

## Oregon Hydrography Framework Implementation Team Meeting

Tuesday, September 18, 2012

1:30 – 3:30 p.m., Conference room 124B

North Mall Office Building, 725 Summer St. NE, Salem

### Attendees (\*via phone):

Bob Harmon, OWRD, Hydro Chair (& scribe)	Jon Bowers, ODFW
Milt Hill, DAS GEO	Jed Roberts, DOGAMI
Dan Wickwire, BLM	Sheri Schneider, USGS
Jay Stevens, BLM	Dick Lycan
Meredith Carine, OWRD	*Malavika Bishop, DEQ

### Agenda:

1) Welcome & introductions, Bob & group.

2) Revised standard update, Bob.

The *Oregon Hydrography Data Standard* has made it through the revision process. So, the NHD and WBD are standard for the state. Here's a link to the document ([http://www.oregon.gov/DAS/CIO/GEO/fit/hydrography/docs/ORHydroStandard\\_v2.pdf](http://www.oregon.gov/DAS/CIO/GEO/fit/hydrography/docs/ORHydroStandard_v2.pdf))

). Dan suggested advertising this on the PNW Hydro site and in the NHD monthly newsletter. He'll see to the PNW site and Bob will take care of the newsletter.

3) State agency migration to NHD.

a) Agency status.

i) OWRD (Bob). Started testing in April and again in June, but found over 1800 reaches in the NHD without measures. Sent info to Jay at BLM who reported it to the USGS-Denver. The last version (August 29) appears to be much better. Will return to migration later this fall upon completion of another project.

ii) ODFW (Jon). Piloted fish habitat distribution data last winter for NE Oregon (lower Snake R. subregion). Jay helped out. Working through NHD data and NED tool updates. Preferred approach to migrate whole stream routes first and data after that. Currently working on remaining areas with StreamNet funding (through end of September): SE (1705, Malheur/Owhyee); 1706 (Lower Snake); 1707 (Deschutes, John Day, Hood, and Umatilla); 1708 (Sandy/Lower Columbia); and hope to get to 1709 (Willamette) before funding runs out and see effects of LiDAR derived streams on the migration process (Portland, Kilchis, Little North Fork of the Santiam, Ashland). The methodology continues to evolve. There are approximately 48,000 streams with distribution data.

iii) DEQ (Malavika). Meeting at DEQ in March that reviewed programs and data that would be affected by the move to NHD, and identified funding opportunities.

iv) DOGAMI (Jed). Not migrating events, but working with new line work for streams and water bodies. Would like to do something similar to Clallam

county's (Washington) hydro compilation from LiDAR and integration into the NHD.

b) Funding options.

- i) USGS Partnership Grant (Sheri). Proposals due mid-November. Grant awards typically around \$15K. [Post meeting update: Brief "pre-proposals due by end of October.] ODFW and OWRD would like to pursue this grant to assist with their migrations. DEQ also interested. Multiple grants from the same state shouldn't hurt any one grant's chances for success. They are competing nationally for the money. Oregon applicants should have a good chance this year based on its reputation, the need to update the NHD, and to be prepared for the next revision of the US Topo coming up in 2014.
- ii) EPA Exchange Network Grant (Sheri/Malavika). Proposals due in November. Grant awards around \$30K. Malavika doesn't know at this point if DEQ will apply for this grant to assist with NHD migration.
- iii) Oregon Framework Grant (Milt). Monies may be back in the proposed budget for the next biennium (13/15). If it remains then would be available for applicants after July 1, 2013.

4) Lakes in the NHD, Dick.

[His summary attached to end of these notes.] Covered issues of missing features, mistyped, missing names or incorrectly named in the NHD. Roger Edwards researching lakes names by county [3 left as of this meeting] and getting information to Meredith who incorporates it into her NHD edits.

Working with his copy of the NHD, Dick covered the following issues:

- a) Dams. Does every one have a lake? No. Some impoundments classified as lakes and others as areas. Checked against National Inventory of Dams and OWRD list (which feeds the NID).
- b) Lake, ponds, and swamp/marsh classification confusion. Discussion about implementing these corrections to the NHD.
- c) Missing lakes. Checked against imagery and Oregon Marine Board facility list.

5) Outcomes, Group

- a) Advertise the revised *Oregon Hydrography Data Standard* (ver. 2). Dan (PNW Hydro site) and Bob (NHD Newsletter).
- b) Grant proposals.
- c) Lakes. Dick get recommended water body updates to Dan (~November).
- d) Next meeting: February/March 2013.

6/26/2012  
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### **Revisions to the AOL Version of the NHD**

I have updated the version of the National Hydro Dataset (NHD) that is used in the Atlas of Oregon Lakes (AOL). This was necessary because the NHD as published by USGS has major omissions and errors in the reporting of lakes that compromise its usefulness.

