Unit Descriptors										Jurisdiction	
State or Province	**County**	**SubBasin (HUC 8/4th field)**	**Watershed (HUC 10/5th field)**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Number of unique breeding locations within drainage**	**Population Numbers (adults - based on 1:1 male:female for every egg mass)**	**Rank that best describes the hectares of occupied habitat within the site. (Very Large ≥ 400 ha; Large 41-400 ha; Medium 5-40 ha; Small ≤ 4 ha)**	**Rank that best describes the hectares of occupied habitat within the drainage. (Very Large ≥ 400 ha; Large 41-400 ha; Medium 5-40 ha; Small ≤ 4 ha)**	**Land owner**	**Land manager**
British Columbia		Lower Fraser River			Aldergrove	4 (however breeding not detected at one since 2006)	<350 adults (based on 2010 surveys)	Medium (18 ha)	Inadequate Data	Dept of Defence	Dept of Defence
				Mountain Slough	Mountain Slough			Medium (20 ha)		Private	Individual
				Maria Slough	Maria Slough			Medium (16 ha)		Private/First Nations	Individual
				Harrison River	Morris Valley			Medium (13 ha)		Private	Individual
Washington	Whatcom	Fraser River	Lower Chilliwack River	Sumas River	Massey Rd	1	< 100 (based on 2012 surveys, but not surveyed extensively)	Medium (12 ha)	Medium (only 1 known breeding area)	Private	Individual
Washington	Whatcom	Nooksack	South Fork Nooksack	Black Slough	Black Slough	3	~232 (based on 2012 surveys, but not surveyed extensively)	Individual breeding areas range from small (1.5 ac) to medium (20 ac)	Large (65 ha for all 3 known breeding locations); Could be more, but surveys are not adequate	Private	Whatcom Land Trust and & Individual
Washington	Whatcom (6 breeding areas); Skagit (1 breeding area)	Straits of Georgia	Samish River	Upper and Middle Samish River	Samish River	7	1,220 (based on 2012 surveys, but not all suitable habitat surveyed)	Individual breeding areas range from small (4 ha) to medium (27 ha)	Large (95 ha for all 7 known breeding locations); Could be more, but surveys are not adequate	Private	Individual
Washington	Thurston	Upper Chehalis River	Black River	Dempsey Creek	Dempsey Creek	Each tributary has multiple breeding locations	3,330 (2013 survey)	Large	Large	Private & Federal	Timber company, USFWS Refuge, Individuals
				Salmon Creek	Salmon Creek			Medium		Private	Individual
				Blooms Ditch at 110th	Blooms Ditch at 110th			Medium		Federal	USFWS Refuge
				Black River at 123rd	Black River at 123rd			Medium		Federal	USFWS Refuge
				Allen Creek	Allen Creek			Large		Private	Individual
				Beaver Creek	Beaver Creek			Large		State	WDFW
				Mima Creek	Mima Creek	2 (found in 2013)		Inadequate Data	Inadequate Data	Private	Individuals
				Fish Pond Creek	Fish Pond Creek	1 (found in 2012)		Inadequate Data	Inadequate Data	Private	Individual
Washington	Klickitat & Skamania	Middle Columbia-Hood River	White Salmon River	Trout Lake Creek	Trout Lake	multiple breeding locations throughout NAP, on private and USFS lands	2,124 (2012 survey)	Very Large (> 400 ha)	> 400 ha	State, Private, Federal	WDNR, Timber Company, US Forest Service
Washington	Klickitat	Klickitat	Middle Klickitat River	Outlet Creek	Conboy Lake	multiple breeding locations distributed throughout NWR and private lands	2,714 (2013)	Very Large (> 400 ha)	> 400 ha	Federal & Private	USFWS Refuge & Individual
Oregon	Wasco	Lower Deschutes	White River	Camas Creek	Camas Prairie	1	168 (2011 highest recorded)	Medium (33 ha)	Medium	Federal	US Forest Service
Oregon	Deschutes	Upper Deschutes River	Deschutes River- Charleton Creek	Isolated	Hosmer Lake	1	258 (2006 survey)	Large (80 ha)	Large	Federal	US Forest Service
	Deschutes			Isolated	Lava Lake	1	198 (2006 survey)	Large (142 ha)	Large	Federal	US Forest Service
	Deschutes			Deschutes River	Little Lava Lake	3	464 (2006 survey)	Large (45 ha)	Large	Federal	US Forest Service
	Deschutes			Deschutes River	Upper and Lower Blue Pools			Medium (19 ha)		Federal	US Forest Service
	Deschutes			Cultus Creek	Winopee Lake	2	722 (2006 survey)	medium (39 ha)	Medium	Federal	US Forest Service
	Deschutes			Cultus Creek	Muskrat lake			Small (2 ha)		Federal	US Forest Service
	Deschutes			Deer Creek	Little Cultus Lake	1	72 (2006 survey)	Medium (14 ha)	Medium	Federal	US Forest Service
	Deschutes			Deschutes River	Crane Prairie Reservoir	Unknown	unknown- breeding at small ponds surrounding reservoir	small	ID	Federal	US Forest Service
	Deschutes		Browns Creek - Deschutes River	Deschutes River	Wickiup Reservoir	Unknown	unknown- breeding limited	small		Federal	US Forest Service
	Klamath			Unnamed trib to Odell Creek/Davis Lake	Odell Creek fen - Scotty Big Boy	1	136 (2012 survey)	Small (1.2 ha)	Small	Federal	US Forest Service
	Klamath			Other Davis Lake sites no longer active			7 egg masses at mouth of Odell Creel in 2000 were the last egg masses seen at Davis Lake.	Small	Small		

Highlighted Fields Represent Changes from Proposed Listing Threats Matrix

Unit Descriptors										Jurisdiction	
State or Province	**County**	**SubBasin (HUC 8/4th field)**	**Watershed (HUC 10/5th field)**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Number of unique breeding locations within drainage**	**Population Numbers (adults - based on 1:1 male:female for every egg mass)**	**Rank that best describes the hectares of occupied habitat within the site. (Very Large ≥ 400 ha; Large 41-400 ha; Medium 5-40 ha; Small ≤ 4 ha)**	**Rank that best describes the hectares of occupied habitat within the drainage. (Very Large ≥ 400 ha; Large 41-400 ha; Medium 5-40 ha; Small ≤ 4 ha)**	**Land owner**	**Land manager**
	Deschutes		Fall River-Deschutes River	Deschutes River	Dilman Meadow	4	128 (2011 survey highest recorded)	Medium (5 ha)	Medium	Federal	US Forest Service
	Deschutes			Deschutes River	Dead Slough		19 (2013)	Medium (8 ha)	Large	State	Oregon State Parks
	Deschutes			Deschutes River	La Pine SP SW oxbow		2 (2013)	small		State	Oregon State Parks
	Deschutes		North Unit Diversion Dam - Deschutes River	Deschutes River	Sunriver		1480 (2011)	Large (88 ha)		Private	Private
	Deschutes			Deschutes River	Slough Camp		33 (2011 survey)	Medium (31 ha)		Federal	US Forest Service
	Deschutes			Deschutes River	Old Mill Pond (new as of July 2012) and LSA Marsh		N/A	Small (3.4ha)		Federal	Private
Oregon	Klamath	Little Deschutes River	Crescent Creek	Big Marsh Creek	Big Marsh	multiple breeding locations throughout marsh	5,324 (2012 highest on record)	Very large (>400 ha)	Very large> 400 ha	Federal	US Forest Service
	Klamath			Crescent Creek	Crescent Creek Highway 58	multiple breeding locations at 5 currently known locations	356 (2012); Crescent Creek BLM oxbows (2006)	Medium (7.6 ha)		Federal	US Forest Service
	Klamath			Crescent Creek	Black Rock lava pond			Small (2.4 ha)		Federal	US Forest Service
	Klamath			Crescent Creek	Crescent Upper Oxbow			Medium (19 ha)		Private	Private
	Klamath			Crescent Creek	Crescent Creek 62 RD			Large (75 ha)		Private	Private
	Klamath			Crescent Creek	Crescent Creek BLM oxbows			Medoim (8.5 ha)		Federal	BLM
	Klamath		Upper Little Deschutes River	Little Deschutes River	5830 Road dogleg	13	942 (most data from 2012; oxbows behind LaPine HS 2009)	Medium (14 ha)	Very large> 400 ha	Federal	US Forest Service
	Klamath			Little Deschutes River	Hwy 58 area sites (Upper oxbow, Mowich log pond)			Medium (18 ha)		Federal	US Forest Service
	Klamath			Little Deschutes River	100 road mill pond and oxbows			Medium (14 ha)		Federal	US Forest Service
	Klamath			Little Deschutes River	LDR 62 road oxbow, floodplain pool, gravel pit, beaver			Large (95.7)		Federal	BLM
	Klamath		Middle Little Deschutes River	Little Deschutes River	Middle Little Deschutes Complex 1			Medium (16 ha)		Private	Private
	Klamath			Little Deschutes River	Middle Little Deschutes Complex 2			Large (77 ha)		Private	Private
	Deschutes			Little Deschutes River	Leona Park			small (3 ha)		City	City of LaPine
	Deschutes		Lower Little Deschutes River	Little Deschutes River	Oxbows behind LaPine Highschool			Medium (17 ha)		Federal	BLM
	Deschutes			Little Deschutes River	Rosland Park			Medium (12 ha)		City	City of LaPine
	Deschutes			Little Deschutes River	Riverside oxbow			Medium (22.4 ha)		Private	Private
	Deschutes			Little Deschutes River	Casey Tract			Medium (35 ha)		Federal	BLM
	Deschutes			Little Deschutes River	Thousand Trails			Medium (22 ha)		Private	private
	Deschutes			Little Deschutes River	Crosswater (N. driving range pond, bullfrog pond, Fairway 2)			Medium (7.3 ha)		Private	Private
	Deschutes		Long Prairie	Long Prairie Creek	Long Prairie marsh (lowest reach)	3	1 (2006)	small (1.8 ha)	Small	Federal	BLM
	Deschutes			Long Prairie Creek	Long Prairie upper BLM		20 (2001)	small (1.3)		Federal	BLM
	Klamath			Long Prairie Creek	Mickle site		2 (2012)	Small (0.86 ha)		Private	Private
Oregon	Lane	McKenzie River	South Fork McKenzie River	Isolated	Penn Lake	2	179 (2011 mark-recapture USGS)	Medium (7 ha)	Medium	Federal	US Forest Service
				Isolated	Unnamed Marsh		38 (2011 mark-recapture USGS)	Medium (4.5 ha)	Medium	Federal	US Forest Service
Oregon	Lane	Middle Fork Willamette	Salt Creek	Salt Creek	Gold Lake Bog	1	1,824 (2006 survey)	Large (118 ha)	Large	Federal	US Forest Service

