	catnip	Lamiaceae	yes	
NOTR2	Nothocalais troximoides (A. Gray) Greene	sagebrush false dandelion	Asteraceae		
ORAS	Oryzopsis asperifolia Michx.	roughleaf ricegrass	Poaceae		
PAPE5	Parietaria pensylvanica Muhl. ex Willd.	Pennsylvania pellitory	Urticaceae		
PASM	Pascopyrum smithii (Rydb.) A. Löve	western wheatgrass	Poaceae		
PHAR3	Phalaris arundinacea L.	reed canarygrass	Poaceae	yes	
PHCA7	Phlox caespitosa Nutt.	tufted phlox	Polemoniaceae		
PHLO2	Phlox longifolia Nutt.	longleaf phlox	Polemoniaceae		
PHAU7	Phragmites australis (Cav.) Trin. ex Steud.	common reed	Poaceae		
PLMA2	Plantago major L.	common plantain	Plantaginaceae	yes	
PLPA2	Plantago patagonica Jacq.	woolly plantain	Plantaginaceae		
PLMA4	Plectritis macrocera Torr. & A. Gray	longhorn plectritis	Valerianaceae		
POBU	Poa bulbosa L.	bulbous bluegrass	Poaceae	yes	
POPR	Poa pratensis L.	Kentucky bluegrass	Poaceae	yes	
POSE	Poa secunda J. Presl	Sandberg bluegrass	Poaceae		
POAM8	Polygonum amphibium L.	water knotweed	Polygonaceae		
POAV	Polygonum aviculare L.	prostrate knotweed	Polygonaceae	yes	
POPE3	Polygonum persicaria L.	spotted ladysthumb	Polygonaceae	yes	
POMO5	Polypogon monspeliensis (L.) Desf.	annual rabbitsfoot grass	Poaceae	yes	
POAL7	Populus alba L.	white poplar	Salicaceae	yes	
POBAT	Populus balsamifera L. ssp. trichocarpa (Torr. & A. Gray ex Hook.) Brayshaw	black cottonwood	Salicaceae		
PONI	Populus nigra L.	Lombardy poplar	Salicaceae	yes	
POTR5	Populus tremuloides Michx.	quaking aspen	Salicaceae		
POOL	Portulaca oleracea L.	little hogweed	Portulacaceae	yes	
PSST7	Pseudognaphalium stramineum (Kunth) Anderb.	cottonbatting plant	Asteraceae		
PSSP6	Pseudoroegneria spicata (Pursh) A. Löve	bluebunch wheatgrass	Poaceae		
PSLA3	Psoralidium lanceolatum (Pursh) Rydb.	lemon scurfpea	Fabaceae		
PTTET	Pteryxia terebinthina (Hook.) J.M. Coult. & Rose var. terebinthina	turpentine wavewing	Apiaceae		
PUTR2	Purshia tridentata (Pursh) DC.	antelope bitterbrush	Rosaceae		
PYCO	Pyrus communis L.	common pear	Rosaceae	yes	
RHGL	Rhus glabra L.	smooth sumac	Anacardiaceae		
RHTY	Rhus typhina L.	staghorn sumac	Anacardiaceae	yes	
RIAU	Ribes aureum Pursh	golden currant	Grossulariaceae		
ROWO	Rosa woodsii Lindl.	Woods' rose	Rosaceae		

Code	Scientific Name with Author	National Common Name	Family	Exotic	State Status
RUCR	Rumex crispus L.	curly dock	Polygonaceae	yes	
RUVE2	Rumex venosus Pursh	veiny dock	Polygonaceae		
SAAM2	Salix amygdaloides Andersson	peachleaf willow	Salicaceae		
SAEX	Salix exigua Nutt.	narrowleaf willow	Salicaceae		
SALIX	Salix L.	willow	Salicaceae		
SALU	Salix lucida Muhl.	shining willow	Salicaceae		
SAMA13	Salix matsudana Koidzumi	corkscrew willow	Salicaceae	yes	
SAKA	Salsola kali L.	Russian thistle	Chenopodiaceae	yes	
SATR12	Salsola tragus L.	prickly Russian thistle	Chenopodiaceae	yes	
SCPH	Schedonorus phoenix (Scop.) Holub	tall fescue	Poaceae	yes	
SCAM6	Schoenoplectus americanus (Pers.) Volkart ex Schinz & R. Keller	chairmaker's bulrush	Cyperaceae		
SCMA8	Schoenoplectus maritimus (L.) Lye	cosmopolitan bulrush	Cyperaceae		
SCDU2	Sclerochloa dura (L.) P. Beauv.	common hardgrass	Poaceae	yes	
SEPUP2	Setaria pumila (Poir.) Roem. & Schult. ssp. pumila	yellow foxtail	Poaceae	yes	
SEVI4	Setaria viridis (L.) P. Beauv.	green bristlegrass	Poaceae	yes	
SIAL2	Sisymbrium altissimum L.	tall tumblemustard	Brassicaceae	yes	
SODU	Solanum dulcamara L.	climbing nightshade	Solanaceae	yes	
SOAR2	Sonchus arvensis L.	field sowthistle	Asteraceae	yes	
SPMU2	Sphaeralcea munroana (Douglas) Spach	Munro's globemallow	Malvaceae		
SPCR	Sporobolus cryptandrus (Torr.) A. Gray	sand dropseed	Poaceae		
SYVU	Syringa *vulgaris* L.	common lilac	Oleaceae	yes	
TAOF	Taraxacum officinale F.H. Wigg.	common dandelion	Asteraceae	yes	
TABA80	Taxus baccata L.	English yew	Taxaceae	yes	
TECA2	Tetradymia canescens DC.	spineless horsebrush	Asteraceae		
THLA	Thelypodium laciniatum (Hook.) Endl. ex Walp.	cutleaf thelypody	Brassicaceae		
THIN6	Thinopyrum intermedium (Host) Barkworth & D.R. Dewey	intermediate wheatgrass	Poaceae	yes	
TRDU	Tragopogon dubius Scop.	yellow salsify	Asteraceae	yes	
TYLA	Typha latifolia L.	broadleaf cattail	Typhaceae		
ULPU	Ulmus pumila L.	Siberian elm	Ulmaceae	yes	
URDI	Urtica dioica L.	stinging nettle	Urticaceae	yes	
VETH	Verbascum thapsus L.	common mullein	Scrophulariaceae	yes	
VEHA2	Verbena hastata L.	swamp verbena	Verbenaceae		
VUMI	Vulpia microstachys (Nutt.) Munro	small fescue	Poaceae		
XAST	Xanthium strumarium L.	rough cocklebur	Asteraceae		
ZIVE	Zigadenus venenosus S. Watson	meadow deathcamas	Liliaceae		

Discussion and Recommendations

Noxious Weeds

Potholes State Park and the Potholes Agreement have many noxious weed infestations. Due to the geographic positions relative to high-intensity agricultural lands in the Columbia Basin Irrigation Project, there are ample seed sources of noxious weeds that are able to access the park's habitats. The impacts of artificial water storage in the reservoir, agricultural land development, infrastructure development, and increased off-trail/off-road recreation have created many disturbed and artificial wetland sites where noxious weed seeds have advantage over native species to become established. Table 4 lists the noxious weeds tracked by the Washington State Noxious Weed Board that occur within both park properties. Many of these species can be found in the artificial wetland communities within Potholes State Park, and in both the artificial wetlands and degraded upland communities within the Potholes Agreement.

Table 4. Noxious weeds encountered in the survey areas.

Code	Scientific Name with Author	National Common Name	Family	Updated Status
ACRE3	Acroptilon repens (L.) DC.	hardheads	Asteraceae	B
BASC5	Bassia scoparia (L.) A.J. Scott	burningbush	Chenopodiaceae	B
BUDA2	Buddleja davidii Franch.	orange eye butterflybush	Buddlejaceae	B
CADR	Cardaria draba (L.) Desv.	whitetop	Brassicaceae	C
CEDI3	Centaurea diffusa Lam.	diffuse knapweed	Asteraceae	B
CIAR4	Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae	C
GYPA	Gypsophila paniculata L.	baby's breath	Caryophyllaceae	C
LELA2	Lepidium latifolium L.	broadleaved pepperweed	Brassicaceae	B
LYSA2	Lythrum salicaria L.	purple loosestrife	Lythraceae	B
PHAR3	Phalaris arundinacea L.	reed canarygrass	Poaceae	C
PHAU7	Phragmites australis (Cav.) Trin. ex Steud.	common reed	Poaceae	B
SOAR2	Sonchus arvensis L.	field sowthistle	Asteraceae	B

We mapped some of the larger infestations of noxious weeds encountered during the 2008 field surveys. Figures 9 and 10 provide maps of the large noxious weed infestations in both park properties. Smaller noxious weed patches and diffuse populations are not mapped. Note that most concentrated infestations of noxious weeds occur within wetland communities in Potholes State Park, but infestations are more scattered throughout all communities wet or dry in the highly degraded Potholes Agreement.