The major issues are:

- Missing waterbodies
  - A number of waterbodies are misclassified as area features as double line streams or as a swamp/marsh waterbody as is the case with Malheur Lake.
  - A few waterbodies were simply missed, such as 20 acre Campbell Lake in Lake County.
- Missing GNIS names
  - Just over half of the waterbodies 10 acres and larger in size have GNIS names in the NHD.
  - In some cases there is a GNIS name label point in proximity that can be used to update the NHD.
- Incorrect GNIS names
  - We know that for a few waterbodies the GNIS name is incorrect, probably assigned incorrectly based on proximity such as the mislabeling of Fern Ridge Lake as Warren Slough.
  - The topology of some water bodies in the NHD and that of the GNIS names is not conformable. On such case is where a GNIS label applies to multiple lakes, such as Green Lakes. Another is where a complex waterbody polygon, such as Sturgeon Lake, has parts that know by separate GNIS names.
  - There are some errors in the GNIS that are being studied and corrected by OWRD and USGS and will eventually find their way into the NHD.

This report attempts to specifically identify some of the missing waterbodies and missing or incorrect GNIS names and to make corrections in the local copy of the NHD used for the Atlas of Oregon Lakes. However, to facilitate linking our data to that of other organizations and other organizations to AOL it is important that the changes be made in the on-line version of the NHD that others are using.

## Misclassification of feature type in the NHD

A small but significant number of lakes and reservoirs are classified in the NHD as other than lake/pond/reservoir. I can provide a comprehensive list of the misclassified features and would like to know what the process is for making the corrections in the NHD High. I can correct my copy of the dataset, but that will not solve the problem for others or allow cross linking between the Atlas of Oregon Lakes website and other users and providers of lakes data.

Reservoirs Miss-Classified as Area Features. Another case of misclassification is that of some reservoirs which are classified as NHD “area” features, derived from double line streams on the topographic map. This type of error can be highlighted by selecting point event feature class dams in the NHD with no adjacent waterbody, such as Bonneville and The Dalles dams (Figure 2) and represent inconsistencies in the NHD. There are 28 dam event features in the NHD that do not show an adjacent lake/pond/reservoir, but on closer examination only 14 have a nearby GNIS lake/reservoir identifier (Table 1) and appear to be a waterbody in an air photo view.