Highlighted Fields Represent Changes from Proposed Listing Threats Matrix

Unit Descriptors										Jurisdiction	
State or Province	**County**	**SubBasin (HUC 8/4th field)**	**Watershed (HUC 10/5th field)**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Number of unique breeding locations within drainage**	**Population Numbers (adults - based on 1:1 male:female for every egg mass)**	**Rank that best describes the hectares of occupied habitat within the site. (Very Large ≥ 400 ha; Large 41-400 ha; Medium 5-40 ha; Small ≤ 4 ha)**	**Rank that best describes the hectares of occupied habitat within the drainage. (Very Large ≥ 400 ha; Large 41-400 ha; Medium 5-40 ha; Small ≤ 4 ha)**	**Land owner**	**Land manager**
Oregon	Klamath	Upper Klamath	Spencer Creek	Spencer Creek	Buck Lake	multiple	1130 adults (1995-1997) 22 (2011)	75	75	Federal and private	BLM,USFS, & private
	Jackson		Keene Creek	Keene Creek	Parsnip Lakes	multiple	28 (2011)	24	24	Federal	BLM
Oregon	Klamath	Upper Klamath Lake	Sevenmile Creek	Sevenmile Creek	Sevenmile	multiple	60	65	65	Federal and private	US Forest Service and private
	Klamath		Wood River	Wood River	Wood River Wetland	multiple	338	14	14	Federal and private	BLM and private
	Klamath			Wood River	Wood River headwaters south to Loosely Road	multiple	128	291	231	Private	Private
	Klamath			Wood River	Wood River Loosely Road to mouth	multiple	6 (2010)	(part of Dixon Rd)	(part of Dixon Rd)	Private	Private
	Klamath		Fourmile Creek	Fourmile Creek	Fourmile Creek	multiple	10 (2010)	506	506	Federal and private	BLM (is the land manager), USFS, BOR (is the owner no longer in withdrawal program) And private (per RR)
	Klamath		Crane Creek	Crane Creek	Crane Creek	multiple	32	(part of sevenmile HA)	(part of sevenmile HA)	Private	Private
Oregon	Klamath	Williamson River	Williamson River	Williamson River	Upper Williamson	multiple	4	97	97	Federal and Private	Private and US Forest Service
	Klamath			Williamson River	Klamath Marsh NWR	multiple	116 (adult visuals) in 1994 p. 73; 338 (2011)	5893	5893	Federal and private	Private (part of the Refuge acquisition program) and US Fish and Wildlife Service National Wildlife Refuge
	Klamath		Jack Creek	Jack Creek	Jack Creek	2	335 in 1999; 34 (2011)	97	97	Federal and private	US Forest Service and Private

Unit Descriptors				Loss of habitat			Livestock grazing				Invasive flora		
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/site name(s)**	**Are wetlands continuing to be lost or degraded? (Y,N, U)**	**Discuss the threat(s) to OSF adults, embryos, and/or larva due to water management practices at the site or in the drainage. May include activities such as ditching/dams/altered hydrology**	**Residential and Commercial Development - An increase in semi-permeable and non-permeable surfaces (i.e. clear-cuts, pasture, lawn, pavement, buildings and so forth) can increase "flashy" hydrology in a system. Describe the current threat at the OSF site. (Not a threat - Hydrology at site is not impacted by human changes to uplands; Threat – Flashy hydrology due to human impacts to the surrounding uplands has been noted as a factor in egg mass stranding; ID - Inadequate data)**	**Is there cattle grazing at the site?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog water quality?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog habitat quality?**	**For grazed sites, is grazing maintaining vegetation in early seral condition that promotes OSF habitat?**	**Level of threat posed by reed canarygrass if site was not managed. (RCG Not present; Present but sparse or patchy, not currently impacting OSF habitat quality; Dense, thatch forming, degrading OSF habitat; Dense, thatch forming, excluding OSF use; or Inadequate data)**	**Under current management/land use practices, rank the level of threat posed by reed canarygrass (RCG). None - RCG does not occur or it is a minor component of the flora; Low- Management practices keep the RCG short and prevent thatch formation in all critical habitats; Medium - Management practices are inadequate to keep RCG short in all critical habitats; High - No management reducing RCG; ID - Inadequate data.**	**What practices are used specifically to control reed canarygrass at this site (i.e. grazing, mowing, haying, burning, herbicides) etc.**
British Columbia	Lower Fraser River		Aldergrove	Undetermined	Undetermined	Undetermined	No	n/a	n/a	n/a	Present, but sparse	Low, mgmt practices keep RCG low	Excavation, hand removal
			Mountain Slough	Yes	Ditching and draining for irrigation	Land conversion to agriculture results in draining	No	n/a	n/a	n/a	Dense, thatch forming excluding OSF use	Mgmt practices inadequate to keep RCG short and prevent thatch forming	Dredging, mowing
			Maria Slough	Yes			No	n/a	n/a	n/a	Dense, thatch forming degrading OSF habitat	High - no rcg management	None
			Morris Valley	Yes			Yes - Horses	Inadequate Data	Inadequate Data	No	Present, but sparse	Inadequate Data	Grazing
Washington	Fraser River	Sumas River	Massey Rd	Undetermined	Undetermined	Inadequate Data	Yes	Inadequate Data	Inadequate Data	No	Dense, thatch forming excluding OSF use	Inadequate Data	Grazing
Washington	Nooksack	Black Slough	Black Slough	Undetermined	Undetermined	Inadequate Data	Yes	Inadequate Data	Yes, cattle are excluded from breeding areas, resulting in rcg growth that excludes OSF and pushes them to alternate locations where water levels are unstable	Yes and No. Early seral condition is not maintained in areas where there would be sufficient water through tadpole stage, resulting in tadpoles being stranded.	Dense, thatch forming excluding OSF use	Med to High - Current rcg management practices will also exclude OSF use	Shrub and tree planting
Washington	Straits of Georgia	Upper and Middle Samish River	Samish River	Yes	No water management occurs	Flashy hydrology has been noted to change course of River.	Yes	Inadequate Data	Yes, cattle are excluded from breeding areas, resulting in rcg growth that excludes OSF and pushes them to alternate locations where water levels are unstable	Yes and No. Early seral condition is not maintained in areas where there would be sufficient water through tadpole stage, resulting in tadpoles being stranded.	Dense, thatch forming excluding OSF use	High-rcg in breeding areas is being allowed to grow and exclude OSF use	grazing; mowing; shrub and tree planting

Unit Descriptors				Shrub planting for riparian restoration/ reed canarygrass shading				Loss of disturbance regimes:	Loss of disturbance regimes: Beaver	Loss of disturbance regimes: fire	Water Quality
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/site name(s)	Are woody-planting restoration activities occurring at the OSF site?	Are woody-planting restoration activities intended to improve habitat for OSF at the site?	Are woody-planting restoration activities inadver-tently degrading habitat for OSF?	Are riparian restoration activities taking place in drainage within 5 km of OSF site?	Is there encroach-ment by shrubs and trees at oviposition sites	Qualify beaver activity at this site?	Is fire important in maintaining OSF habitat at site?	Are there known water quality issues that may impact OSF in the drainage? (e.g. pesticides, nitrites/ nitrates) If so, describe
British Columbia	Lower Fraser River		Aldergrove	No	n/a	n/a	Inadequate Data	Not currently and issue	beaver present, leading to higher water volume retention and thinning of canopy in forested wetlands. Also negatively affectin breeding habitat through higher water volume retention (margins of beaver pond are too steep).	No	No
			Mountain Slough	Yes	Yes	No	Yes	Not currently and issue	beaver present and stabilizing water levels at certain breeding locations.	No	Yes-nitrites/nitrates; pesticides; fungicides;water-borne sewage.
			Maria Slough	Yes	No	n/a	Yes	Not currently and issue	beaver present and positively effecting OSF habitat by encouraging water retention and providing overwintering habitat	No	Yes-nitrites/nitrates; pesticides; fungicides;water-borne sewage.
			Morris Valley	No	n/a	n/a	No	Not currently and issue	Beaver present and are likely creating the channels used by OSF during low water.	No	Yes-nitrites/nitrates; pesticides; fungicides;water-borne sewage.
Washington	Fraser River	Sumas River	Massey Rd	No	n/a	n/a	Yes	inadequate data	Inadequate Data	No	Yes - multiple parameters not meeting State water quality standards
Washington	Nooksack	Black Slough	Black Slough	Yes	No	Yes	Yes	Yes	Beaver are present, but are actively controlled	No	Yes - multiple parameters not meeting State water quality standards
Washington	Straits of Georgia	Upper and Middle Samish River	Samish River	Yes	No	Yes	Yes	No	Beaver are present in the drainage, but the role they play in OSF habitat is undetermined	No	Yes - multiple parameters not meeting State water quality standards