Figure 9. Large noxious weed infestations in Potholes State Park.

Figure 10. Large noxious weed infestations in the Potholes Agreement.

Besides noxious weeds, many exotic invasive species like cheatgrass (*Bromus tectorum*) and other annual grasses, as well as herbs like tall tumblemustard (*Sisymbrium altissimum*) and prickly lettuce (*Lactuca serriola*), have invaded disturbed dry-land sites in both Potholes State Park and the Potholes Agreement. The weedy annual grasses show the highest potential of invading remaining good condition natural communities in Potholes State Park. It is unlikely that many of the state listed noxious weeds will invade the dry shrub-steppe communities without further substantial disturbance impacts and hydrological alteration, which raises the water table even higher.

Ecological Condition

In Potholes State Park, the overall condition of the dry upland shrub-steppe communities is good. Figure 11 provides a map of the ecological condition ranks for the primary vegetation community represented by each vegetation polygon in the park. Exotic species cover and diversity is low, biotic soil crusts are abundant in places, and off-trail/off-road soil disturbances are not abundant or apparent. Shrub vigor and senescence is patchy throughout these communities, with some areas exhibiting vibrant shrub growth while other areas show signs of shrub mortality and dieback. Areas directly alongside existing roads tend to have the worst weed infestations and signs of soil disturbance in the shrub-steppe communities.

The wetland communities in the park are another matter. The artificial wasteway and reservoir have created many artificial wetland communities in area that were once dry upland shrub-steppe. The native vegetation in these areas has been lost and replaced by mostly exotic, hydrophilic vegetation. The wetland and wasteway influenced communities in the northwest section of the park are in better condition than those communities closest to the reservoir, with more native species present. This is probably because the hydrographic functions of the wasteway better mimic more natural stream channel characteristics. Native species are better adapted to these conditions. A majority of the wetland communities in the park are in poor condition. The remaining wetlands are in fair condition. Although these areas are in poor to fair condition, they still may provide important habitat to area wildlife.

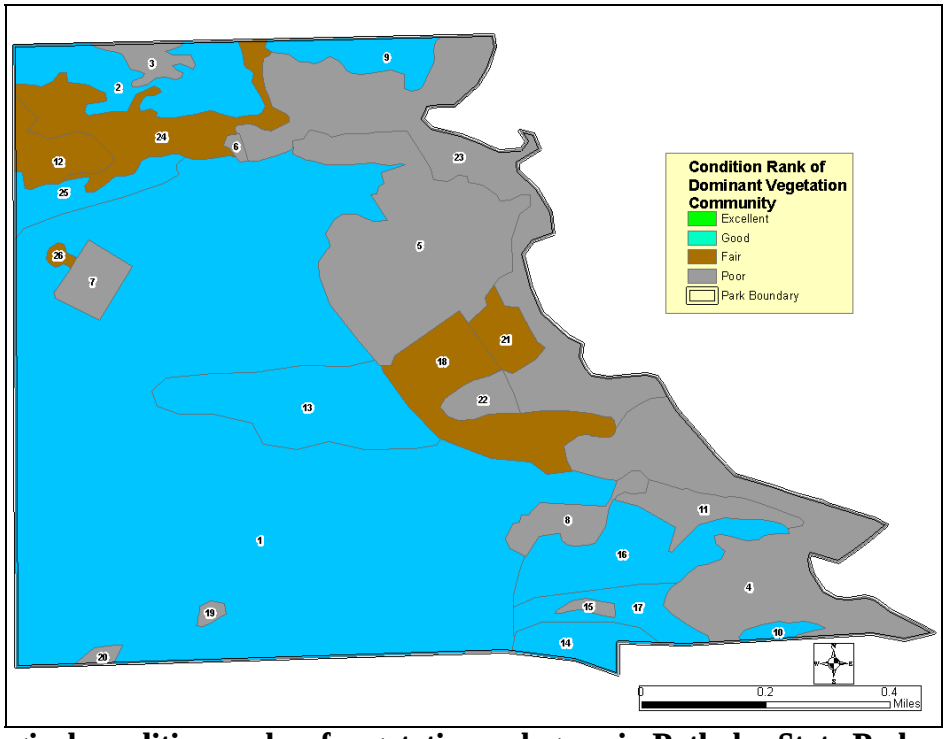


Figure 11. Ecological condition ranks of vegetation polygons in Potholes State Park.

In the Potholes Agreement, almost all areas are in poor ecological condition. Gravel mining, off-trail and off-road recreation, agricultural conversion, home-site development, and fire have drastically disturbed the property's soils and destroyed the biotic crusts. Most of the historic native vegetation has been removed through these activities and exotic plants have taken advantage. Figure 12 provides a map of the ecological condition ranks for the primary vegetation community represented by each vegetation polygon in the park. Only one polygon is mapped as being in fair condition within this property.

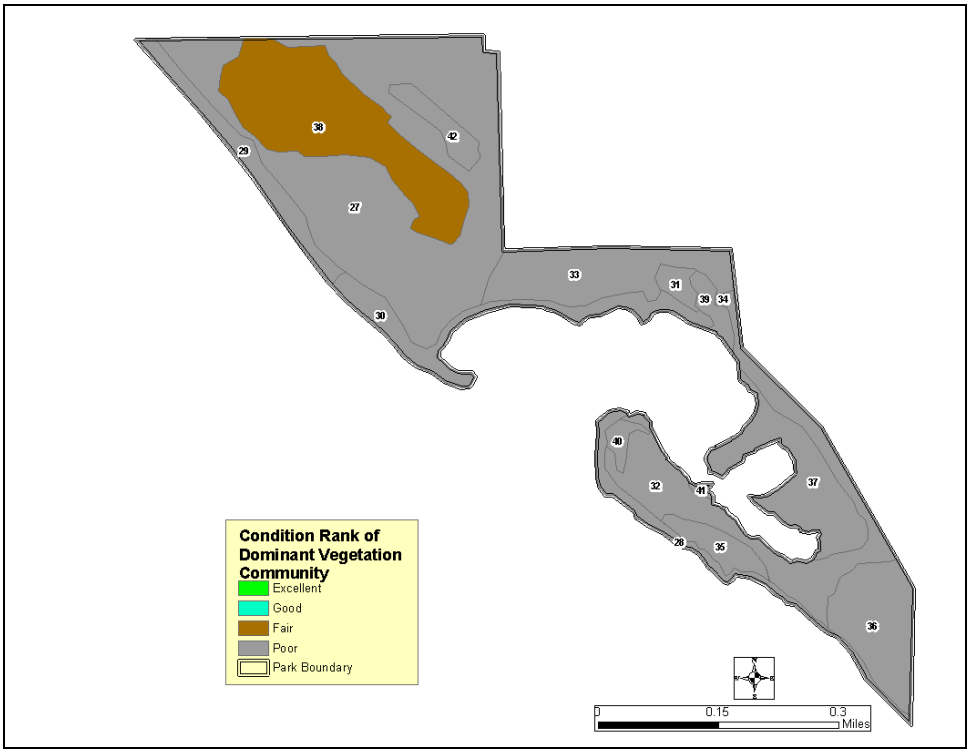


Figure 12. Ecological condition ranks of vegetation polygons in the Potholes Agreement.

Restoration Opportunities

Restoration opportunities exist within Potholes State Park, and to a much lesser degree in the Potholes Agreement. Prioritizing restoration activities should consider a number of factors so that limited restoration resources are optimized. The overall ecological condition of a site should be considered, along with information about the conservation status of the resource being evaluated for restoration. Figures 13 and 14 provide information about the global conservation rank of communities in both park properties based on the most sensitive community occurring within a given vegetation polygon.