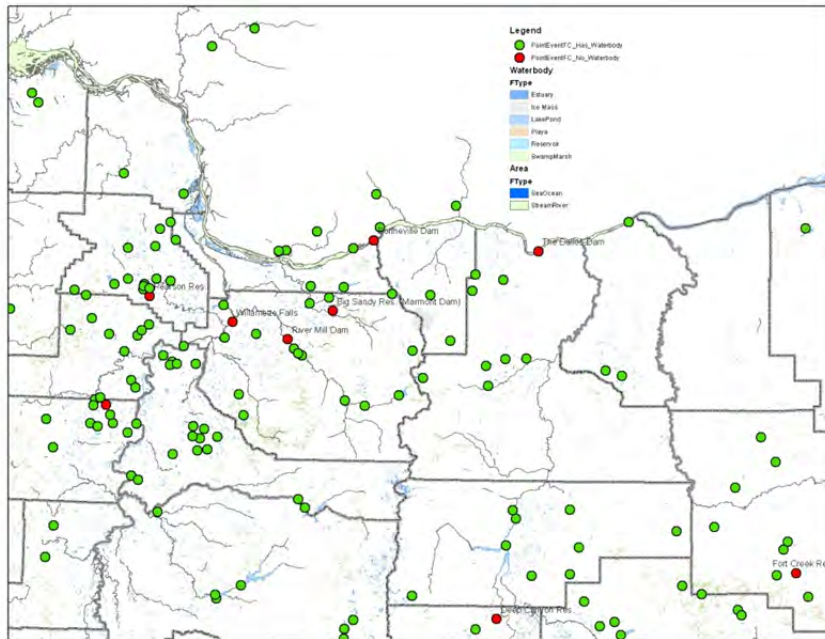


Figure 1 - NID dams in NHD with no lake/pond/reservoir above

ReachCode	NID_ID	DamName	Acres	GNIS_ID	GNIS_Name	Comment
18010204005433	OR00585	Anderson-Rose Div.		119 01131562	Anderson-Rose Pool	In CA, OWRD dam same name nearby
17080001000094	OR00597	Big Sandy Res. (Marmont Dam)		11 01155522	Big Sandy Reservoir	
17070301003241	OR00641	Deep Canyon Res.		13 01133502	Deep Canyon Reservoir	No lake obvious on photo
17100307000432	OR82202			0 01160753	Elk Creek Lake	Dam breached
17070201002380	OR00223	Fort Creek Res.		32 01129503	Fort Creek Reservoir	Polygon not in NHD, added from NLCD
17070105000013	OR00001	Bonneville Dam	20,600	01159124	Lake Bonneville	
17070105000169	OR00002	The Dalles Dam	11,200	01517585	Lake Celilo	
17090004000100	OR00553	Leaburg Dam		120 01133586	Leaburg Reservoir	
17090008000184	OR00615			0 01639200	Marvin Fast Reservoir	Del Raeeve Res #2 in OWRD
17090010000459	OR00430	Pearson Res.		2 01131519	Pearson Reservoir	
17090011000079	OR00552	River Mill Dam		150 01131599	River Mill Reservoir	
18020001001935	OR00078	South Arm Reservoir		129 01149898	South Arm Reservoir	
17070103004322	OR00588	Three Miles Falls (Div.)		46 01133690	Three Mile Falls Pool	
17090007000035	OR00596	Willamette Falls		6 01133720	Willamette Falls Hydro Power Res	

Table 1 – List of NID Dams in NHD with no lake/pond/reservoir

Using the longer list of dams published by OWRD reveals additional dams with no adjacent waterbody, such as Mirror Pond in Bend, but located on a double line stream. Only Hells Canyon and Mirror Pond are labeled in the GNIS.

NIDID	Dam_Name	Acres	GNIS_No	GNIS_Name	River
OR00250	Hells Canyon Dam	2,412	01155574	Hells Canyon Reservoir	Snake River
OR03632	Youngs River Dam	440			Youngs River
OR00558	Keno Dam	43			Klamath River
OR00594	Bend Hydro (MirrorPond)	30	01146355	Mirror Pond	Deschutes River
OR00715	North Fork Diversion Dam	30			N. Fork Rogue River
OR00566	North Unit Diversion Dam	15			Deschutes River

Table 2 – List of NID Dams in OWRD list with no lake/pond/reservoir

Lakes/Ponds Miss-Classified Swamp/Marsh. There are 20 NHD swamp/marsh polygons which contain a label point for lake/reservoir GNIS names. On examining these in an aerial photo view it appears that most are smaller water bodies where it is a judgment call whether it should be classified as lake/reservoir or swamp/marsh. The one significant misclassification is Malheur Lake where the central open body of water is classified as swamp/marsh-perennial and the surrounding area as lake/pond-intermittent (Figure 1). The GNIS name is associated with the swamp/marsh polygon of open water and Malheur Lake lacks an NHD waterbody reach code. The NHD also lacks GNIS names for Mud, Harney, and Vickers Lakes, a different problem that will be addressed elsewhere.



Figure 2 - Malheur Lake

### Missing Waterbodies in the NHD

It appears that there are a few lakes that are simply missing from the current version (June, 2012) of the NHD as lake/pond/reservoir or area features. Some of the missing lakes were discovered when attempting to relate a facility like a boat launch ramp to a waterbody (e.g. Campbell Lake in Lake County) and finding it did not exist in the NHD High.

Examining the National Land Cover Database. Can the existence of water classed cells in the National Lake Cover Database (NLCD, 2006) be used to locate missing lakes in the NHD? We first asked what proportion of NHD lake/reservoir waterbodies were expressed as water classed cells in the NLCD (Table 1.)

Greater than or equal - Acres	All Lakes			Permanent Lakes			Percent Permanent
	All	Intersect	Pct Intersect	All	Intersect	Pct Intersect	
5	3,536	2,069	59	2,177	1,665	76	62
10	2,095	1,344	64	1,277	1,075	84	61
20	1,192	823	69	727	651	90	61
40	672	498	74	428	398	93	64
80	373	292	78	252	239	95	68
160	223	194	87	169	166	98	76

**Table 3 – NLCD water features which intersect NHD lake/reservoir features**

For permanent lakes (not intermittent) the majority of NHD lake/reservoir polygons intersect a polygon derived from the water classed cells in the NLCD, ranging from 76 percent for lakes 5 acres or greater in area up to 98 percent for lakes 160 acres or greater. Thus the list of NLCD derived water polygons that do not intersect an NHD lake/reservoir polygon should provide a rough list of missing lakes, some of which can be related to GNIS name points. There were 8 lakes for which satisfied these criteria and for which there was a GNIS name point in the lake or nearby that appeared to relate to the lake polygon (Table 2). Since 76 to 98 percent of known permanent NHD waterbodies were found in the NLCD, one might extrapolate to suggest that only a small number of new lakes were missed in this process, perhaps 2 or 3.