Unit Descriptors				Loss of habitat			Livestock grazing				Invasive flora		
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/site name(s)**	**Are wetlands continuing to be lost or degraded? (Y,N, U)**	**Discuss the threat(s) to OSF adults, embryos, and/or larva due to water management practices at the site or in the drainage. May include activities such as ditching/dams/altered hydrology**	**Residential and Commercial Development - An increase in semi-permeable and non-permeable surfaces (i.e. clear-cuts, pasture, lawn, pavement, buildings and so forth) can increase "flashy" hydrology in a system. Describe the current threat at the OSF site. (Not a threat - Hydrology at site is not impacted by human changes to uplands; Threat – Flashy hydrology due to human impacts to the surrounding uplands has been noted as a factor in egg mass stranding; ID - Inadequate data)**	**Is there cattle grazing at the site?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog water quality?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog habitat quality?**	**For grazed sites, is grazing maintaining vegetation in early seral condition that promotes OSF habitat?**	**Level of threat posed by reed canarygrass if site was not managed. (RCG Not present; Present but sparse or patchy, not currently impacting OSF habitat quality; Dense, thatch forming, degrading OSF habitat; Dense, thatch forming, excluding OSF use; or Inadequate data)**	**Under current management/land use practices, rank the level of threat posed by reed canarygrass (RCG). None - RCG does not occur or it is a minor component of the flora; Low- Management practices keep the RCG short and prevent thatch formation in all critical habitats; Medium - Management practices are inadequate to keep RCG short in all critical habitats; High - No management reducing RCG; ID - Inadequate data.**	**What practices are used specifically to control reed canarygrass at this site (i.e. grazing, mowing, haying, burning, herbicides) etc.**
Washington	Upper Chehalis River	Dempsey Creek	Dempsey Creek	Yes	No water management occurs	Inadequate Data	Yes, specifically to benefit OSF	Inadequate Data	Unclear. Removal of grazing resulting in degradation of breeding habitat. However, population numbers have not increased since grazing was reintroduced.	No	Dense, thatch forming excluding OSF use	Medium - current land management practices are inadequate to keep rcg short in breeding areas	grazing and mowing
		Salmon Creek	Salmon Creek	Undetermined	No water management occurs	Inadequate Data	No	n/a	n/a	n/a	Dense, thatch forming excluding OSF use	Medium - current land management practices are inadequate to keep rcg short in breeding areas	Shade cloth; hand pulling; mowing; replanting with native vegetation
		Blooms Ditch at 110th	Blooms Ditch at 110th	Yes	No water management occurs	Not a threat	No	n/a	n/a	n/a	Dense, thatch forming excluding OSF use	High - no rcg management	None
		Black River at 123rd	Black River at 123rd	Yes	No water management occurs	Not a threat	No	n/a	n/a	n/a	Dense, thatch forming excluding OSF use	Med to High - Current rcg management practices not sufficient across site to maintain OSF use	Mowing; Shrub and tree planting
		Allen Creek	Allen Creek	Yes	No water management occurs	Not a threat	Yes	Inadequate Data	Inadequate Data	no	Dense, thatch forming excluding OSF use	Inadequate Data	Grazing
		Beaver Creek	Beaver Creek	Yes	No water management occurs	Inadequate Data	No	n/a	n/a	n/a	Dense, thatch forming excluding OSF use	High - Current rcg management practices not sufficient across site to maintain OSF use	Mowing
		Mima Creek	Mima Creek	Yes	Inadequate Data	Inadequate Data	Yes	No	No	No	Dense, thatch forming excluding OSF use	High - Current rcg management practices not sufficient across site to maintain OSF use	grazing and mowing
		Fish Pond Creek	Fish Pond Creek	Yes	Undetermined	Inadequate Data	No	n/a	n/a	n/a	Dense, thatch forming excluding OSF use	High - Current rcg management practices not sufficient across site to maintain OSF use	mowing
Washington	Middle Columbia-Hood River	Trout Lake Creek	Trout Lake	Yes	OSF recruitment may be dependant on water management in the NAP, where holding back the water through metamorphosis improves survival.	Not documented as a threat, but surrounding uplands are timber lands.	No	n/a	n/a	n/a	Dense, thatch forming degrading OSF habitat	Med to High - Current rcg management practices not sufficient across site to maintain OSF use	Shade cloth; herbicides; replanting with native vegetation
Washington	Klickitat River	Outlet Creek	Conboy Lake	Yes	OSF recruitment is highly dependant on water management at this location.	Flashy hydrology has resulted in egg mass strandings, reduced breeding habitat, and egg mass flooding.	Yes, on private lands and incidentally on NWR	Inadequate Data	No, grazing keeps the rcg at a height conducive to breeding on private property	Yes on private property; no on Refuge	Dense, thatch forming excluding OSF use	High - Current rcg management practices not sufficient across site to maintain OSF use	Grazing and haying on private lands; Haying on NWR.
Oregon	Lower Deschutes sub-basin	Camas Creek	Camas Prairie	No	No water management occurs	No threat	Not since 2008	n/a	n/a	n/a	Inadequate data	None	

Unit Descriptors				Shrub planting for riparian restoration/ reed canarygrass shading				Loss of disturbance regimes:	Loss of disturbance regimes: Beaver	Loss of disturbance regimes: fire	Water Quality
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/site name(s)	Are woody-planting restoration activities occurring at the OSF site?	Are woody-planting restoration activities intended to improve habitat for OSF at the site?	Are woody-planting restoration activities inadver-tently degrading habitat for OSF?	Are riparian restoration activities taking place in drainage within 5 km of OSF site?	Is there encroach-ment by shrubs and trees at oviposition sites	Qualify beaver activity at this site?	Is fire important in maintaining OSF habitat at site?	Are there known water quality issues that may impact OSF in the drainage? (e.g. pesticides, nitrites/ nitrates) If so, describe
Washington	Upper Chehalis River	Dempsey Creek	Dempsey Creek	No	n/a	n/a	Inadequate Data	No	Beaver are present in the drainage but play a significant ecological role only in the lower drainage and along the Black River	No	No
		Salmon Creek	Salmon Creek	No	n/a	n/a	Inadequate Data	yes	Beaver are present in the drainage and are playing a role in OSF habitat	No	No
		Blooms Ditch at 110th	Blooms Ditch at 110th	Yes	No	Yes	Inadequate Data	Yes	Beaver are present in the drainage but play an insignificant ecological role and are likely controlled to prevent flooding of private landowner property	No	No
		Black River at 123rd	Black River at 123rd	Yes	No	Yes	Yes	Yes	Beaver are present in the drainage but play an insignificant ecological role	No	No
		Allen Creek	Allen Creek	Inadequate Data	Inadequate Data	Inadequate Data	Inadequate Data	inadequate data	Beaver are present in the drainage but play an insignificant ecological role and are likely controlled to prevent flooding of private landowner property	No	No
		Beaver Creek	Beaver Creek	No	n/a	n/a	Inadequate Data	Yes	Beaver are present in the drainage but play an insignificant ecological role	No	Yes - multiple parameters not meeting State water quality standards
		Mima Creek	Mima Creek	Yes	No	Yes	Inadequate Data	Yes	Inadequate Data	No	No
		Fish Pond Creek	Fish Pond Creek	Inadequate Data	Inadequate Data	Inadequate Data	Inadequate Data	inadequate data	Inadequate Data	No	No
Washington	Middle Columbia-Hood River	Trout Lake Creek	Trout Lake	Yes	No	Yes	Inadequate Data	Yes - at the SDS breeding location	Beaver are present and actively modify habitat	Yes, historically	Yes - multiple parameters not meeting State water quality standards
Washington	Klickitat River	Outlet Creek	Conboy Lake	No	n/a	n/a	No	Yes	Beaver are excluded	Yes	No
Oregon	Lower Deschutes sub-basin	Camas Creek	Camas Prairie	No	n/a	n/a	No	Yes	historic (inactive)	yes	No

Unit Descriptors				Loss of habitat			Livestock grazing				Invasive flora		
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/site name(s)**	**Are wetlands continuing to be lost or degraded? (Y,N, U)**	**Discuss the threat(s) to OSF adults, embryos, and/or larva due to water management practices at the site or in the drainage. May include activities such as ditching/dams/altered hydrology**	**Residential and Commercial Development - An increase in semi-permeable and non-permeable surfaces (i.e. clear-cuts, pasture, lawn, pavement, buildings and so forth) can increase "flashy" hydrology in a system. Describe the current threat at the OSF site. (Not a threat - Hydrology at site is not impacted by human changes to uplands; Threat – Flashy hydrology due to human impacts to the surrounding uplands has been noted as a factor in egg mass stranding; ID - Inadequate data)**	**Is there cattle grazing at the site?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog water quality?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog habitat quality?**	**For grazed sites, is grazing maintaining vegetation in early seral condition that promotes OSF habitat?**	**Level of threat posed by reed canarygrass if site was not managed. (RCG Not present; Present but sparse or patchy, not currently impacting OSF habitat quality; Dense, thatch forming, degrading OSF habitat; Dense, thatch forming, excluding OSF use; or Inadequate data)**	**Under current management/land use practices, rank the level of threat posed by reed canarygrass (RCG). None - RCG does not occur or it is a minor component of the flora; Low- Management practices keep the RCG short and prevent thatch formation in all critical habitats; Medium - Management practices are inadequate to keep RCG short in all critical habitats; High - No management reducing RCG; ID - Inadequate data.**	**What practices are used specifically to control reed canarygrass at this site (i.e. grazing, mowing, haying, burning, herbicides) etc.**
Oregon	Upper Deschutes River		Hosmer Lake	No	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a
			Lava Lake	No	No water management occurs	No threat	No	n/a	n/a	n/a	Present/moderate	No management to reduce RCG.	None
		Deschutes River	Little Lava Lake	No	No water management occurs	No threat	No	n/a	n/a	n/a	Present/moderate	No management to reduce RCG.	None
		Deschutes River	Blue Pool (Upper and lower)	No	No water management occurs	No threat	No	n/a	n/a	n/a	Present/low abundance	No management to reduce RCG. Needed to reduce spread.	None
		Cultus Creek	Winopee Lake	No	No water management occurs	No threat	No	n/a	n/a	n/a	Inadequate data	Inadequate data	Inadequate data
		Cultus Creek	Muskrat lake	No	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a
		Deer Creek	Little Cultus Lake	No	No water management occurs	No threat	No	n/a	n/a	n/a	Present/low abundance	No management to reduce RCG.	None
		Deschutes River	Crane Prairie Reservoir	Yes	Annual and seasonally abrupt changes in water levels within the reservoirs may affect OSF breeding habitat at the edges of the reservoirs. Wetlands may be completely innundated with water during the breeding season or egg masses may be dessicated when water level suddenly drops.	None	No	n/a	n/a	n/a	Present	No management to reduce RCG.	None
		Deschutes River	Wickiup Reservoir	Yes			No	n/a	n/a	n/a	Present	No management to reduce RCG.	None
		Unnamed trib to Odell Creek/Davis Lake	Odell Creek fen - Scotty Big Boy	No	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a
			Other Davis Lake sites no longer active			No threat					present at Davis Lake and areas along Odell Cr	No management to reduce RCG.	None
		Deschutes River	Dilman Meadow	No	No water management occurs	No threat	No	n/a	n/a	n/a	None	None	n/a
		Deschutes River	Dead Slough	No	Sites located below Wickiup Reservoir do not experience natural hydrological fluctuation. Water releasess from reservoir occur from April 15 to Oct 15. Therefore, breeding sites may not have enough water for egg mass development and overwintering and dispersal are affected.	No threat	No	n/a	n/a	n/a	None	n/a	n/a
		Deschutes River	La Pine SP SW oxbow	No		No threat	No	n/a	n/a	n/a	None	n/a	n/a
		Deschutes River	Sunriver	No		OSF habitat in Sunriver is surrounded by a golf course and homes. Current management of OSF habitat by Sunriver Nature Center is beneficial to OSF. Therefore development is not a threat in Sunriver. Old Mill pond is located within a shopping district in downtown Bend. Maintaing water levels for OSF within pond is dependent upon management. Without management pond levels drop and impacts to OSF have been documented.	No	n/a	n/a	n/a	Present/lmoderate	No management to reduce RCG. Needed to reduce spread.	none
		Deschutes River	Slough Camp	No			No	n/a	n/a	n/a	Present low abundance	No management to reduce RCG.	None
		Deschutes River	Old Mill pond/LSA Marsh-Deschutes River	No			No	n/a	n/a	n/a	None	n/a	n/a