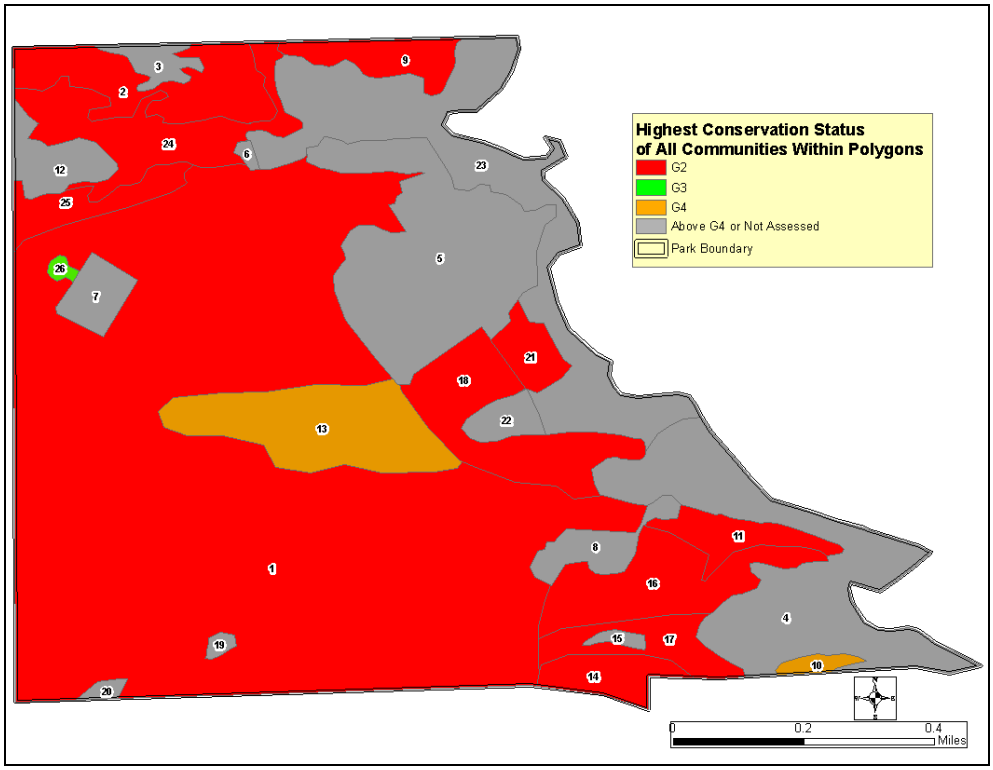


Figure 13. Map of the global conservation status rank of the most sensitive community occurring within a given vegetation polygon in Potholes State Park.

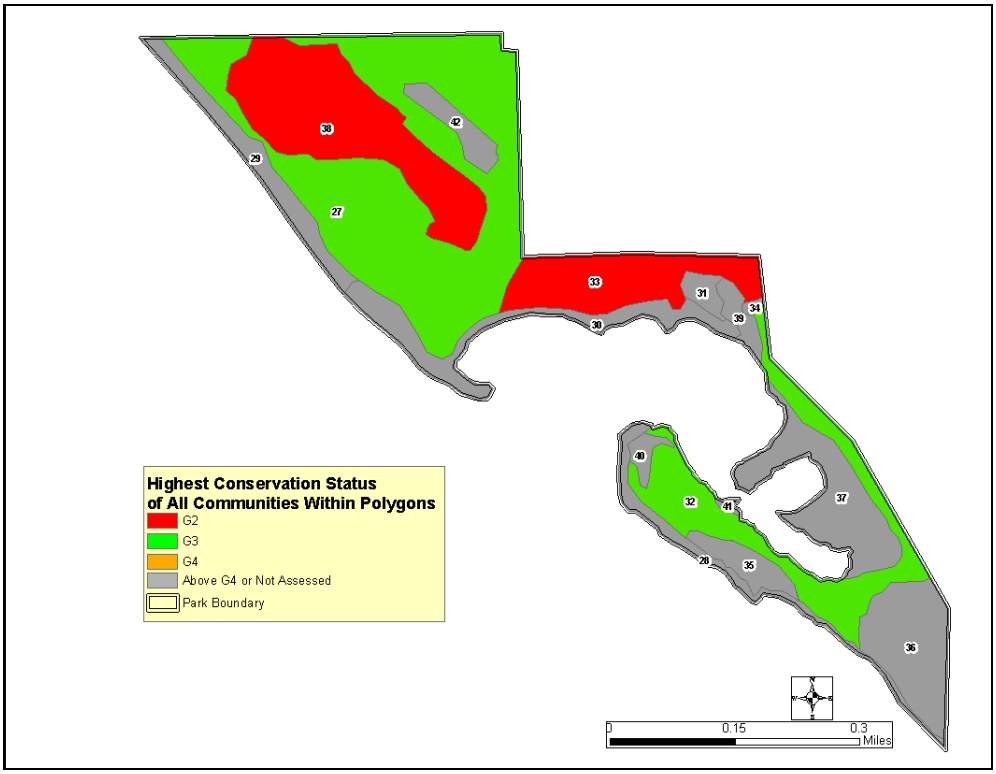


Figure 14. Map of the global conservation status rank of the most sensitive community occurring within a given vegetation polygon in the Potholes Agreement.

Given what is known about the natural communities' conditions and conservation status in both properties, restoration priority should be given to the dry upland shrub-steppe areas in Potholes State Park. In these areas, the ecological condition of the natural communities could benefit from a reduction of exotic species cover where exotic infestations are more intense. Mostly this would be along the park's roadsides. Re-introduction and propagation of native herbs and grasses in these will be important to ensuring long-term success of reducing exotic species cover. Protection and maintenance of the existing biotic crusts should be a focal point of any restoration activities in these areas. Restoration attempts will be counter-productive if damage to this critical ecological element occurs.

Restoration activities along the park's reservoir shorelines are not recommended, although control of noxious species in these areas may be desirable to limit their spread into other non-infested sites in the future. The stabilized dune system in the northwest section of the park represents another place where restoration activities may be appropriate, at least the activity of controlling and/or eliminating noxious weeds.

We do not recommend focusing any restoration resources in the Potholes Agreement, except perhaps some very small-scale restoration experiments with hand-drilling native bunchgrass seeds similar to what has been done at the Columbia National Wildlife Refuge.

GIS Products Produced

Associated with this report are polygon layers created by PBI depicting the vegetation community types mapped in the project areas of Potholes State Park and the Potholes Agreement. The datasets have been converted into ESRI shapefile formats and provided to WSPRC. The spatial datasets are complete with metadata meeting FGDC standards. Refer to the associated metadata for descriptions and attribute definitions for each spatial dataset.

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Appendix A – Definitions of Vegetation Survey Data

Legend:

Site = name of locality of map project

Polygon = number you put on map

Name/Date = your name / day-month-year completed polygon survey

Photo roll/number = number of roll (on canister) and number of shot

Survey intensity
1 = walked or could see most of polygon (high confidence in survey data)
2 = walked or could see part of polygon interior (moderate confidence)
3 = walked perimeter or could see part of polygon interior (low confidence)
4 = photo interpretation or other remote survey

VEGETATION COVER includes all vascular plants, mosses, lichens and foliose lichens (crustose lichens excluded they are considered rock); this never exceeds 100%. Space between leaves/branches is included in "cover".

Code	**Cover (%)**	Cover mid-pt
0	0	0
1	<1	0.5
2	1-5	3
3	5-25	15
4	25-60	43
5	60-90	75
6	>90	95

TOTAL VEGETATION COVER includes all vascular plants, mosses, lichens and foliose lichens (crustose lichens excluded they are considered rock); this never exceeds 100%.

TREES, SHRUBS, GRAMINOIDS, FORBS, EXOTICS cover includes the space between leaves/branches. Each Life form category canopy cover must be 0-100%. Therefore, the sum of all life forms (layers) can exceed 100%. List most abundant species in each life form category; when trees are cored, note DBH, species, length of core, number of rings counted.