GNIS_ID	GNIS_Name	Feature Class	County Name	NLCD Acres	GNIS Distance
01161288	Buck Lake	Lake	Klamath	17	418
01118545	Campbell Lake	Lake	Lake	20	0
01132036	Campbell Reservoir	Reservoir	Harney	15	368
01129503	Fort Creek Reservoir	Reservoir	Wheeler	30	0
01952913	Merwin Reservoir Number 3	Reservoir	Crook	325	0
01638774	Stone Quarry Lake	Lake	Marion	39	0
01162627	Tilikum Lake	Reservoir	Yamhill	12	104
01128247	Trout Lake	Lake	Jefferson	27	0

**Table 4 - Lakes not in NHD found in NLCD**

No water feature shown in NHD above OWRD dams. Further examination of the list of OWRD dams turned up additional waterbodies above these dams and not shown in the NHD. There were 41 such waterbodies that either had surface area 10 acres or greater and/or had an associated GNIS label point. Most of these lakes are industrial, farm, wastewater, or city water supply ponds. Some water features with a GNIS name assigned were under 10 acres.

NIDID	County	Case	Dam_Name	Acres	GNIS_No	GNIS_Name	River
OR00626	MALH	GNIS	Albertson s Res. (Malheur)	25	01133447	Albertsons Reservoir 'A'	Feedlot Runoff
OR00507	YAMH	GNIS	Baker, ER (Yamhill)	13	01162627	Tiikum Lake	Chehalem Creek, Trib to
OR03735	BAKE	GNIS	Clover Creek Res. (Baker)	13	01131960	Cranston Reservoir	Clover Creek
OR00659	YAMH	GNIS	Olson Flashboard Dam	13	01163597	Phil Olson Reservoir	Ash Swale
OR00153	DOUG	GNIS	Youngs Bay Log Pond	11	01131350	Youngs Bay Lumber Company Pond	Deer Creek
OR02667	JACK	GNIS	Petrehn Res	10	01134761	Petrehn Reservoir	Snider Creek
OR00519	MARI	GNIS	Funrue	10	01131607	Funrue Reservoir	Drift Creek, Trib to
OR00667	MULT	GNIS	Portland #1 (Mt.Tabor)	8	01131511	City of Portland Reservoir Number 1	Bull Run River (offstream)
OR02604	HARN	GNIS	Oscar Res	7	01163663	Oscar Reservoir Number 4429	Unnamed, Trib to Walls Lake
OR00055	GRAN	GNIS	Scheckel s Res	7	01153921	Scheckels Reservoir (historical)	Unnamed
OR02589	YAMH	GNIS	Olson, Phillip 2-B	6	01163597	Phil Olson Reservoir	Ash Swale, Trib to
OR00670	MULT	GNIS	Portland #5 (Mt.Tabor)	6	01131514	City of Portland Reservoir Number 5	Bull Run River (offstream)
OR03833	LAKE	GNIS	Boggy Lake Dam	3	01117901	Boggy Lake	Unnamed, Trib/Crooked Creek
OR00853	DOUG	GNIS	Doerner Reservoir	3	01162713	Doerner Reservoir	Unnamed; Trib. to Umpqua R.
OR03175	POLK	GNIS	Stapleton, Hal Res	2	01160788	Stapleton Reservoir	Ash Swale, Trib to
OR00645	CLAC	GNIS	AAMODT	2	01133442	Aamodt Dairy Reservoir	
OR03880	CURR	GNIS	Euchre Creek Log Pond	0	01154671	Euchre Creek Pond	
OR00997	LINN	GNIS	Freres Log Pond	0	01637977	Freres Log Ponds	North Santiam River
OR02597	CURR	GNIS	Oregon Coast Veneer (No Storang	0	01134649	Oregon Coast Log Pond	(cold deck - no pond)
OR00689	CROO	GT10	Bear Creek (Crook)	163			Bear Creek
OR03726	YAMH	GT10	Katz Farm	75			Off Channel
OR03858	UMAT	GT10	Simplot Waste Lagoon #1	36			Off Channel
OR00690	HARN	GT10	Deadman Creek Reservoir	31			Deadman Creek; Trib S. Fork Malheur
OR00701	LAKE	GT10	Taylor Res	30			Big Honey Creek & Others
OR03827	WASC	GT10	Van Conklin Dam #6	30			
OR03781	MARI	GT10	Kraemer Farms Dam	20			Zollner Creek, Trib/Pudding
OR00733	POLK	GT10	Marx Brothers Reservoir	16			Mud Slough
OR03835	POLK	GT10	Basket Slough - East	15			
OR02389	LANE	GT10	Metropolitan Wastewater Lagoon	15			Wastewater
OR00035	KLAM	GT10	Calahan Reservoir	15			
OR03725	MARI	GT10	Meridian Res.	14			Unnamed Trib/Rock Creek
OR02525	YAMH	GT10	Ruddenklau Dam	14			Unnamed Trib; Salt Creek
OR03869	YAMH	GT10	Amity Hills Dam	13			Unnamed, Trib/Ash Swale
OR00671	MULT	GT10	Portland #6 (Mt.Tabor)	12			Bull Run River (offstream)
OR03819	YAMH	GT10	Riverbend Landfill Lagoon	12			Off Channel
OR03790	DESC	GT10	Sunriver Effluent Lagoon	12			Off Channel
OR03805	MARI	GT10	Westbrook Dam	12			Weaver Gulch, Trib/Miller Creek
OR03777	CROO	GT10	Black Snag Reservoir	12			Black Snag Creek
OR03943	MARI	GT10	4-B Farms	11			
OR02511	YAMH	GT10	Dragonfly Reservoir	11			Ash Swale, Trib to
OR03064	POLK	GT10	Simpson Dam (Polk)	11			Salt Creek