Unit Descriptors				Shrub planting for riparian restoration/ reed canarygrass shading				Loss of disturbance regimes:	Loss of disturbance regimes: Beaver	Loss of disturbance regimes: fire	Water Quality
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/site name(s)	Are woody-planting restoration activities occurring at the OSF site?	Are woody-planting restoration activities intended to improve habitat for OSF at the site?	Are woody-planting restoration activities inadver-tently degrading habitat for OSF?	Are riparian restoration activities taking place in drainage within 5 km of OSF site?	Is there encroach-ment by shrubs and trees at oviposition sites	Qualify beaver activity at this site?	Is fire important in maintaining OSF habitat at site?	Are there known water quality issues that may impact OSF in the drainage? (e.g. pesticides, nitrites/ nitrates) If so, describe
Oregon	Upper Deschutes River		Hosmer Lake	No	n/a	n/a	No	Yes	some (none and active)	Yes, historically	No
			Lava Lake	No	n/a	n/a	No	Yes	recent (active)		No
		Deschutes River	Little Lava Lake	No	n/a	n/a	No	Yes	Lower-recent (active) Upper-historic (inactive)		No
		Deschutes River	Blue Pool (Upper and lower)	No	n/a	n/a	No	Yes	recent (active)		No
		Cultus Creek	Winopee Lake	No	n/a	n/a	No	Yes	recent (active)		No
		Cultus Creek	Muskrat lake	No	n/a	n/a	No	Yes	recent (active)		No
		Deer Creek	Little Cultus Lake	No	n/a	n/a	No	Yes	recent (active)		No
		Deschutes River	Crane Prairie Reservoir	No	n/a	n/a	No	No	Beavers utilize the reservoir system.	No	Unknown
		Deschutes River	Wickiup Reservoir	No	n/a	n/a	No	No	Beavers utilize the reservoir system.	No	Unknown
		Unnamed trib to Odell Creek/Davis Lake	Odell Creek fen - Scotty Big Boy	No	n/a	n/a	No	Yes	historic (inactive)	Yes	No
			Other Davis Lake sites no longer active	No	n/a	n/a	No	Yes		Yes	No
		Deschutes River	Dilman Meadow	No	n/a	n/a	No	Yes	For all these ponds, we have seen transient beaver sign in several of the last 10 yr (several chews, no new dam building). The entire meadow appears to be a peat accumulation behind an old beaver dam	Yes, historically	No
		Deschutes River	Dead Slough	No	n/a	n/a	No	No	Inadequate Data	No	ODEQ has Deschutes River 303(d) listed for temperature, dissolved oxygen, turbidity, sedimentation. OSF sites adjacent to the Deschutes River may be affected by reduced water quality.
		Deschutes River	La Pine SP SW oxbow	No	n/a	n/a	No	No	Inadequate Data	No	
		Deschutes River	Sunriver	No	n/a	n/a	No	No	historic and active	No	
		Deschutes River	Slough Camp	No	n/a	n/a	No	Yes	Beaver are maintaining open water habitat for breeding at the S Slough Camp site adjacent to the Deschutes River below Wickiup Dam.	No	
		Deschutes River	Old Mill pond/LSA Marsh-Deschutes River	No	n/a	n/a	Yes	No	In the riverine system of Upper Deschutes River sub-basin, beaver activity creates overwintering and breeding habitat for OSF. There are at least two known sites below Wickiup dam where frogs breed in ponds affected by the regulated flows, frog are forced to overwinter in the river and beaver runs and burrows are likely places for overwintering of frogs. Telemetry informatio is being collected by J. Bowerman that may provide evidence of this at the newly discovered (2012) Old Mill Pond site.	No	

Unit Descriptors				Loss of habitat			Livestock grazing				Invasive flora		
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/site name(s)**	**Are wetlands continuing to be lost or degraded? (Y,N, U)**	**Discuss the threat(s) to OSF adults, embryos, and/or larva due to water management practices at the site or in the drainage. May include activities such as ditching/dams/altered hydrology**	**Residential and Commercial Development - An increase in semi-permeable and non-permeable surfaces (i.e. clear-cuts, pasture, lawn, pavement, buildings and so forth) can increase "flashy" hydrology in a system. Describe the current threat at the OSF site. (Not a threat - Hydrology at site is not impacted by human changes to uplands; Threat – Flashy hydrology due to human impacts to the surrounding uplands has been noted as a factor in egg mass stranding; ID - Inadequate data)**	**Is there cattle grazing at the site?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog water quality?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog habitat quality?**	**For grazed sites, is grazing maintaining vegetation in early seral condition that promotes OSF habitat?**	**Level of threat posed by reed canarygrass if site was not managed. (RCG Not present; Present but sparse or patchy, not currently impacting OSF habitat quality; Dense, thatch forming, degrading OSF habitat; Dense, thatch forming, excluding OSF use; or Inadequate data)**	**Under current management/land use practices, rank the level of threat posed by reed canarygrass (RCG). None - RCG does not occur or it is a minor component of the flora; Low- Management practices keep the RCG short and prevent thatch formation in all critical habitats; Medium - Management practices are inadequate to keep RCG short in all critical habitats; High - No management reducing RCG; ID - Inadequate data.**	**What practices are used specifically to control reed canarygrass at this site (i.e. grazing, mowing, haying, burning, herbicides) etc.**
		Big Marsh Creek	Big Marsh	No	No	No threat	No	n/a	n/a	n/a	Present/abundant	Management has occurred to contain spread of RCG. More needed as Big Marsh is headwater to Little Deschutes system and RCG is moving downstream.	Partial closier of perimeter ditches to restore hydrology of marsh and reduce RCG spread.
		Crescent Creek	Crescent Creek Highway 58	Yes	All sites along Crescent Creek (other than Black Rock lava pond which is isolated) may experience low water during the breeding period and throughout winter as water is held in Crescent Lake from October through July for irrigation needs.	No threat	No	n/a	n/a	n/a	Present/moderate	No management to reduce RCG.	None
		Crescent Creek	Black Rock lava pond	No			No	n/a	n/a	n/a	None	n/a	N/a
		Crescent Creek	Crescent Upper Oxbow	No			Yes	unknown	unknown	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Crescent Creek	Crescent Creek 62 RD	Yes			Yes	unknown	unknown	Inadequate data	Inadequate data		
		Crescent Creek	Crescent Creek BLM oxbows	Undetermined			Yes (>50% of site)	unk	yes	no	Low abundance	No management to reduce RCG.	None
		Little Deschutes River	5830 Road dogleg	No	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a
		Little Deschutes River	Hwy 58 area sites (Upper oxbow, Mowich log pond)	Undetermined	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a
		Little Deschutes River	100 road mill pond and oxbows	Undetermined	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a
		Little Deschutes River	LDR 62 road oxbow, floodplain pool, gravel pit, beaver	Undetermined	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a

Unit Descriptors				Shrub planting for riparian restoration/ reed canarygrass shading				Loss of disturbance regimes:	Loss of disturbance regimes: Beaver	Loss of disturbance regimes: fire	Water Quality
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/site name(s)	Are woody-planting restoration activities occurring at the OSF site?	Are woody-planting restoration activities intended to improve habitat for OSF at the site?	Are woody-planting restoration activities inadver-tently degrading habitat for OSF?	Are riparian restoration activities taking place in drainage within 5 km of OSF site?	Is there encroach-ment by shrubs and trees at oviposition sites	Qualify beaver activity at this site?	Is fire important in maintaining OSF habitat at site?	Are there known water quality issues that may impact OSF in the drainage? (e.g. pesticides, nitrites/ nitrates) If so, describe
		Big Marsh Creek	Big Marsh	No	n/a	n/a	no	Yes	Recent (active)	Yes	No
		Crescent Creek	Crescent Creek Highway 58	No	n/a	n/a	No	No	Recent (active)	Yes, historically	No
		Crescent Creek	Black Rock lava pond	No	n/a	n/a	No	No	Recent (active)	Unknown	No
		Crescent Creek	Crescent Upper Oxbow	No	n/a	n/a	No	No	Inadequate Data	Yes, historically	No
		Crescent Creek	Crescent Creek 62 RD	No	n/a	n/a	No	Yes	Inadequate Data	Yes, historically	No
		Crescent Creek	Crescent Creek BLM oxbows	No	n/a	n/a	No	Yes	Recent (active) & historic (inactive)	Yes, historically	No
		Little Deschutes River	5830 Road dogleg	No	n/a	n/a	No	No	Inadequate Data	Yes, historically	
		Little Deschutes River	Hwy 58 area sites (Upper oxbow, Mowich log pond)	No	n/a	n/a	No	Yes	Recent (active) & historic (inactive)	Yes, historically	
		Little Deschutes River	100 road mill pond and oxbows	No	n/a	n/a	No	Yes	Recent (active)	Yes, historically	
		Little Deschutes River	LDR 62 road oxbow, floodplain pool, gravel pit, beaver	No	n/a	n/a	No	Yes	Recent (active)	Yes, historically	