SOIL SURFACE estimate to nearest **%** the following, the sum of the categories adds to 100%
Rock outcrop = exposed bedrock including detached boulders over 1m across
Gravel/cobble = large fragments between sand and boulder
Bare ground = exposed mineral soil
Mosses/lichens = nonvascular plant cover on soil
Litter = includes logs, branches, and basal area of plants
Describe in comments if there is wide variation in any category; note % standing water if it is persistent or characteristic of site.

LAND USE - put 0 (zero) if not applicable to site.

Logging
1 = unlogged, no evidence of past logging or occasional cut stumps not part of systematic harvest of trees, no or very little impact on stand composition
2 = selectively logged: frequent cut stumps but origin of dominant or co-dominant cohort appears to be natural disturbance
3 = heavy logging disturbance with natural regeneration: many cut stumps that predate the dominant or co-dominant cohort with no tree planting
4 = tree plantation: dominant cohort appears to be planted after clearcutting

Stand Age
1 = very young 0-40 yr
2 = young 40-90 yr
3 = mature 90-200 yr
4 = old-growth 200+ yr
5 = young with scattered old trees (2-10 old trees per acre)
6 = mature with scattered old trees

Agriculture
1 = active annual cropping
2 = active perennial herbaceous cropping
3 = active woody plant cultivation
4 = fallow, plowed no crops this yr
5 = Federal CRP
6 = other

Livestock
1 = active heavy grazing (most forage used to ground soil compaction or churning)
2 = active moderate grazing (25-75% forage used)
3 = active light grazing (lots of last years litter left)
4 = no current, heavy past grazing
5 = no current, light past grazing
6 = no obvious sign of grazing

Development
1 = actively used facilities
2 = roads
3 = established trails
4 = abandoned facilities
5 = none obvious
6 = multiple types (detail in comments)

Wildlife
1 = heavy ungulate use
2 = moderate ungulate use
3 = light to no ungulate use
4 = burrowing animals
5 = active beaver
6 = active porcupine
7 = other, list animal

Recreation Use Severity
1 = heavy use, abundant soil and vegetation displacement off trail/road
2 = moderate use, frequent soil and vegetation displacement off trail/road
3 = light use, little sign of activity off trail/road

Recreation Use Primary Type
1 = wheeled
2 = hoofed
3 = pedestrian
4 = combination of above
5 = other

Hydrology
1 = unaltered
2 = altered; dams, dikes, ditches, culverts, etc
3 = not assessed

Plant Association (PA) = list all PAs encountered in polygon survey, in comments list source of name if not on provided key.

Condition Rank of PA in key or estimate

% of Polygon = your estimate

Pattern = how PA is distributed in polygon
1 = matrix (most of polygon)
2 = large patches
3 = small patches
4 = clumped, clustered, contiguous
5 = scattered, more or less evenly repeating
6 = linear
7 = other

Exotic = primary species observed; secondary species observed.

Plot Number = number of any plots established for EO (element occurrence), or other more detail sheets within polygon.

Appendix B – Ecological Condition Ranking System

Ecological Condition Ranks

When assessing conservation priorities and management decisions, it can be useful to rank natural communities into levels of ecological condition. For example, an unfragmented area with high native species diversity, absence of non-native species and little soil erosion often has greater conservation value than another area in the same habitat type that is fragmented, infested with weeds or has erosion problems. Likewise, areas with a lower ecological condition rank may be targets for restoration activities.

The flowing ecological condition ranks were applied to vegetation polygons that were surveyed in this project:

- **Excellent Ecological Condition**

Areas in this class have very few non-native plants. The composition and structure of native vegetation in this condition class correspond to the natural range of variation characteristic to this habitat type. Old-growth conditions often exist. Species diversity of native plants and animals is often high relative to the natural community under consideration. Wildlife habitat conditions are optimal for species of conservation concern. Soil compaction, accelerated erosion and hydrologic alteration are absent. Direct signs of human-induced ecological stress are absent. Many rare plant and animal species may only exist within this condition class.

- **Good Ecological Condition**

Areas in this class have few non-native plants. The composition and structure of native vegetation in this condition class correspond to the natural range of variation characteristic to this habitat type. Old-growth conditions may exist, but have been subject to some human-induced stress. Species diversity of native plants and animals is moderately high relative to the natural community under consideration. Wildlife habitat conditions are adequate for species of conservation concern. Soil compaction, accelerated erosion and hydrologic alteration do not significantly affect the area. Direct signs of human-induced ecological stress are infrequent. Some rare plant and animal species may exist within this condition class.

- **Marginal Ecological Condition**

Areas in this class often have both native and non-native plants. The composition and structure of native vegetation in this condition class is altered from the natural range of variation characteristic to this habitat type. Old-growth conditions are absent. Species diversity of native plants and animals is lower than the two high condition classes. Wildlife habitat conditions may be adequate for some species of conservation concern, but not adequate for many. Soil compaction, accelerated erosion and hydrologic alteration may impact the area. Direct signs of human-induced ecological stress are frequent. Most rare plant and animal species are only infrequently encountered within this condition class.

- **Poor Ecological Condition**

Areas in this class are often dominated by non-native plants. The composition and structure of native vegetation in this condition class is often dramatically altered from the natural range of variation characteristic to this habitat type. Old-growth conditions are absent. Species diversity of native plants and animals is often low. Wildlife habitat conditions are not adequate for most species of conservation concern. Soil compaction, accelerated erosion and hydrologic alteration often affect the area. Direct signs of human-induced ecological stress are frequent. Rare plant and animal species are seldom encountered within this condition class.

Appendix C – Definitions of Vegetation Community Ranks

The following table defines the ranking system for plants and plant communities used by the Washington State Natural Heritage Program.

Code	Definition
G1	Critically imperiled throughout its range; extremely rare with five or fewer occurrences or very few remaining acres.
G2	Imperiled throughout its range; rare with six to 20 occurrences or few remaining acres.
G3	Either very rare and local throughout its range or found locally in a restricted range; uncommon with 21 to 100 occurrences.
G4	Apparently secure throughout its range, though it may be quite rare in some parts of its range, especially at the periphery; many occurrences.
G5	Demonstrably secure in its range, though it may be quite rare in some parts of its range, especially at the periphery; ineradicable under present conditions.
S1	Critically imperiled in Oregon; extremely rare with five or fewer occurrences or very few remaining acres.
S2	Imperiled in Oregon; rare with six to 20 occurrences or few remaining acres.
S3	Either very rare and local in Oregon or found locally in a restricted range; uncommon with 21 to 100 occurrences.
S4	Apparently secure in Oregon, though it may be quite rare in some parts; many occurrences.
S5	Demonstrably secure in Oregon, though it may be quite rare in some parts; ineradicable under present conditions.
U	Unknown
NA	Natural Heritage Rank not available
NR	Not Ranked

Appendix D – Vegetation Community Data Collected for Each Vegetation Community Polygon

Polygon Number 1

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ARTR2, ERNA10, PUTR2
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	POSE, BRTE, PSSP6
Graminoids Perennial	3
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	BASA3, COUM, ACMI2
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	2
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	1
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE, SIAL2

Water:	0
Rock:	0
Talus:	0
Gravel:	1
Bare Ground:	15
Moss Lichen:	20
Litter:	64

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/POSE-BRTE		70	Matrix	Good
Veg Community1:	ARTR2/POSE	Daubenmire, 1970			G4
Existing Veg2:	ARTR2-ERNA10/HECO26-POSE		20	Large patch	Good
Veg Community3:	ARTR2/HECO26	Daubenmire, 1970			G2
Existing Veg3:	ARTR2-ERNA10/PSSP6-POSE		10	Small patch	Good
Veg Community3:	ARTR2/PSSP6	Daubenmire, 1970			G5

Notes: weed infestations worst along roads; good biotic crust profile; polygon a mosaic of ARTR2 dominated communities with varying grass composition; ARTR2/POSE most

Polygon Number 2

ParkName:
Potholes

Survey Intensity	3
Observer	HS, DH
Date	7/24/2008
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ARTR2, ERNA10, CHVI8
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	HECO26, POSE, BRTE
Graminoids Perennial	4
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	PTTET, COUM
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	1
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	30
Moss Lichen:	10
Litter:	60

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/HECO26-POSE-BRTE		100	Matrix	Good
Veg Community1:	ARTR2/HECO26	Daubenmire, 1970			G2
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: Dune Community