Table 5 – Additional lakes/ponds/reservoirs found above OWRD dams not in the NHD



## NHD Waterbodies with Unassigned GNIS Names

With the help of a volunteer from the Oregon Lakes Association the USGS and OWRD are attempting to change incorrect names recorded in the Geographic Names Information System (GNIS). After the corrections are made they will be entered into the NHD. Hopefully this will correct such problems as the name for Fern Ridge Lake being miss-assigned to a pond below the dam and the name of the surrounding marsh Warren Slough being incorrectly assigned to the reservoir. Hopefully!

There are 2,095 lakes, ponds, and reservoirs in the Oregon NHD for that are 10 Acres and larger in size (Table 6). Just over half of these have a GNIS label point located within the lake or within 1,000 feet of the shoreline.

Lake Size Class											
GNIS to Lake in Feet	10-20	20-40	40-80	80- 120	120- 240	240- 480	480- 960	960- 1,920	1,920- 3,840	3,840 & over	Total
0	325	218	161	56	74	50	29	21	20	22	976
1-499	34	15	11	3	9	0	2	2	1	2	79
500-999	14	7	7	0	2	2	1	0	0	1	34
1,000-1,999	30	15	7	3	1	2	1	0	1	0	60
2,000-5,280	142	77	32	7	6	2	0	2	0	0	268
GT5280	368	178	81	19	13	12	4	3	0	0	678
	913	510	299	88	105	68	37	28	22	25	2,095

**Table 6 - Lakes and Reservoirs over 10 Acres**

Of those lakes with no GNIS name in the NHD there are 20 where the GNIS label point is found within the lake and another 79 where there is a GNIS label point within 1,000 feet of the shoreline that may hold the correct name for the nearby lake. A larger proportion of the intermittent than perennial lakes lacked a proximate GNIS label.

Lake Size Class											
GNIS to Lake in Feet	10-20	20-40	40-80	80- 120	120- 240	240- 480	480- 960	960- 1,920	1,920- 3,840	3,840 & over	Total
0	8	1	2	2	1	2	0	1	0	3	20
1-499	25	12	5	2	6	0	2	1	1	2	56
500-999	9	7	6	0	0	1	0	0	0	0	23
1,000-1,999	28	14	7	2	1	1	1	0	1	0	55
2,000-5,280	134	73	27	7	6	2	0	2	0	0	251
GT5280	350	168	73	18	10	11	3	2	0	0	635
	554	275	120	31	24	17	6	6	2	5	1,040

**Table 7 - Lakes and Reservoirs over 10 Acres with No GNIS Name Associated**

All of the waterbodies over 10 acres in area that lacked an assigned GNIS name where there was a GNIS label point within 2000 feet of the shore line were examined on the screen with a photo image background. There were 92 instances where it appeared that a missing GNIS name could be assigned to the waterbody (Table 8).