Unit Descriptors				Loss of habitat			Livestock grazing				Invasive flora		
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/site name(s)**	**Are wetlands continuing to be lost or degraded? (Y,N, U)**	**Discuss the threat(s) to OSF adults, embryos, and/or larva due to water management practices at the site or in the drainage. May include activities such as ditching/dams/altered hydrology**	**Residential and Commercial Development - An increase in semi-permeable and non-permeable surfaces (i.e. clear-cuts, pasture, lawn, pavement, buildings and so forth) can increase "flashy" hydrology in a system. Describe the current threat at the OSF site. (Not a threat - Hydrology at site is not impacted by human changes to uplands; Threat – Flashy hydrology due to human impacts to the surrounding uplands has been noted as a factor in egg mass stranding; ID - Inadequate data)**	**Is there cattle grazing at the site?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog water quality?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog habitat quality?**	**For grazed sites, is grazing maintaining vegetation in early seral condition that promotes OSF habitat?**	**Level of threat posed by reed canarygrass if site was not managed. (RCG Not present; Present but sparse or patchy, not currently impacting OSF habitat quality; Dense, thatch forming, degrading OSF habitat; Dense, thatch forming, excluding OSF use; or Inadequate data)**	**Under current management/land use practices, rank the level of threat posed by reed canarygrass (RCG). None - RCG does not occur or it is a minor component of the flora; Low- Management practices keep the RCG short and prevent thatch formation in all critical habitats; Medium - Management practices are inadequate to keep RCG short in all critical habitats; High - No management reducing RCG; ID - Inadequate data.**	**What practices are used specifically to control reed canarygrass at this site (i.e. grazing, mowing, haying, burning, herbicides) etc.**
Oregon	Little Deschutes River	Little Deschutes River	Middle Little Deschutes Complex 1	Yes	Sites located downstream of Crescent Creek may experience low water during spring breeding season since water is held in Crescent Lake until July . Egg mass stranding has been observed. Winter flows are low due to water being held in Crescent Lake throughout the winter, thereby reducing the amount of overwintering habitat available for OSF. Additionally, a large irrigation ditch (Walker Basin Canal) pulls water (28 cfs) from the Little Deschutes and supplies irrigation water to Long Prairie.	Development of land in the Little Deschutes River floodplain may pose a threat to OSF.	Yes (>50% of site)	unk	unk	unk	Inadequate data	Inadequate Data	Inadequate data
		Little Deschutes River	Middle LD Complex 2	Yes			Yes (>50% of site)	unk	unk	unk	Inadequate data	Inadequate Data	Inadequate data
		Little Deschutes River	Leona Park	Undetermined			No	n/a	n/a	n/a	Present/low abundance	No management	None
		Little Deschutes River	Oxbows behind LaPine Highschool	Undetermined			No	n/a	n/a	n/a	Present	floodplain may pose a threat to OSF habitat.	None
		Little Deschutes River	Rosland Park	No			No	n/a	n/a	n/a	Inadequate data	Inadequate Data	Inadequate data
		Little Deschutes River	Riverside oxbow	Undetermined			Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate Data	Inadequate data
		Little Deschutes River	Casey Tract	Undetermined			No	n/a	n/a	n/a	Abundant/High threat	No management to reduce RCG.	None
		Little Deschutes River	Thousand Trails	Undetermined			No	n/a	n/a	n/a	Inadequate data		
		Little Deschutes River	Crosswater (N. driving range pond, bullfrog pond, Fairway 2)	Undetermined			No	n/a	n/a	n/a	Inadequate data		
		Long Prairie Creek	Long Prairie marsh (lowest reach)	Yes	Most of the Long Prairie wetlands have been converted for agriculture. Hydrology of the watershed has been severely altered and breeding may be dependent on the timing of irrigation water on private lands.	Development has occurred in the Long Prairie drainage to the Little Deschutes River. Wetlands have been drained and ditched. OSF utilization of Long Prairie sites have altered hydrology due to a historic ditching infrastructure and a manipulated irrigation system for private landowners.	Yes (<50% of site)	unk	unk	n/a	Present/low abundance	No management to reduce RCG.	None
		Long Prairie Creek	Long Prairie upper BLM and	Yes			Yes (<50% of site)	unk	unk	unk	Present	No management to reduce RCG.	None
		Long Prairie Creek	Mickle site	Yes			No	n/a	n/a	n/a	Present	Inadequate Data	Inadequate data

Unit Descriptors				Shrub planting for riparian restoration/ reed canarygrass shading				Loss of disturbance regimes:	Loss of disturbance regimes: Beaver	Loss of disturbance regimes: fire	Water Quality
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/site name(s)	Are woody-planting restoration activities occurring at the OSF site?	Are woody-planting restoration activities intended to improve habitat for OSF at the site?	Are woody-planting restoration activities inadver-tently degrading habitat for OSF?	Are riparian restoration activities taking place in drainage within 5 km of OSF site?	Is there encroach-ment by shrubs and trees at oviposition sites	Qualify beaver activity at this site?	Is fire important in maintaining OSF habitat at site?	Are there known water quality issues that may impact OSF in the drainage? (e.g. pesticides, nitrites/ nitrates) If so, describe
Oregon	Little Deschutes River	Little Deschutes River	Middle Little Deschutes Complex 1	No	n/a	n/a	Inadequate Data	No	Inadequate Data	unknown	
		Little Deschutes River	Middle LD Complex 2	No	n/a	n/a	Inadequate Data	No	Inadequate Data	Unknown	
		Little Deschutes River	Leona Park	No	n/a	n/a	No	No	Evidence of recent beaver at site.	Yes, historically	
		Little Deschutes River	Oxbows behind LaPine Highschool	No	n/a	n/a	No	No	Recent (active) - Beavers are maintaining this as a breeding and rearing site for OSF.	Yes, historically	
		Little Deschutes River	Rosland Park	No	n/a	n/a	No	No	Beaver are actively working to manipulate vegetation.	Yes, historically	
		Little Deschutes River	Riverside oxbow	No	n/a	n/a	No	Unknown	Unknown	Unknown	
		Little Deschutes River	Casey Tract	No	n/a	n/a	No	No	None	Yes, historically	
		Little Deschutes River	Thousand Trails	No	n/a	n/a	No	No	Unknown	Yes, historically	
		Little Deschutes River	Crosswater (N. driving range pond, bullfrog pond, Fairway 2)	No	n/a	n/a	No	No	Unknown	Yes, historically	
		Long Prairie Creek	Long Prairie marsh (lowest reach)	No	n/a	n/a	No	No	None	Yes, historically	Inadequate data
		Long Prairie Creek	Long Prairie upper BLM and	No	n/a	n/a	No	No	None	Yes, historically	Inadequate data
		Long Prairie Creek	Mickle site	No	n/a	n/a	Inadequate Data	No	Unknown	Yes, historically	Inadequate data

Unit Descriptors				Loss of habitat			Livestock grazing				Invasive flora		
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/site name(s)**	**Are wetlands continuing to be lost or degraded? (Y,N, U)**	**Discuss the threat(s) to OSF adults, embryos, and/or larva due to water management practices at the site or in the drainage. May include activities such as ditching/dams/altered hydrology**	**Residential and Commercial Development - An increase in semi-permeable and non-permeable surfaces (i.e. clear-cuts, pasture, lawn, pavement, buildings and so forth) can increase "flashy" hydrology in a system. Describe the current threat at the OSF site. (Not a threat - Hydrology at site is not impacted by human changes to uplands; Threat – Flashy hydrology due to human impacts to the surrounding uplands has been noted as a factor in egg mass stranding; ID - Inadequate data)**	**Is there cattle grazing at the site?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog water quality?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog habitat quality?**	**For grazed sites, is grazing maintaining vegetation in early seral condition that promotes OSF habitat?**	**Level of threat posed by reed canarygrass if site was not managed. (RCG Not present; Present but sparse or patchy, not currently impacting OSF habitat quality; Dense, thatch forming, degrading OSF habitat; Dense, thatch forming, excluding OSF use; or Inadequate data)**	**Under current management/land use practices, rank the level of threat posed by reed canarygrass (RCG). None - RCG does not occur or it is a minor component of the flora; Low- Management practices keep the RCG short and prevent thatch formation in all critical habitats; Medium - Management practices are inadequate to keep RCG short in all critical habitats; High - No management reducing RCG; ID - Inadequate data.**	**What practices are used specifically to control reed canarygrass at this site (i.e. grazing, mowing, haying, burning, herbicides) etc.**
Oregon	Mckenzie River		Penn Lake	No	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a
		South Fork McKenzie River	Unnamed Marsh	No	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a
Oregon	Middle Fork Willamette	Salt Creek	Gold Lake Bog	No	No water management occurs	No threat	No	n/a	n/a	n/a	None	n/a	n/a
Oregon	Upper Klamath	Spencer Creek	Buck Lake	Unknown but significant habitat was lost historically when they drained and altered the lake bed	Ditching, irrigation, and reverse hydrology is occuring there (RR 6/20/2012 pers com)	Drained pasture lands; heavily grazed on the private; minimal timber extraction surrounding the site, unsure if impacting	Yes	untested	Unknown-possibly helps in some instances (see K) but hurts in others	Yes maintains the appropriate structure	Not present	NA	NA
		Keene Creek	Parsnip Lakes	Yes	water diversion? Chris Pearl says it is an issue, but issue is not in Parker 2009 report	abandoned logging roads	yes (as of 2009)	Inadequate Data	yes-redux of beaver dams	Inadequate Data	Not present	NA	NA
Oregon	Upper Klamath Lake	Sevenmile Creek	Sevenmile	Yes on FS due to water diversion; unknown if on private	100% of the water can be diverted for irrigation leading loss of habitat for breeding and adults depending on water diversion	forest roads	FS no; private unknown	Inadequate Data	Inadequate Data	Inadequate Data	Not present	NA	NA
		Wood River	Wood River Wetland	no-BLM is actively engaged in creating more and managing existing wetlands	Water is controlled by BLM specifically for OSF but if it were to no longer be implemented there could be serious implications for frog habitat	pasture and levee roads exist	yes (private)	untested	not extensively-cattle released into pasture after OSF breed (end of May) and habitat appears to be avoided (RR pers comm 6/20/2012)	yes-eggmasses occur in the sedges that have been grazed (RR pers comm 6/20/2012)	Variable, depending upon reach of the canal (only on BLM). Present but sparse or patchy, not currently impacting OSF habitat quality in some reaches. Dense, thatch forming, degrading OSF habitat in some reaches. Dense, thatch forming, excluding OSF use in some reaches. Grass is pushed down by ice and snow creating some breeding habitat in stretches of the canal.	Medium: Management practices are inadequate to keep RCG short in all critical habitats.	mowing
		Wood River	Wood River headwaters south to Loosely Road	Undetermined	Early movement of water for forage has left eggmasses dessicated in the spring (B. Tinniswood 2012)	unknown-cattle grazing pastures and houses exist along this stretch of the river	yes. Field visit on sept 26 2012 showed cattle grazing occuring at some of the ponds in the habitat. Also stated by ODFW biologist water mgmt in the spring for forage has left eggmasses exposed	Inadequate Data	Inadequate Data	Inadequate Data	Inadequate data	unknown	unknown
		Wood River	Wood River Loosely Road to mouth	Undetermined	Undetermined	unknown-cattle grazing pastures and houses exist along this stretch of the river	unknown if it occurs at the site	Inadequate Data	Inadequate Data	Inadequate Data	Inadequate data	unknown	unknown