Polygon Number 3

ParkName:
Potholes

Survey Intensity	3
Observer	HS, DH
Date	7/24/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ELAN, ERNA10, SAEX
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	4
Dominant Graminoids	JUARL
Graminoids Perennial	4
Graminoids Annual	1
Forbs Total	5
Dominant Forbs	LELA2, CIAR4, ASSP, CHAL7
Forbs Perennial	5
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Noxious Exotic Plants
CIAR4
Other Exotic Plants
LELA2, ELAN

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank	
Existing Veg1:	SAEX-ELAN/JUARL-CIAR4-LELA2	100	Matrix	Poor	
Veg Community1:	SALIX/herbs artificial shoreline PBI			Not	Assessed
Existing Veg2:		0			
Veg Community3:					
Existing Veg3:		0			
Veg Community3:					

Notes:

Polygon Number 4

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	3
Dominant Trees	SALU
emergent	0
maincanopy	3
subcanopy	0
Shrubs Total	4
Dominant Shrubs	SAEX, ELAN
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoids	JUARL, weedy grasses
Graminoids Perennial	2
Graminoids Annual	1
Forbs Total	4
Dominant Forbs	XAST, POAM8, LELA2, ASSP, CIAR4
Forbs Perennial	4
Forbs Annual	2
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	2
Water	10
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
CIAR4, LYSA2, LELA2
Other Exotic Plants
ELAN, XAST

Water:	10
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	15
Moss Lichen:	0
Litter:	75

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	SALU/SAEX/XAST-POAM8-LYSA2		70	Matrix	Poor	
Veg Community1:	SALIX/herbs artificial shoreline	PBI			Not Assessed	
Existing Veg2:	XAST-POAM8		20	Large patch	Poor	
Veg Community3:	SALIX/herbs artificial shoreline	PBI			Not Assessed	
Existing Veg3:	ELAN/LELA2-JUARL-CIAR4		10	Large patch	Poor	
Veg Community3:	SALIX/herbs artificial	PBI			Not	Assessed

Notes: overrun with exotic species; many noxious weeds present; mostly flodded during high water events; polygon 14 is a disturbed site with piles of leaves, wood, stone,

Polygon Number 5

ParkName:
Potholes

Survey Intensity 1
Observer HS, DH
Date 7/25/2008

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Logging
Fire:
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:
Rock:
Talus:
Gravel:
Bare Ground:
Moss Lichen:
Litter:

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	Campground and Day Use Area	100	Matrix	Poor
Veg Community1:	Developed/Disturbed PBI			
Existing Veg2:		0		
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes:

Polygon Number 6

ParkName:
Potholes

Survey Intensity 1
Observer HS, DH
Date 7/24/2008

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Logging
Fire:
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:
Rock:
Talus:
Gravel:
Bare Ground:
Moss Lichen:
Litter:

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	Lawn and Water Pump House				Poor
Veg Community1:	Developed/Disturbed	PBI			
Existing Veg2:					
Veg Community3:					
Existing Veg3:					
Veg Community3:					

Notes:

Polygon Number 7

ParkName:
Potholes

Survey Intensity 1
Observer HS, DH
Date 7/24/2008

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water
Rock Outcrop
Gravel
Logging
Fire:
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:
Rock:
Talus:
Gravel:
Bare Ground:
Moss Lichen:
Litter:

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	Sewage Lagoons				Poor
Veg Community1:	Developed/Disturbed	PBI			
Existing Veg2:					
Veg Community3:					
Existing Veg3:					
Veg Community3:					

Notes:

Polygon Number 8

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	
Trees Total	
Dominant Trees	
emergent	
maincanopy	
subcanopy	
Shrubs Total	
Dominant Shrubs	
> 1.5' tall	
< 1.5' tall	
Graminoids Total	
Dominant Graminoids	
Graminoids Perennial	
Graminoids Annual	
Forbs Total	
Dominant Forbs	
Forbs Perennial	
Forbs Annual	
Ferns Total	
Ferns Evergreen	
Ferns Deciduous	
ExoticsTotal	
Exotics Perennial	
Exotics Annual	
Water	0
Rock Outcrop	0
Gravel	0
Logging	
Fire:	
Stand Age	
Agriculture	
Livestock	
Development	
Wildlife	
Recreation Severity	
Recreation Type	
Hydrology	

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	0

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	Ranger Office and Dump		0		Poor
Veg Community1:	Developed/Disturbed	PBI			
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes:

Polygon Number 9

ParkName:
Potholes

Survey Intensity	3
Observer	HS, DH
Date	7/24/2008
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ARTR2, ERNA10, CHVI8
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	HECO26, POSE, BRTE
Graminoids Perennial	4
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	PTTET, COUM
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	1
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	30
Moss Lichen:	10
Litter:	60

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/HECO26-POSE-BRTE		100	Matrix	Good
Veg Community1:	ARTR2/HECO26	Daubenmire, 1970			G2
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: Dune Community

Polygon Number 10

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ARTR2, ERNA10
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoids	POSE, BRTE
Graminoids Perennial	3
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	2
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	10
Moss Lichen:	5
Litter:	85

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2/POSE		100	Matrix	Good
Veg Community1:	ARTR2/POSE	Daubenmire, 1970			G4
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes:

Polygon Number 11

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ERNA10, CHVI8, ARTR2
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	5
Dominant Graminoids	BRTE, HECO26, POSE
Graminoids Perennial	3
Graminoids Annual	4
Forbs Total	2
Dominant Forbs	BASA3, SIAL2
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	2
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	1
Logging	0
Fire:	burnt in the last 5
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
SIAL2, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	1
Bare Ground:	10
Moss Lichen:	5
Litter:	84

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ERNA10-ARTR2/BRTE-HECO26-POSE		100	Matrix	Poor
Veg Community1:	ARTR2/HECO26	Daubenmire, 1970			G2
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: looks like patch was burned- wide shrub spacing; polygon 9 is developed

Polygon Number 12

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/24/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ELAN, ROWO, ERNA10
> 1.5' tall	4
< 1.5' tall	1
Graminoids Total	4
Dominant Graminoids	PASM, JUARL, ERCI, BRTE
Graminoids Perennial	4
Graminoids Annual	2
Forbs Total	3
Dominant Forbs	CIAR4, ASSP, EQHY, TYLA
Forbs Perennial	3
Forbs Annual	2
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	2
Water	15
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
CIAR4
Other Exotic Plants
ELAN, BRTE, ERCI

Water:	15
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	4
Moss Lichen:	1
Litter:	80

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ELAN/PASM-ERCI-JUARL		40	Large patch	Fair
Veg Community1:	JUARL	Crawford, 2003			G5
Existing Veg2:	ROWO		30	Small patch	Good
Veg Community3:	ROWO	Crawford, 2003			G5
Existing Veg3:	TYLA-PHAR3		30	Small patch	Fair
Veg Community3:	TYLA	Crawford, 2003			G5

Notes: mosaid of upper dune and wet dune communities with stream side vegetation, highly complex; overall condition is fair

Polygon Number 13

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/24/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ARTR2, ERNA10
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoids	POSE, BRTE, HECO26
Graminoids Perennial	3
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	BASA3, ACMI2
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	0
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants
SIAL2, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	40
Moss Lichen:	20
Litter:	40

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/POSE-BRTE		100	Matrix	Good
Veg Community1:	ARTR2/POSE	Daubenmire, 1970			G4
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: weed infestations near road; interior conditions good

Polygon Number 14

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ARTR2, ERNA10
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	POSE, HECO26, BRTE
Graminoids Perennial	4
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	BASA3, COUM
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	1
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	1
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	1
Bare Ground:	9
Moss Lichen:	30
Litter:	60

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/POSE-HECO26		100	Matrix	Good
Veg Community1:	ARTR2/HECO26	Daubenmire, 1970			G2
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: old road through polygon

Polygon Number 15

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ELAN, ERNA10, SAEX
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	4
Dominant Graminoids	JUARL
Graminoids Perennial	4
Graminoids Annual	1
Forbs Total	5
Dominant Forbs	LELA2, CIAR4, ASSP, CHAL7
Forbs Perennial	5
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Noxious Exotic Plants
CIAR4, LELA2
Other Exotic Plants
ELAN