Action	Ft2lake	GNIS_ID	GNIS_Name	ReachCode	FCode	Acres	Per_Int	GNIS_Class	COUNTY	Lat_DD	Lon_DD
assigned name	1586	01116863	Alkali Lake	18010204009441	39001	76	E	Lake	Klamath	42.2059055	-121.4830065
assigned name	2888	01116863	Alkali Lake	18010204009464	39001	142	E	Lake	Klamath	42.2059055	-121.4830065
assigned name	1218	01138135	Bingham Lakes	17070302000370	39004	13	P	Lake	Klamath	43.4265735	-122.0106615
assigned name	1087	01117900	Boggs Lake	18010204009897	39004	23	P	Lake	Klamath	42.1009592	-121.1903697
assigned name	4605	01161288	Buck Lake	18010206003840	39004	69	P	Lake	Klamath	42.2629166	-122.1850182
assigned name	887	01130246	Fish Ponds	17080003006387	39004	12	P	Lake	Columbia	45.9602955	-123.0653591
assigned name	1197	01167390	Mill Lake	17120006001133	39001	12	E	Lake	Lake	42.4218485	-120.3338035
assigned name	3650	01149898	South Arm Reservoir	18020001001197	39009	103	P	Reservoir	Lake	42.0654375	-120.8158024
assigned name	1212	01128347	Twin Lakes	17120008002656	39001	11	E	Lake	Lake	42.4284869	-119.5185134
assigned name	645	01130368	Whetstone Pond	17100308005327	39001	56	E	Lake	Jackson	42.4184344	-122.8677725
assigned name	1336	01152512	Windy Lakes	17070302000377	39004	16	P	Lake	Klamath	43.4270570	-122.0750719
inside	0	01117321	Batts Camp Lake	17120002008052	39000	65	P	Lake	Harney	43.4459845	-119.1746613
inside	0	01117522	Benjamin Lake	17120005008535	39000	388	P	Lake	Lake	43.5151401	-120.3105346
inside	0	01133459	Betty Jane Deardorff Reservoir	17090009015489	43600	54	P	Reservoir	Clackamas	44.9998446	-122.5478631
inside	0	01130513	Beyers Lake	17090009015487	39000	19	P	Lake	Clackamas	45.0345668	-122.5567526
inside	0	01637881	Big Cliff Reservoir	17090005012191	39009	101	P	Reservoir	Marion	44.7503998	-122.2828561
inside	0	01118173	Bryce Lake	17090012000392	39004	16	P	Lake	Columbia	45.8190034	-122.8309367
inside	0	01140491	Crown Lake	17090005000755	39009	12	P	Lake	Marion	44.7612310	-121.8775714
inside	0	01121607	Harney Lake	17120001004352	39001	31285	E	Lake	Harney	43.2368196	-119.1099346
inside	0	01160387	Highway Waterhole	17070303014620	39001	15	E	Reservoir	Deschutes	43.6159749	-120.0755288
inside	0	01143808	Horseshoe Lake	17090004001139	39009	17	P	Lake	Lane	43.9231732	-121.8936449
inside	0	01145807	Lake Marie	17100304006488	39004	14	P	Lake	Douglas	43.6595606	-124.1951155
inside	0	01161601	Lake of the Woods	18010203003546	39004	1229	P	Lake	Klamath	42.3693027	-122.2150210
inside	0	01513298	Lake Umatilla	17070101000696	39009	50052	P	Reservoir	Klickitat	45.7176248	-120.6939480
inside	0	01144916	Leach Lake	17070301006729	39004	33	P	Lake	Deschutes	43.9206728	-121.8605886
inside	0	01123115	Linton Lake	17090004021354	39004	81	P	Lake	Lane	44.1678962	-121.8939360
inside	0	01124464	Lud Lake	17120001004500	39001	7021	E	Lake	Harney	43.2682074	-118.9904863
inside	0	02702779	Pulcher Creek Reservoir	17050203006047	39004	218	P	Reservoir	Union	45.0446006	-118.0720425
inside	0	01153144	Reams Reservoir	17070304003779	39004	11	P	Reservoir	Crook	44.0818010	-120.3177716
inside	0	01149230	Senoj Lake	17070301006731	39004	14	P	Lake	Deschutes	43.9353948	-121.8530888
inside	0	01126826	Sheep Lake	17120004006236	39000	351	P	Lake	Harney	43.5765349	-119.7555181
moved point	0	01154267	Antelope Flat Reservoir	17070304003841	39004	199	P	Reservoir	Crook	44.0045775	-120.3936051
moved point	0	01134040	Bailey Waterhole	17120005004694	39000	24	P	Reservoir	Lake	42.8562337	-120.5271128
moved point	0	01117253	Barney Reservoir	17100203049891	39009	204	P	Reservoir	Washington	45.4470551	-123.3953902
moved point	0	01157644	Best Waterhole	17120005008547	39000	25	P	Reservoir	Lake	43.2905314	-120.2900610
moved point	0	01134034	Between Rim Waterhole	17120006003378	39000	24	P	Reservoir	Lake	42.8662007	-120.4923832
moved point	0	01135701	Brattain Waterhole Number 4	17120006003382	39000	22	P	Reservoir	Lake	42.8909577	-120.2726675
moved point	0	01138920	Bull Run Reservoir Number Two	17080001017571	39009	454	P	Reservoir	Clackamas	45.4493281	-122.1525431
moved point	0	01133992	Button Waterhole	17120006003419	39000	16	P	Reservoir	Lake	42.8157037	-120.2341440
moved point	0	01131205	Canterbury Reservoir	17120007002075	39004	11	P	Reservoir	Lake	42.6320112	-119.7621913
moved point	0	01157360	Chicago Pond	17120005008574	39000	15	P	Reservoir	Lake	43.4817196	-120.2719867
moved point	0	01158911	Cougar Reservoir	17090004007144	39009	1129	P	Reservoir	Lane	44.1290135	-122.2400566
moved point	0	01158186	Crescent Lake	17070302000357	39004	3823	P	Lake	Klamath	43.4992917	-121.9844744
moved point	0	01158199	Deep Lake	18010203000410	39004	20	P	Lake	Klamath	42.5685744	-122.1968580
moved point	0	01639301	Detroit Lake	17090005012370	39009	3591	P	Reservoir	Linn	44.7215112	-122.2500775
moved point	0	01119729	DeVaul Lake	18010204009688	39001	14	E	Lake	Klamath	42.1935915	-121.1591615