Unit Descriptors				Shrub planting for riparian restoration/ reed canarygrass shading				Loss of disturbance regimes:	Loss of disturbance regimes: Beaver	Loss of disturbance regimes: fire	Water Quality
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/site name(s)	Are woody-planting restoration activities occurring at the OSF site?	Are woody-planting restoration activities intended to improve habitat for OSF at the site?	Are woody-planting restoration activities inadver-tently degrading habitat for OSF?	Are riparian restoration activities taking place in drainage within 5 km of OSF site?	Is there encroach-ment by shrubs and trees at oviposition sites	Qualify beaver activity at this site?	Is fire important in maintaining OSF habitat at site?	Are there known water quality issues that may impact OSF in the drainage? (e.g. pesticides, nitrites/ nitrates) If so, describe
Oregon	Mckenzie River		Penn Lake	No	N/A	N/A	No	Yes	historic (inactive)	Unknown	No
		South Fork McKenzie River	Unnamed Marsh	No	N/A	N/A	No	Yes	historic (inactive)	Unknown	No
Oregon	Middle Fork Willamette	Salt Creek	Gold Lake Bog	No	N/A	N/A	No	Yes	recent (active)	No	No
Oregon	Upper Klamath	Spencer Creek	Buck Lake	No-managing existing aspen stands (BLM) and extracting lodgepole (USFS); possibly willow planting ID in SMP to improve habitat for beaver	Yes-lodgepole; no for the aspen and willow (beaver)	No-not currently occuring	Yes BLM placed wood in Spencer Creek downstream from the habitat; USFS will be completing some activities near Buck Lake in SMP but no action has occurred thus far	Yes-Tunnel Creek willows and bog birch shrub	Present but not contributing to maintaining frog habitat-identified as potential beaver reintroduction	Yes-minor component due to the existing grazing regime (RR 6/20/2012 pers comm)	Unknown
		Keene Creek	Parsnip Lakes	Inadequate Data	unknown	Unknown	unknown	Yes	one seen in 2005 but no evidence of residency-identified as potential beaver reintroduction	Unknown	Temperature issues (DEQ)
Oregon	Upper Klamath Lake	Sevenmile Creek	Sevenmile	No	No	n/a	no on FS; unknown on private	Yes	present but reduced level and variable on an annual basis-identified as potential beaver reintroduction	Yes (AM 6/20/2012 pers comm)	Unknown
		Wood River	Wood River Wetland	Yes cutting of willows sporadically but no planting	Yes-removing willows increase solar exposure	No	Yes	Minor	active and present but not maintaining habitat-this is not a beaver dependent site	unknown-but can be used to manage RCG	Unknown-studies have been completed but focused on OSF water qualities needs
		Wood River	Wood River headwaters south to Loosely Road	unknown-PFW projects have occurred but project specifics are unknown	unknown	unknown-there is no monitoring associated with PFW projects	Yes	Unknown	Unknown	Unknown	Unknown
		Wood River	Wood River Loosely Road to mouth	unknown-PFW projects have occurred but project specifics are unknown	unknown	unknown-there is no monitoring associated with PFW projects	Yes	Unknown	Unknown	Unknown	Unknown

Highlighted Fields Represent Changes from Proposed Listing Threats Matrix

Unit Descriptors				Loss of habitat			Livestock grazing				Invasive flora		
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/site name(s)**	**Are wetlands continuing to be lost or degraded? (Y,N, U)**	**Discuss the threat(s) to OSF adults, embryos, and/or larva due to water management practices at the site or in the drainage. May include activities such as ditching/dams/altered hydrology**	**Residential and Commercial Development - An increase in semi-permeable and non-permeable surfaces (i.e. clear-cuts, pasture, lawn, pavement, buildings and so forth) can increase "flashy" hydrology in a system. Describe the current threat at the OSF site. (Not a threat - Hydrology at site is not impacted by human changes to uplands; Threat – Flashy hydrology due to human impacts to the surrounding uplands has been noted as a factor in egg mass stranding; ID - Inadequate data)**	**Is there cattle grazing at the site?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog water quality?**	**For grazed sites, is the grazing detrimental to Oregon Spotted Frog habitat quality?**	**For grazed sites, is grazing maintaining vegetation in early seral condition that promotes OSF habitat?**	**Level of threat posed by reed canarygrass if site was not managed. (RCG Not present; Present but sparse or patchy, not currently impacting OSF habitat quality; Dense, thatch forming, degrading OSF habitat; Dense, thatch forming, excluding OSF use; or Inadequate data)**	**Under current management/land use practices, rank the level of threat posed by reed canarygrass (RCG). None - RCG does not occur or it is a minor component of the flora; Low- Management practices keep the RCG short and prevent thatch formation in all critical habitats; Medium - Management practices are inadequate to keep RCG short in all critical habitats; High - No management reducing RCG; ID - Inadequate data.**	**What practices are used specifically to control reed canarygrass at this site (i.e. grazing, mowing, haying, burning, herbicides) etc.**
		Fourmile Creek	Fourmile Creek	No-the wetland is expanding but not maintained by grazing on federal lands so there is some loss ob breeding habitat (RR 6/20/2012 pers comm)	Water is not managed at this site (there is a lack of infrastructure) (RR 6/20/2012 pers comm)	no-there are developments adjacent to the known OSF sites	not on the site-as of 1998 (RR 6/20/2012 pers comm)	n/a	n/a	n/a	minor-seen by surveyors and grazed by waterfowl (RR 6/20/2012 pers comm)	minor component	none-natural water inundation
		Crane Creek	Crane Creek	No-private landowner works with PFW and USGS to maintain property for OSF	None	some grazing occurs adjacent to the riparian area of crane creek	adjacent to the riparian area but has been fenced since?	No	No	No	Inadequate data	unknown	unknown
Oregon	Williamson River	Williamson River	Upper Williamson	No FS; Unknown on private (CAP states that yes they are continuing to be lost due to loss of beaver and water management)	Undetermined	cattle grazing occurs near the site as well as limited housing development, FS roads	Near the sites on private where the FS boundrary ends; Not on FS	Inadequate Data	Inadequate Data	Inadequate Data	None	n/a	n/a
		Williamson River	Klamath Marsh NWR	No - but depending on the water year the type and levels of wetland habitat changes however the OSF use areas with springs and flowing water consistently due to groundwater influence; sediment build up from the Williamson River is occuring at one site (biggest oviposition site) and effects the changes in vegetation (drought years: FW pers comm across the landscape there is plenty of water The ones impacted in severe drought are gone and the sites remaining are drought resistant)	There are control structures on the Refuge to move the water around; but the water is not managed at the OSF sites	county roads, grazing pastures, forest service roads (CAP)	no grazing that occurs on the Refuge at any of the OSF sites	n/a	n/a	n/a	RCG is adjacent (0.25 mile) to one OSF site but is not at the oviposition site and is minor component of the flora-	Minor component	no management
		Jack Creek	Jack Creek	Yes-loss of historic beaver dams resulting in a loss of associated open water/wetland habitat; head cut on the creek eliminates/reduces water movt into the associated wetlands	No after irrigation, etc occuring	Many roads and the system is flashy in the spring (CAP)	Yes private but small component on the habitat (AM 6/20/2012 pers comm)	Inadequate Data	Possibly degrading historic beaver dams	yes (AM 6/20/2012 pers comm)	Small amount in system, but does not occur at current oviposition sites	major problem	herbicide

Unit Descriptors				Shrub planting for riparian restoration/ reed canarygrass shading				Loss of disturbance regimes:	Loss of disturbance regimes: Beaver	Loss of disturbance regimes: fire	Water Quality
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/site name(s)	Are woody-planting restoration activities occurring at the OSF site?	Are woody-planting restoration activities intended to improve habitat for OSF at the site?	Are woody-planting restoration activities inadver-tently degrading habitat for OSF?	Are riparian restoration activities taking place in drainage within 5 km of OSF site?	Is there encroach-ment by shrubs and trees at oviposition sites	Qualify beaver activity at this site?	Is fire important in maintaining OSF habitat at site?	Are there known water quality issues that may impact OSF in the drainage? (e.g. pesticides, nitrites/ nitrates) If so, describe
		Fourmile Creek	Fourmile Creek	No	n/a	n/a	No on FS (AM 6/20/2012 pers comm)	yes-looks pretty shrubby	good, lots of dams and are actively maintaining OSF habitat	Yes-ungulate grazing and fire were historically the two maintaining mechanism	Unknown
		Crane Creek	Crane Creek	No	n/a	n/a	Yes	No	Inactive	Unknown	Unknown
Oregon	Williamson River	Williamson River	Upper Williamson	No	n/a	n/a	Yes-could be degrading additional potential habitat	Yes-willows in oxbows	Recent beaver activity that appear to be bank dwelling beavers; tunnels are opening up the oxbows for water inundation (AM 6/20/2012 pers comm) CHECK with OSF workgroup: this is inconsistent but more accurate than workgroup assessment. TLA personally can verify AM observations.	Historically may have been important	sediementation (DEQ)
		Williamson River	Klamath Marsh NWR	No	n/a	n/a	Yes	No	~20-30 beaver dams on the Refuge; the beaver are actively cutting willows within 4 feet of OSF sites but there are no dams associated with the OSF oviposition sites	Yes-historically fire was important to maintaining seral stages and currently there are few fires on the marsh	sediementation (DEQ)
		Jack Creek	Jack Creek	No-proposed willow plantings	Not intended for frog; intended to benefit beaver	Unknown they are not occuring	Yes-possible pond creation in 2012	Yes much of the lodgepole has been removed but willow is still an issue (AM 6/20/2012 pers comm) bog birch (CAP)	Beaver have not been documented since 2001 (AM 6/20/2012 perso comm and SMP) UPDATE: 7 beavers were reintroduced to the system in winter 2012-2013 (T. Simspon pers com 2012)	Yes, historically maintained by fire (AM 6/20/2012 pers comm)	sedimentation (DEQ): listed as potential in the Jack Creek SMP