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	SAEX/JUARL-CIAR4-LELA2		100	Matrix	Poor	
Veg Community1:	SALIX/herbs artificial shoreline	PBI			Not	Assessed
Existing Veg2:			0			
Veg Community3:						
Existing Veg3:			0			
Veg Community3:						

Notes:

Polygon Number 16

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ARTR2, ERNA10, PUTR2
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	3
Dominant Graminoids	POSE, BRTE, HECO26
Graminoids Perennial	3
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	BASA3
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	1
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	1
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	1
Bare Ground:	20
Moss Lichen:	20
Litter:	59

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2/POSE-BRTE-HECO26		80	Matrix	Good
Veg Community1:	ARTR2/POSE	Daubenmire, 1970			G4
Existing Veg2:	PUTR2-ARTR2-ERNA10/HECO26-POSE		20	Small patch	Good
Veg Community3:	PUTR2/HECO26	Daubenmire, 1970			G2
Existing Veg3:			0		
Veg Community3:					

Notes:

Polygon Number 17

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ARTR2, ERNA10
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	POSE, HECO26, BRTE
Graminoids Perennial	4
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	COUM, ACMI2
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	1
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	1
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants
SIAL2, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	1
Bare Ground:	5
Moss Lichen:	10
Litter:	84

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/POSE-HECO26		100	Matrix	Good
Veg Community1:	ARTR2/HECO26	Daubenmire, 1970			G2
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes:

Polygon Number 18

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/24/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ARTR2, ERNA10, PUTR2
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	BRTE, ORAS, POSE
Graminoids Perennial	2
Graminoids Annual	4
Forbs Total	2
Dominant Forbs	ACMI2, BASA3
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	1
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE, SIAL2

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	20
Moss Lichen:	10
Litter:	70

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/BRTE-POSE		90	Matrix	Fair
Veg Community1:	ARTR2/POSE	Daubenmire, 1970			G4
Existing Veg2:	PUTR2-ARTR2/HECO26		10	Large patch	Fair
Veg Community3:	PUTR2/HECO26	Daubenmire, 1970			G2
Existing Veg3:			0		
Veg Community3:					

Notes: SIAL2 is bad near roads

Polygon Number 19

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	1
Dominant Shrubs	SALIX
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	BRTE
Graminoids Perennial	0
Graminoids Annual	5
Forbs Total	3
Dominant Forbs	SIAL2, LASE
Forbs Perennial	3
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	3
Exotics Annual	5
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
SIAL2, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	5
Moss Lichen:	0
Litter:	95

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	SIAL2-BRTE		100	Matrix	Poor	
Veg Community1:	Exotic herbs/grasses	PBI			Not	Assessed
Existing Veg2:			0			
Veg Community3:						
Existing Veg3:			0			
Veg Community3:						

Notes:

Polygon Number 20

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	1
Dominant Shrubs	SALIX
> 1.5' tall	1
< 1.5' tall	0
Graminoids Total	5
Dominant Graminoids	BRTE
Graminoids Perennial	0
Graminoids Annual	5
Forbs Total	3
Dominant Forbs	SIAL2, LASE
Forbs Perennial	3
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	3
Exotics Annual	5
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
SIAL2, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	5
Moss Lichen:	0
Litter:	95

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	SIAL2-BRTE		100	Matrix	Poor	
Veg Community1:	Exotic herbs/grasses	PBI			Not	Assessed
Existing Veg2:			0			
Veg Community3:						
Existing Veg3:			0			
Veg Community3:						

Notes:

Polygon Number 21

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	5
Dominant Shrubs	ARTR2, ERNA10, PUTR2
> 1.5' tall	5
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	BRTE, POSE
Graminoids Perennial	2
Graminoids Annual	4
Forbs Total	2
Dominant Forbs	LELA2, ACMI2
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	2
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	1
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants
SIAL2, BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	1
Bare Ground:	15
Moss Lichen:	15
Litter:	69

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/BRTE-POSE		50	Large patch	Fair
Veg Community1:	ARTR2/POSE	Daubenmire, 1970			G4
Existing Veg2:	PUTR2-ARTR2-ERNA10/BRTE-POSE		50	Large patch	Fair
Veg Community3:	PUTR2/HECO26	Daubenmire, 1970			G2
Existing Veg3:			0		
Veg Community3:					

Notes: weeds more prominent near roads and lakeshore

Polygon Number 22

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/24/2008
Total Vegetation	6
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ELAN, ERNA10, SAEX
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	4
Dominant Graminoids	JUARL
Graminoids Perennial	4
Graminoids Annual	1
Forbs Total	5
Dominant Forbs	LELA2, CIAR4, ASSP, CHAL7
Forbs Perennial	5
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	5
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Noxious Exotic Plants
CIAR4
Other Exotic Plants
LELA2, ELAN,

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	100

Vegetation Types

		Percent	Pattern	Rank	
Existing Veg1:	SAEX-ELAN/JUARL-CIAR4-LELA2	100	Matrix	Poor	
Veg Community1:	SALIX/herbs artificial shoreline PBI			Not	Assessed
Existing Veg2:		0			
Veg Community3:					
Existing Veg3:		0			
Veg Community3:					

Notes:

Polygon Number 23

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/24/2008
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	SAEX
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	2
Dominant Graminoids	POMO5
Graminoids Perennial	2
Graminoids Annual	1
Forbs Total	4
Dominant Forbs	XAST, POAM8, LYSA2
Forbs Perennial	4
Forbs Annual	2
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	1
Water	30
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
CEDI3, LELA2
Other Exotic Plants
XAST, SIAL2

Water:	30
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	20
Moss Lichen:	0
Litter:	50

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	SAEX/XAST-POAM8		40	Large patch	Poor	
Veg Community1:	SALIX/herbs artificial shoreline	PBI			Not Assessed	
Existing Veg2:	XAST		40	Large patch	Poor	
Veg Community3:	SALIX/herbs artificial shoreline	PBI			Not Assessed	
Existing Veg3:	LELA2-JUARL		20	Small patch	Poor	
Veg Community3:	SALIX/herbs artificial	PBI			Not	Assessed

Notes: mouth of rivers into resevoir have exotic cover and water levels change dramatically

Polygon Number 24

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/24/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ERNA10, ARTR2, ELAN
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	PASM, JUARL, BRTE, PHAR3
Graminoids Perennial	4
Graminoids Annual	3
Forbs Total	3
Dominant Forbs	ASSP, CIAR4, EQHY
Forbs Perennial	3
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	3
Water	15
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
CIAR4, LYSA2
Other Exotic Plants
BRTE, ELAN, POBU, PHAR3, VETH

Water:	15
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	10
Moss Lichen:	0
Litter:	75

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	PASM-JUARL-ASSP		40	Large patch	Fair	
Veg Community1:	ARTR2/PASM	MTNHP, 2002			G3	
Existing Veg2:	ERNA10-ARTR2-PUTR2/HECO26-EQHY-	POBU	30	Large patch	Fair	
Veg Community3:	ARTR2/HECO26	Daubenmire, 1970			G2	
Existing Veg3:	TYLA-PHAR3		30	Large patch	Fair	
Veg Community3:	TYLA	Crawford, 2003			G5	

Notes: polygons 3 and 26 are like Plant Association 1 (PASM-JUARL); polygons 2 and 12 are like 1N; mosaic of upper dune and wet dune communities with stream side

Polygon Number 25

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/24/2008
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ARTR2, ERNA10, CHVI8
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	HECO26, POSE, BRTE
Graminoids Perennial	4
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	PTTET, COUM
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	1
Exotics Annual	3
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	30
Moss Lichen:	10
Litter:	60

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/HECO26-POSE-BRTE		100	Matrix	Good
Veg Community1:	ARTR2/HECO26	Daubenmire, 1970			G2
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: Dune Community

Polygon Number 26

ParkName:
Potholes

Survey Intensity	1
Observer	HS, DH
Date	7/24/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ERNA10, ARTR2
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	PSSP6, POSE, BRTE
Graminoids Perennial	4
Graminoids Annual	2
Forbs Total	2
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	2
Exotics Perennial	1
Exotics Annual	2
Water	0
Rock Outcrop	0
Gravel	1
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	1
Bare Ground:	15
Moss Lichen:	10
Litter:	74