moved point	0	01639034	Diamond Pit	17050110008795	39001	15016	E	Reservoir	Malheur	43.1429928	-118.0152967
moved point	0	01120538	Evans Reservoir	170701050119841	39001	18	E	Reservoir	Wasco	45.5152003	-121.3034901
moved point	0	01134024	Faber Waterhole	17120005008537	39000	27	P	Reservoir	Lake	43.0301705	-120.4632286
moved point	0	01135698	Fire Lake	17120005004046	39000	120	P	Lake	Lake	43.0681347	-120.3236210
moved point	0	01120841	Flock Lake	17120008005232	39001	648	E	Lake	Lake	42.5755447	-119.5311219
moved point	0	01160508	Folder Waterhole	17120005008554	39000	65	P	Reservoir	Lake	43.3536028	-120.1590292
moved point	0	01132751	Fossil Lake	17120005008592	39001	15	E	Lake	Lake	43.3248642	-120.4924816
moved point	0	01120909	Foster Lake	17120004001397	39001	13	E	Lake	Harney	43.0013238	-119.2626528
moved point	0	01134574	Four Draws Waterhole	17120006003415	39000	56	P	Reservoir	Lake	42.9029169	-120.3845489
moved point	0	01135828	Hay Lake	17120004006234	39000	132	P	Lake	Lake	43.4737581	-119.7871842
moved point	0	01157148	Hidden Lake	17120005008572	39000	105	P	Lake	Lake	43.4189740	-120.2286366
moved point	0	01134016	Horse Trap Waterhole	17120005008532	39000	25	P	Reservoir	Lake	43.1174316	-120.4583207
moved point	0	01134018	Horsetail Waterhole	17120005008585	39000	13	P	Reservoir	Lake	43.0912191	-120.4680773
moved point	0	01160511	Immigrant Waterhole	17120005003475	39000	45	P	Reservoir	Lake	43.3707900	-120.1418852
moved point	0	01157639	Jewel Waterhole	17120005008595	39000	31	P	Reservoir	Lake	43.3147297	-120.1352753
moved point	0	01122824	Knowland Slough	17080006006605	39004	20	P	Reservoir	Clatsop	46.1562180	-123.8323635
moved point	0	01161732	Maher Reservoir	17050107004986	39009	20	P	Reservoir	Malheur	42.4182136	-117.0738802
moved point	0	01153229	Mainline Reservoir Number 1	17070304000701	39004	16	P	Reservoir	Crook	44.1065249	-120.2061012
moved point	0	01135367	Military Slough Reservoirs	17100308005190	39004	14	P	Reservoir	Jackson	42.4442918	-122.8775419
moved point	0	01135689	North DC Waterhole	17120005008601	39000	10	P	Reservoir	Lake	43.1184761	-120.2503027
moved point	0	01160510	Oblong Waterhole	17120005008558	39000	110	P	Reservoir	Lake	43.3371241	-120.1377978
moved point	0	01157604	Palmer Reservoir	17070303006708	39004	14	P	Reservoir	Crook	44.1504200	-119.7580306
moved point	0	01134983	Pattern Reservoir	17120005003938	39000	23	P	Reservoir	Lake	43.0544879	-120.7378801
moved point	0	01125256	Peacock Lake	17050109004815	39001	41	E	Lake	Malheur	42.4537692	-117.4851434
moved point	0	01125513	Poker Jim Lake	17120008002629	39001	121	E	Lake	Lake	42.6115149	-119.5984693
moved point	0	01125622	Potters Ponds	17070306011514	39004	14	P	Reservoir	Wasco	44.8619824	-121.4755865
moved point	0	01135682	Poverty Corners Waterhole	17120005001417	39001	35	E	Reservoir	Lake	42.9388916	-120.1507991
moved point	0	01135682	Poverty Corners Waterhole	17120005001416	39001	76	E	Reservoir	Lake	42.9388916	-120.1507991
moved point	0	01125799	Ramsey Lake	17090012004027	39004	20	P	Lake	Multnomah	45.6267830	-122.7637104
moved point	0	01135693	Saunders Waterhole	17120005008600	39000	45	P	Reservoir	Lake	43.0281948	-120.2544525
moved point	0	01134576	Sheep Rock Waterhole	17120006003372	39000	19	P	Reservoir	Lake	42.9911849	-120.4289777
moved point	0	01131420	Skou Reservoir	17100308005107	39004	12	P	Reservoir	Jackson	42.4948464	-122.9161555
moved point	0	01135699	Snipe Waterhole	17120006003371	39000	12	P	Reservoir	Lake	42.8782808	-120.3148109
moved point	0	01161521	Socket Waterhole	17120008004720	39000	11	P	Reservoir	Lake	42.5170455	-119.4020952
moved point	0	01127219	Soup Lakes	17120005001462	39001	12	E	Lake	Lake	42.7486404	-120.0451158
moved point	0	01163285	South Slough Pond	17090007005879	43601	126	P	Reservoir	Polk	44.9542846	-123.2564908
moved point	0	01160509	Spook Waterhole	17120005008579	39000	13	P	Reservoir	Lake	43.3321766	-120.1673863
moved point	0	01133985	State Game Reservoir Number 6	17120005004073	39000	18	P	Reservoir	Lake	43.0293887	-120.5064878
moved point	0	01135837	Stinking Lake	17120004006233	39001	488	E	Lake	Harney	43.3209860	-119.3649451
moved point	0	01151300	Toketee Lake	17100301005580	39009	76	P	Reservoir	Douglas	43.2720665	-122.4205976
moved point	0	01134159	Toothless Waterhole	17120005008546	39000	11	P	Reservoir	Lake	43.1322145	-120.5254094
moved point	0	01639021	Unit Nine Pond	17120003002292	39004	18	P	Reservoir	Harney	43.1034890	-118.8538145
moved point	0	01155658	Watson Reservoir	17070301004478	39004	41	P	Reservoir	Deschutes	44.2643951	-121.4918479
moved point	0	01157146	Webster Waterhole	17120005008588	39000	36	P	Reservoir	Lake	43.3772994	-120.2337757
moved point	0	01134578	West Waterhole	17120006003379	39000	29	P	Reservoir	Lake	42.8618039	-120.2548793
moved point	0	01135702	ZX Waterhole Number 2	17120005001415	39000	13	P	Reservoir	Lake	42.9419257	-120.2626448