Unit Descriptors				Emerging Diseases								Introduced Fish			
State or Province	**SubBasin**	**Occupied River Drainage**	**Population/ subpopulation/ site name(s)**	**Has the Amphibian Chytrid fungus been verified at the site?**	**Has the Amphibian Chytrid fungus been verified within the drainage?**	**Have Oregon Spotted Frogs infected with the trematode *Ribeiroia ondatrae* been found at the site?**	**Have Oregon Spotted Frogs infected with the trematode *Ribeiroia ondatrae* been found in the drainage?**	**Have Oomycete fungi, Saprolegnia spp., been found at the site?**	**Have Oomycete fungi, Saprolegnia spp., been found at the drainage?**	**Have Iridoviruses (Ranavirus) been found at the site?**	**Have Iridoviruses (Ranavirus) been found at the drainage?**	**Do introduced warm-water fish occur at this OSF site?**	**Do introduced warm-water fish occur within drainage?**	**Do introduced cold-water fish occur at this OSF site?**	**Do introduced cold-water fish occur within drainage?**
British Columbia	Lower Fraser River		Aldergrove	Yes	Yes	Not surveyed	Not surveyed	Not surveyed	Not tested for specifically, but assumed to be present	No	Not tested for specifically	Inadequate data	Yes	No	Unknown
			Mountain Slough	Yes		Not surveyed	Not surveyed	Not surveyed		No		Inadequate data	Yes	No	Unknown
			Maria Slough	Yes		Not surveyed	Not surveyed	Not surveyed		No		No	Yes	No	Unknown
			Morris Valley	Yes		Not surveyed	Not surveyed	Not surveyed		No		Yes	Yes	No	Unknown
Washington	Fraser River	Sumas River	Massey Rd	not tested	not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Inadequate data	Yes	No	No
Washington	Nooksack River	Black Slough	Black Slough	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Inadequate data	Yes in Wiser Lake (very far downstream from known OSF locations)	No	Yes
Washington	Straits of Georgia	Upper and Middle Samish River	Samish River	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Inadequate data	Yes in Samish Lake	yes	Yes
Washington	Upper Chehalis River	Dempsey Creek	Dempsey Creek	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	Yes, primarily in the mainstem Black River	No	Yes
		Salmon Creek	Salmon Creek	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Yes		Inadequate data	
		Blooms Ditch at 110th	Blooms Ditch at 110th	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Inadequate data		Inadequate data	
		Black River at 123rd	Black River at 123rd	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Inadequate data		Inadequate data	
		Allen Creek	Allen Creek	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Inadequate data		Inadequate data	
		Beaver Creek	Beaver Creek	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No		No	
		Mima Creek	Mima Creek	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Inadequate data		Inadequate data	
		Fish Pond Creek	Fish Pond Creek	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Likely occur in the creek		Inadequate data	
Washington	Middle Columbia-Hood River	Trout Lake Creek	Trout Lake	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes (brook trout)	Yes
Washington	Klickitat River	Outlet Creek	Conboy Lake	Yes	Yes	Yes	Yes	no	no	Not surveyed	Not surveyed	Yes (brown bullhead)	Yes	Yes	Yes
Oregon	Lower Deschutes	White River	Camas Prairie	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Unknown	Yes
Oregon	Upper Deschutes River	isolated	Hosmer Lake	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
		isolated	Lava Lake	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
		Deschutes River	Little Lava Lake	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
		Deschutes River	Blue Pool	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
		Cultus Creek	Winoppee Lake	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
		Cultus Creek	Muskrat lake	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
		Deer Creek	Little Cultus Lake	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
		Deschutes River	Crane Prairie Reservoir	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Yes	Yes	Yes	Yes
		Deschutes River	Wickiup Reservoir	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Yes	Yes	Yes	Yes
		Tributary to Odell Creek	Odell Creek fen - Scotty Big Boy	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Unknown	Yes
			Davis Lake	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Yes	Yes	No	No
		Deschutes River	Dilman Meadow	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	No	No
			Dead Slough						Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			La Pine SP SW oxbow						Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Sunriver	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	No	Yes
			Slough Camp	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Old Mill Pond	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes

Unit Descriptors				Introduced Amphibians					
State or Province	**SubBasin**	**Occupied River Drainage**	**Population/ subpopulation/ site name(s)**	**Do Bullfrogs occur at this OSF site?**	**Rank the current bullfrog threat. n/a- Bullfrogs do not occur at the site; Low - Bullfrogs are infrequently observed with no evidence of breeding (e.g. advertisement calls, egg masses, tadpoles, juv. alarm calls); Medium - Bullfrogs are observed but do not appear to be common; High - Bullfrogs are common and breeding is well established as is evident from advertisement calls, egg masses, tadpoles, and frequent alarm calls; IA - Inadequate data.**	**Do Bullfrogs occur within drainage?**	**Do Green Frogs occur at this OSF site?**	**Rank the current Green Frog threat. n/a - Green Frogs do not occur at the site; Low - Green Frogs are infrequently observed with no evidence of breeding (e.g. advertisement calls, egg masses, tadpoles, alarm calls); Medium - Green Frogs are observed but do not appear to be common; High - Green Frogs are common and breeding is well established as is evident from advertisement calls, egg masses, tadpoles, and frequent alarm calls; IA - Inadequate data.**	**Do Green Frogs occur within drainage?**
British Columbia	Lower Fraser River		Aldergrove	Yes	High	Yes	No	n/a	Inadequate Data
			Mountain Slough	No	n/a	Yes	Yes	High	Yes
			Maria Slough	Yes	Inadequate Data	Yes	Yes	High	Yes
			Morris Valley	No	n/a	Yes	No	n/a	Yes
Washington	Fraser River	Sumas River	Massey Rd	No	n/a	Yes	No	n/a	Inadequate Data
Washington	Nooksack River	Black Slough	Black Slough	No	n/a	Yes	No	n/a	No
Washington	Straits of Georgia	Upper and Middle Samish River	Samish River	No	n/a	Yes	No	n/a	No
Washington	Upper Chehalis River	Dempsey Creek	Dempsey Creek	Yes	Low	Yes	No	n/a	No
		Salmon Creek	Salmon Creek	Yes	Inadequate Data		No	n/a	No
		Blooms Ditch at 110th	Blooms Ditch at 110th	Yes	Inadequate Data		No	n/a	No
		Black River at 123rd	Black River at 123rd	No	Inadequate Data		No	n/a	No
		Allen Creek	Allen Creek	Undetermined	Inadequate Data		No	n/a	No
		Beaver Creek	Beaver Creek	No	n/a		No	n/a	No
		Mima Creek	Mima Creek	Undetermined	Inadequate Data		No	n/a	No
		Fish Pond Creek	Fish Pond Creek	Undetermined	Inadequate Data		No	n/a	No
Washington	Middle Columbia-Hood River	Trout Lake Creek	Trout Lake	No	n/a	No	No	n/a	No
Washington	Klickitat River	Outlet Creek	Conboy Lake	Yes	High	Yes	No	n/a	No
Oregon	Lower Deschutes	White River	Camas Prairie	No	n/a	No	No	n/a	No
Oregon	Upper Deschutes River	isolated	Hosmer Lake	No	n/a	No	No	n/a	No
		isolated	Lava Lake	No	n/a	No	No	n/a	No
		Deschutes River	Little Lava Lake	No	n/a	No	No	n/a	No
		Deschutes River	Blue Pool	No	n/a	No	No	n/a	No
		Cultus Creek	Winoppee Lake	No	n/a	No	No	n/a	No
		Cultus Creek	Muskrat lake	No	n/a	No	No	n/a	No
		Deer Creek	Little Cultus Lake	No	n/a	No	No	n/a	No
		Deschutes River	Crane Prairie Reservoir	No	n/a	No	No	n/a	No
		Deschutes River	Wickiup Reservoir	No	n/a	No	No	n/a	No
		Tributary to Odell Creek	Odell Creek fen - Scotty Big Boy	No	n/a	No	No	n/a	No
			Davis Lake	No	n/a	No	No	n/a	No
		Deschutes River	Dilman Meadow	No	n/a	No	No	n/a	No
			Dead Slough	No	n/a	Yes	No	n/a	No
			La Pine SP SW oxbow	No	n/a	Yes	No	n/a	No
			Sunriver	Yes	High	Yes	No	n/a	No
			Slough Camp	Undetermined	Undetermined	Yes	No	n/a	No
			Old Mill Pond	Undetermined	Undetermined	Yes	No	n/a	No

Unit Descriptors				Emerging Diseases								Introduced Fish			
State or Province	**SubBasin**	**Occupied River Drainage**	**Population/ subpopulation/ site name(s)**	**Has the Amphibian Chytrid fungus been verified at the site?**	**Has the Amphibian Chytrid fungus been verified within the drainage?**	**Have Oregon Spotted Frogs infected with the trematode *Ribeiroia ondatrae* been found at the site?**	**Have Oregon Spotted Frogs infected with the trematode *Ribeiroia ondatrae* been found in the drainage?**	**Have Oomycete fungi, Saprolegnia spp., been found at the site?**	**Have Oomycete fungi, Saprolegnia spp., been found at the drainage?**	**Have Iridoviruses (Ranavirus) been found at the site?**	**Have Iridoviruses (Ranavirus) been found at the drainage?**	**Do introduced warm-water fish occur at this OSF site?**	**Do introduced warm-water fish occur within drainage?**	**Do introduced cold-water fish occur at this OSF site?**	**Do introduced cold-water fish occur within drainage?**
Oregon	Little Deschutes River	Big Marsh Creek	Big Marsh	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
		Crescent Creek	Crescent Creek Highway 58	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Black Rock lava pond	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Unknown	No	Unknown	Unknown
			Crescent Upper Oxbow	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Crescent Creek 62 RD	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Crescent Creek BLM oxbows	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
		Little Deschutes River	5830 Road dogleg	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Hwy 58 area sites (Upper oxbow, Mowich log pond)	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			100 road mill pond and oxbows	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			LDR 62 road oxbow, floodplain pool, gravel pit, beaver	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Middle Little Deschutes Complex 1	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Middle Little Deschutes Complex 2	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Leona Park	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Oxbows behind LaPine Highschool	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Rosland Park	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Riverside oxbow	Not tested	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Casey Tract	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Thousand Trails	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Unknown	Yes
			Crosswater (N. driving range pond, bullfrog pond, Fairway 2)	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Unknown	Yes
		Long Prairie Creek	Long Prairie marsh (lowest reach)	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Long Prairie upper BLM	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Mickle site	Not tested	Not tested	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
Oregon	Mckenzie River River	isolated	Penn Lake	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
			Unnamed Marsh	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
Oregon	Middle Fork Willamette	isolated	Gold Lake Bog	Yes	Yes	Not tested	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	No	No	Yes	Yes
Oregon	Upper Klamath	Spencer Creek	Buck Lake	Yes	Yes	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested	Yes-bullhead and fat head minnow	Yes	Yes (brook trout)	Yes
		Keene Creek	Parsnips Lakes	Yes	Yes	Unknown	Unknown	Yes	Yes	Unknown	Unknown	No	Yes - black bullhead (Anderson email)	No	No (Anderson pers. comm.)