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ERNA10/PSSP6-POSE		100	Matrix	Fair
Veg Community1:	ERNA10/PSSP6	MTNHP, 2002			G3
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: strange community on artifical fill near sewage lagoon

Polygon Number 27

ParkName:
Potholes Agreement

Survey Intensity	2
Observer	HS, DH
Date	7/25/2008
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ERNA10, ARTR2
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	BRTE, AGCR, HECO26
Graminoids Perennial	3
Graminoids Annual	4
Forbs Total	3
Dominant Forbs	SIAL2
Forbs Perennial	3
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	3
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	5
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	1
Recreation Type	4
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
SIAL2, BRTE, AGCR

Water:	0
Rock:	0
Talus:	0
Gravel:	5
Bare Ground:	15
Moss Lichen:	0
Litter:	80

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ERNA10/BRTE-HECO26		50	Large patch	Poor
Veg Community1:	ERNA10/PSSP6	MTNHP, 2002			G3
Existing Veg2:	BRTE-SIAL2-AGCR		50	Large patch	Poor
Veg Community3:	Exotic herbs/grasses	PBI			Not Assessed
Existing Veg3:			0		
Veg Community3:					

Notes: large old fields and disturbed patches where shrub cover is gone; weed invasions high

Polygon Number 28

ParkName:
Potholes Agreement

Survey Intensity	2
Observer	HS, DH
Date	7/25/2008
Total Vegetation	4
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	SAEX
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	2
Dominant Graminoids	ERCI, JUARL
Graminoids Perennial	2
Graminoids Annual	2
Forbs Total	3
Dominant Forbs	APCA, POAM8
Forbs Perennial	3
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	2
Exotics Annual	3
Water	5
Rock Outcrop	0
Gravel	60
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	5
Wildlife	3
Recreation Severity	1
Recreation Type	4
Hydrology	1

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
ERCI

Water:	5
Rock:	0
Talus:	0
Gravel:	60
Bare Ground:	10
Moss Lichen:	0
Litter:	25

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	SAEX/APCA-JUARL-ERCI		100	Matrix	Poor	
Veg Community1:	SALIX/herbs artificial shoreline	PBI			Not	Assessed
Existing Veg2:			0			
Veg Community3:						
Existing Veg3:			0			
Veg Community3:						

Notes:

Polygon Number 29

ParkName:
Potholes Agreement

Survey Intensity 2
Observer HS, DH
Date 7/25/2008

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water 0
Rock Outcrop 5
Gravel 0
Logging
Fire:
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water: 0
Rock: 5
Talus: 0
Gravel: 0
Bare Ground: 85
Moss Lichen: 0
Litter: 10

Vegetation Types

		Percent	Pattern	Rank	
Existing Veg1:	Highly Disturbed Shoreline - camping			spots/roads/parking	Poor
Veg Community1:	Developed/Disturbed PBI				
Existing Veg2:		0			
Veg Community3:					
Existing Veg3:		0			
Veg Community3:					

Notes: some native vegetation but mostly BRTE and weeds; heavily impacted by vehicle use and camping

Polygon Number 30

ParkName:
Potholes Agreement

Survey Intensity	2
Observer	HS, DH
Date	7/25/2008
Total Vegetation	
Trees Total	
Dominant Trees	
emergent	
maincanopy	
subcanopy	
Shrubs Total	
Dominant Shrubs	
> 1.5' tall	
< 1.5' tall	
Graminoids Total	
Dominant Graminoids	
Graminoids Perennial	
Graminoids Annual	
Forbs Total	
Dominant Forbs	
Forbs Perennial	
Forbs Annual	
Ferns Total	
Ferns Evergreen	
Ferns Deciduous	
ExoticsTotal	
Exotics Perennial	
Exotics Annual	
Water	0
Rock Outcrop	0
Gravel	30
Logging	
Fire:	
Stand Age	
Agriculture	
Livestock	
Development	
Wildlife	
Recreation Severity	
Recreation Type	
Hydrology	

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	30
Bare Ground:	60
Moss Lichen:	0
Litter:	10

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	Highly Disturbed Shoreline - mostly gravel/dirt				Poor
Veg Community1:	Developed/Disturbed	PBI			
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: Developed and disturbed weedy shoreline

Polygon Number 31

ParkName:
Potholes Agreement

Survey Intensity 1
Observer HS, DH
Date 7/25/2008

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water 0
Rock Outcrop 0
Gravel 40
Logging
Fire:
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Noxious Exotic Plants
GYPA
Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	40
Bare Ground:	50
Moss Lichen:	0
Litter:	10

Vegetation Types

		Percent	Pattern	Rank
Existing Veg1:	Highly Disturbed Shoreline - mostly gravel/dirt			Poor
Veg Community1:	Developed/Disturbed PBI			
Existing Veg2:		0		
Veg Community3:				
Existing Veg3:		0		
Veg Community3:				

Notes: like polygon 11 low

Polygon Number 32

ParkName:
Potholes Agreement

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ERNA10, ARTR2
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	BRTE, POSE
Graminoids Perennial	2
Graminoids Annual	4
Forbs Total	3
Dominant Forbs	LELA2, CEDI3, LASE
Forbs Perennial	3
Forbs Annual	2
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	3
Logging	0
Fire:	recent
Stand Age	0
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	1
Recreation Type	4
Hydrology	1

Exotic Species

Noxious Exotic Plants
CEDI3, GYPA, LELA2
Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	3
Bare Ground:	20
Moss Lichen:	1
Litter:	76

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ERNA10-ARTR2/BRTE		100	Matrix	Poor
Veg Community1:	ERNA10/PSSP6	MTNHP, 2002			G3
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: recent fire burned portion of polygon; large weed infestation; human caused disturbance high

Polygon Number 33

ParkName:
Potholes Agreement

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	ERNA10, ARTR2
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	BRTE, POSE
Graminoids Perennial	2
Graminoids Annual	4
Forbs Total	3
Dominant Forbs	CEDI3, LASE
Forbs Perennial	3
Forbs Annual	2
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	3
Logging	0
Fire:	recent
Stand Age	0
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	1
Recreation Type	4
Hydrology	1

Exotic Species

Noxious Exotic Plants
CEDI3, GYPA
Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	3
Bare Ground:	20
Moss Lichen:	1
Litter:	76

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ERNA10-ARTR2/BRTE		80	Matrix	Poor
Veg Community1:	ERNA10/PSSP6	MTNHP, 2002			G3
Existing Veg2:	ARTR2-ERNA10/BRTE-HECO26		20	Small patch	Poor
Veg Community3:	ARTR2/HECO26	Daubenmire, 1970			G2
Existing Veg3:			0		
Veg Community3:					

Notes: large weed infestations; human caused disturbance high

Polygon Number 34

ParkName:
Potholes Agreement

Survey Intensity	2
Observer	HS, DH
Date	7/25/2008
Total Vegetation	
Trees Total	
Dominant Trees	
emergent	
maincanopy	
subcanopy	
Shrubs Total	
Dominant Shrubs	ROSA5 (cultivated)
> 1.5' tall	
< 1.5' tall	
Graminoids Total	
Dominant Graminoids	
Graminoids Perennial	
Graminoids Annual	
Forbs Total	
Dominant Forbs	
Forbs Perennial	
Forbs Annual	
Ferns Total	
Ferns Evergreen	
Ferns Deciduous	
ExoticsTotal	
Exotics Perennial	
Exotics Annual	
Water	0
Rock Outcrop	0
Gravel	0
Logging	
Fire:	
Stand Age	
Agriculture	
Livestock	
Development	6
Wildlife	
Recreation Severity	
Recreation Type	
Hydrology	2

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	40
Moss Lichen:	0
Litter:	60

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	Irrigation Ditch Outflow				Poor
Veg Community1:	Developed/Disturbed	PBI			
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: part of old quarry; developed

Polygon Number 35

ParkName:
Potholes Agreement

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	3
Dominant Trees	ULPU
emergent	0
maincanopy	3
subcanopy	0
Shrubs Total	2
Dominant Shrubs	SALIX
> 1.5' tall	2
< 1.5' tall	1
Graminoids Total	3
Dominant Graminoids	HOJU, BRTE, JUARL
Graminoids Perennial	3
Graminoids Annual	2
Forbs Total	4
Dominant Forbs	LELA2, RUCR, LASE
Forbs Perennial	4
Forbs Annual	2
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	2
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	1
Recreation Type	4
Hydrology	1