Table 8 - Lakes Assigned GNIS Name

In most cases the name was assigned by moving the label point inside of the waterbody polygon. Many of these moves were only for a short distance but some, such as for Crescent Lake, involved a longer move. There were a number of small arid lands reservoirs where a small island was digitized inside of the lake and the label point was

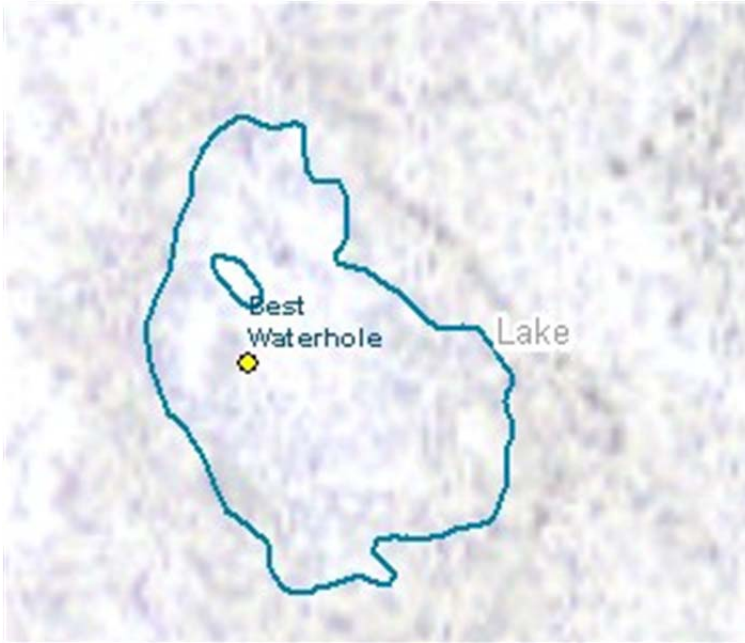


Figure 3 - Best Waterhole

placed on the island, such as in the example for Best Waterhole (Figure 3). For 20 of the lakes the GNIS label point fell within the lake and the GNIS ID and name were copied into the NHD. For another 20 lakes the feature appeared to be an extension of a waterbody with an assigned GNIS name (Figure 4).



Figure 4 - Alkali Lake