Exotic Species

Noxious Exotic Plants
LELA2
Other Exotic Plants
SIAL2, BRTE, LELA2, ULPU, HOJU,

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	5
Moss Lichen:	0
Litter:	95

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	ULPU/SALIX/LELA2		100	Matrix	Poor	
Veg Community1:	SALIX/herbs artificial shoreline	PBI			Not	Assessed
Existing Veg2:			0			
Veg Community3:						
Existing Veg3:			0			
Veg Community3:						

Notes: trash scattered throughout polygon

Polygon Number 36

ParkName:
Potholes Agreement

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	2
Dominant Shrubs	ERNA10
> 1.5' tall	2
< 1.5' tall	2
Graminoids Total	5
Dominant Graminoids	BRTE, AGCR, PSSP6
Graminoids Perennial	3
Graminoids Annual	5
Forbs Total	4
Dominant Forbs	SIAL2
Forbs Perennial	4
Forbs Annual	2
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	5
Exotics Perennial	4
Exotics Annual	5
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
SIAL2
Other Exotic Plants
BRTE

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	10
Moss Lichen:	0
Litter:	90

Vegetation Types

			Percent	Pattern	Rank	
Existing Veg1:	SIAL2-BRTE		90	Matrix	Poor	
Veg Community1:	Exotic herbs/grasses	PBI			Not Assessed	
Existing Veg2:	PSSP6-AGCR-BRTE		10	Small patch	Poor	
Veg Community3:	Exotic herbs/grasses	PBI			Not Assessed	
Existing Veg3:			0			
Veg Community3:						

Notes: old agricultural field; old irrigation ditch

Polygon Number 37

ParkName:
Potholes Agreement

Survey Intensity 1
Observer HS, DH
Date 7/25/2008

Total Vegetation
Trees Total
Dominant Trees
emergent
maincanopy
subcanopy
Shrubs Total
Dominant Shrubs
> 1.5' tall
< 1.5' tall
Graminoids Total
Dominant Graminoids
Graminoids Perennial
Graminoids Annual
Forbs Total
Dominant Forbs
Forbs Perennial
Forbs Annual
Ferns Total
Ferns Evergreen
Ferns Deciduous
ExoticsTotal
Exotics Perennial
Exotics Annual
Water 0
Rock Outcrop 5
Gravel 40
Logging
Fire:
Stand Age
Agriculture
Livestock
Development
Wildlife
Recreation Severity
Recreation Type
Hydrology

Exotic Species

Noxious Exotic Plants
GYPA
Other Exotic Plants

Water:	0
Rock:	5
Talus:	0
Gravel:	40
Bare Ground:	40
Moss Lichen:	0
Litter:	15

Vegetation Types

		Percent	Pattern	Rank	
Existing Veg1:	Highly Disturbed Shoreline - mostly gravel/dirt -			roads	Poor
Veg Community1:	Developed/Disturbed PBI				
Existing Veg2:		0			
Veg Community3:					
Existing Veg3:		0			
Veg Community3:					

Notes: looks like an old quarry

Polygon Number 38

ParkName:
Potholes Agreement

Survey Intensity	2
Observer	HS, DH
Date	7/25/2008
Total Vegetation	5
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ARTR2, ERNA10
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	BRTE, HECO26, POSE
Graminoids Perennial	3
Graminoids Annual	4
Forbs Total	2
Dominant Forbs	SIAL2, CEDI3, ACMI2
Forbs Perennial	2
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	4
Exotics Perennial	2
Exotics Annual	4
Water	0
Rock Outcrop	0
Gravel	5
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Noxious Exotic Plants
CEDI3
Other Exotic Plants
BRTE, SIAL2

Water:	0
Rock:	0
Talus:	0
Gravel:	5
Bare Ground:	20
Moss Lichen:	5
Litter:	70

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	ARTR2-ERNA10/BRTE-HECO26		60	Matrix	Fair
Veg Community1:	ARTR2/HECO26	Daubenmire, 1970			G2
Existing Veg2:	ARTR2-ERNA10/BRTE-POSE		40	Large patch	Fair
Veg Community3:	ARTR2/POSE	Daubenmire, 1970			G4
Existing Veg3:			0		
Veg Community3:					

Notes:

Polygon Number 39

ParkName:
Potholes Agreement

Survey Intensity	2
Observer	HS, DH
Date	7/25/2008
Total Vegetation	3
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	3
Dominant Shrubs	SAEX
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	3
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	XAST, BIFR, POPE3
Forbs Perennial	3
Forbs Annual	1
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	3
Exotics Annual	1
Water	60
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	1
Recreation Type	4
Hydrology	2

Exotic Species

Noxious Exotic Plants

Other Exotic Plants
XAST, POPE3

Water:	60
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	40

Vegetation Types

		Percent	Pattern	Rank	
Existing Veg1:	SAEX/XAST-BIFR-POPE3	100	Matrix	Poor	
Veg Community1:	SALIX/herbs artificial shoreline PBI			Not	Assessed
Existing Veg2:		0			
Veg Community3:					
Existing Veg3:		0			
Veg Community3:					

Notes: SAEX lined pond; ditch pouring into wetland; looks like large trucks have been driving in wetland; large algal bloom; much human litter

Polygon Number 40

ParkName:

Potholes Agreement

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	
Trees Total	
Dominant Trees	
emergent	
maincanopy	
subcanopy	
Shrubs Total	
Dominant Shrubs	
> 1.5' tall	
< 1.5' tall	
Graminoids Total	
Dominant Graminoids	
Graminoids Perennial	
Graminoids Annual	
Forbs Total	
Dominant Forbs	
Forbs Perennial	
Forbs Annual	
Ferns Total	
Ferns Evergreen	
Ferns Deciduous	
ExoticsTotal	
Exotics Perennial	
Exotics Annual	
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	0
Recreation Type	0
Hydrology	0

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	0

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	Highly Disturbed Shoreline - mostly gravel/dirt				Poor
Veg Community1:	Developed/Disturbed	PBI			
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes:

Polygon Number 41

ParkName:

Potholes Agreement

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	
Trees Total	
Dominant Trees	
emergent	
maincanopy	
subcanopy	
Shrubs Total	
Dominant Shrubs	
> 1.5' tall	
< 1.5' tall	
Graminoids Total	
Dominant Graminoids	
Graminoids Perennial	
Graminoids Annual	
Forbs Total	
Dominant Forbs	
Forbs Perennial	
Forbs Annual	
Ferns Total	
Ferns Evergreen	
Ferns Deciduous	
ExoticsTotal	
Exotics Perennial	
Exotics Annual	
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	0
Recreation Type	0
Hydrology	0

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	0

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	Highly Disturbed Shoreline - mostly gravel/dirt				Poor
Veg Community1:	Developed/Disturbed	PBI			
Existing Veg2:			0		
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes:

Polygon Number 42

ParkName:

Potholes Agreement

Survey Intensity	1
Observer	HS, DH
Date	7/25/2008
Total Vegetation	
Trees Total	
Dominant Trees	
emergent	
maincanopy	
subcanopy	
Shrubs Total	
Dominant Shrubs	
> 1.5' tall	
< 1.5' tall	
Graminoids Total	
Dominant Graminoids	
Graminoids Perennial	
Graminoids Annual	
Forbs Total	
Dominant Forbs	
Forbs Perennial	
Forbs Annual	
Ferns Total	
Ferns Evergreen	
Ferns Deciduous	
ExoticsTotal	
Exotics Perennial	
Exotics Annual	
Water	0
Rock Outcrop	0
Gravel	0
Logging	0
Fire:	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	0
Recreation Type	0
Hydrology	0

Exotic Species

Noxious Exotic Plants

Other Exotic Plants

Water:	0
Rock:	0
Talus:	0
Gravel:	0
Bare Ground:	0
Moss Lichen:	0
Litter:	0

Vegetation Types

			Percent	Pattern	Rank
Existing Veg1:	Old Housing Development				Poor
Veg Community1:	Developed/Disturbed	PBI			
Existing Veg2:					
Veg Community3:					
Existing Veg3:			0		
Veg Community3:					

Notes: building lots in polygon, weed invasions high