Unit Descriptors				Introduced Amphibians					
State or Province	**SubBasin**	**Occupied River Drainage**	**Population/ subpopulation/ site name(s)**	**Do Bullfrogs occur at this OSF site?**	**Rank the current bullfrog threat. n/a- Bullfrogs do not occur at the site; Low - Bullfrogs are infrequently observed with no evidence of breeding (e.g. advertisement calls, egg masses, tadpoles, juv. alarm calls); Medium - Bullfrogs are observed but do not appear to be common; High - Bullfrogs are common and breeding is well established as is evident from advertisement calls, egg masses, tadpoles, and frequent alarm calls; IA - Inadequate data.**	**Do Bullfrogs occur within drainage?**	**Do Green Frogs occur at this OSF site?**	**Rank the current Green Frog threat. n/a - Green Frogs do not occur at the site; Low - Green Frogs are infrequently observed with no evidence of breeding (e.g. advertisement calls, egg masses, tadpoles, alarm calls); Medium - Green Frogs are observed but do not appear to be common; High - Green Frogs are common and breeding is well established as is evident from advertisement calls, egg masses, tadpoles, and frequent alarm calls; IA - Inadequate data.**	**Do Green Frogs occur within drainage?**
Oregon	Little Deschutes River	Big Marsh Creek	Big Marsh	No	n/a	No	No	n/a	No
		Crescent Creek	Crescent Creek Highway 58	No	n/a	No	No	n/a	No
			Black Rock lava pond	Undetermined	Inadequate Data	No	No	n/a	No
			Crescent Upper Oxbow	No	n/a	No	No	n/a	No
			Crescent Creek 62 RD	No	n/a	No	No	n/a	No
			Crescent Creek BLM oxbows	No	n/a	No	No	n/a	No
		Little Deschutes River	5830 Road dogleg	No	n/a	Yes	No	n/a	No
			Hwy 58 area sites (Upper oxbow, Mowich log pond)	No	n/a	Yes	No	n/a	No
			100 road mill pond and oxbows	No	n/a	Yes	No	n/a	No
			LDR 62 road oxbow, floodplain pool, gravel pit, beaver	No	n/a	Yes	No	n/a	No
			Middle Little Deschutes Complex 1	Undetermined	Inadequate Data	Yes	No	n/a	No
			Middle Little Deschutes Complex 2	Undetermined	Inadequate Data	Yes	No	n/a	No
			Leona Park	Undetermined	Inadequate Data	Yes	No	n/a	No
			Oxbows behind LaPine Highschool	Yes	Low	Yes	No	n/a	No
			Rosland Park	Yes	Medium	Yes	No	n/a	No
			Riverside oxbow	Undetermined	Inadequate Data	Undetermined	No	n/a	No
			Casey Tract	Yes	Low	Yes	No	n/a	No
			Thousand Trails	Yes	Medium	Yes	No	n/a	No
			Crosswater (N. driving range pond, bullfrog pond, Fairway 2)	Yes	Medium	Yes	No	n/a	No
		Long Prairie Creek	Long Prairie marsh (lowest reach)	Yes	Low	Yes	No	n/a	No
			Long Prairie upper BLM	Yes	Low	Yes	No	n/a	No
			Mickle site	Yes	Medium	Yes	No	n/a	No
Oregon	Mckenzie River River	isolated	Penn Lake	No	n/a	No	No	n/a	No
			Unnamed Marsh	No	n/a	No	No	n/a	No
Oregon	Middle Fork Willamette	isolated	Gold Lake Bog	No	n/a	No	No	n/a	No
Oregon	Upper Klamath	Spencer Creek	Buck Lake	No	n/a	Yes- in Topsy Reservoir at the mouth of Spencer Creek (RR pers com 6/20/2012)	Undetermined	Inadequate Data	Undetermined
		Keene Creek	Parsnips Lakes	No	n/a	Yes	Undetermined	Inadequate Data	Undetermined

Unit Descriptors				Emerging Diseases								Introduced Fish			
State or Province	**SubBasin**	**Occupied River Drainage**	**Population/ subpopulation/ site name(s)**	**Has the Amphibian Chytrid fungus been verified at the site?**	**Has the Amphibian Chytrid fungus been verified within the drainage?**	**Have Oregon Spotted Frogs infected with the trematode *Ribeiroia ondatrae* been found at the site?**	**Have Oregon Spotted Frogs infected with the trematode *Ribeiroia ondatrae* been found in the drainage?**	**Have Oomycete fungi, Saprolegnia spp., been found at the site?**	**Have Oomycete fungi, Saprolegnia spp., been found at the drainage?**	**Have Iridoviruses (Ranavirus) been found at the site?**	**Have Iridoviruses (Ranavirus) been found at the drainage?**	**Do introduced warm-water fish occur at this OSF site?**	**Do introduced warm-water fish occur within drainage?**	**Do introduced cold-water fish occur at this OSF site?**	**Do introduced cold-water fish occur within drainage?**
Oregon	Upper Klamath Lake	Sevenmile Creek	Sevenmile	Not tested	yes at Crane Creek	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	No	Yes - fathead minnow	Yes - brook trout	Yes
		Wood River	Wood River Wetland	Yes? Wood River has multiple unspecified animals with + Bd	Yes	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Yes-brown bullhead, pumpkinseed sunfish, yellow perch, fathead minnow	Yes	Not in the canal	Yes - brook trout and brown bullhead-in the river
			Wood River headwaters south to Loosely Road	Yes? Wood River has multiple unspecified animals with + Bd	Yes	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Yes, if wood river canal is considered part of drainage	Unknown	Yes-brook and brown trout-in the river
			Wood River Loosely Road to mouth	Yes? Wood River has multiple unspecified animals with + Bd	Yes	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Yes, if wood river canal is considered part of drainage	Unknown	Yes - brook trout and brown bullhead
		Fourmile Creek	Fourmile Creek	Not tested	unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Yes	Yes	Yes - brook trout and brown bullhead	Yes
		Crane Creek	Crane Creek	Yes	Yes	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	No	No	Yes	Yes - brook trout and brown bullhead
Oregon	Williamson River	Jack Creek	Jack Creek	Yes	Yes	Unknown	Unknown	Yes	Yes	Unknown	Unknown	No	No	No	No
		Williamson River	Upper Willliamson	Not tested?	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Yes - brown bullhead	Unknown	Yes - brook trout and brown bullhead
		Williamson River	Klamath Marsh	Not tested	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Yes - brown bullhead	Yes - brown bullhead and fathead minnow	Yes - brook trout and brown bullhead	Yes - brook trout and brown bullhead on the Refuge

Unit Descriptors				Introduced Amphibians					
State or Province	**SubBasin**	**Occupied River Drainage**	**Population/ subpopulation/ site name(s)**	**Do Bullfrogs occur at this OSF site?**	**Rank the current bullfrog threat. n/a- Bullfrogs do not occur at the site; Low - Bullfrogs are infrequently observed with no evidence of breeding (e.g. advertisement calls, egg masses, tadpoles, juv. alarm calls); Medium - Bullfrogs are observed but do not appear to be common; High - Bullfrogs are common and breeding is well established as is evident from advertisement calls, egg masses, tadpoles, and frequent alarm calls; IA - Inadequate data.**	**Do Bullfrogs occur within drainage?**	**Do Green Frogs occur at this OSF site?**	**Rank the current Green Frog threat. n/a - Green Frogs do not occur at the site; Low - Green Frogs are infrequently observed with no evidence of breeding (e.g. advertisement calls, egg masses, tadpoles, alarm calls); Medium - Green Frogs are observed but do not appear to be common; High - Green Frogs are common and breeding is well established as is evident from advertisement calls, egg masses, tadpoles, and frequent alarm calls; IA - Inadequate data.**	**Do Green Frogs occur within drainage?**
Oregon	Upper Klamath Lake	Sevenmile Creek	Sevenmile	not currently	n/a	Yes - in Crane Creek	Undetermined	Inadequate Data	Undetermined
		Wood River	Wood River Wetland	Yes	High - there is active control implemented by the BLM	Yes	Undetermined	Inadequate Data	Undetermined
			Wood River headwaters south to Loosely Road	Undetermined	Inadequate Data	Yes - Wood River canal - bullfrogs documented moving back and forth from the canal to the main channel	Undetermined	Inadequate Data	Undetermined
			Wood River Loosely Road to mouth	Undetermined	Inadequate Data	Yes - Wood River canal - bullfrogs documented moving back and forth from the canal to the main channel	Undetermined	Inadequate Data	Undetermined
		Fourmile Creek	Fourmile Creek	Not documented, but possible since documented nearby in Crane Creek	Inadequate Data	Yes - in the upper Klamath Refuge but a large distance from known OSF locations	Undetermined	Inadequate Data	Undetermined
		Crane Creek	Crane Creek	Yes-cohort of juveniles arrived in 2010-no signs of breeding	Inadequate Data	Yes	Undetermined	Inadequate Data	Undetermined
Oregon	Williamson River	Jack Creek	Jack Creek	No	n/a	No	No	n/a	Undetermined
		Williamson River	Upper Willliamson	Undetermined	Inadequate Data	Yes - they occur on the Refuge	No	n/a	Undetermined
		Williamson River	Klamath Marsh	Possibly-no surveys conducted since 1994	Inadequate Data	Yes - 22 bullfrogs removed, likely more populations present	No	n/a	No

UNIT DESCRIPTORS				Small Population Sizes					Isolation and fragmentation			Hybridization
									Dispersal Isolation between occupied sites within watershed	Genetic Isolation between occupied sites within watershed	Physical Barriers to dispersal between occupied sites within watershed	
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Number of unique breeding locations within drainage	Estimated number of breeding females at the site.	Estimated number of breeding females within drainage.	Is the estimated population size at the site less than 50 breeding females (=50 egg masses)?	Is the estimated population size in the drainage less than 50 breeding females (=50 egg masses)?	Is aquatic distance between any occupied sites in watershed > 5 km	Is aquatic distance between any occupied sites in watershed > 10 km	Are there any known physical barriers between occupied locations? (dams, dewatering, etc.)	Is there co-occurrence with Cascades frogs or red-legged frogs?
British Columbia	Lower Fraser River		Aldergrove	4 (however, breeding not detected at Aldergrove since 2006)	0 (2010)	< 250	Yes	No, but all four subpopulations are disconnected from each other	Yes	Yes	Inadequate data	Yes - red legged
British Columbia			Mountain Slough		52 (2010)		No		Yes	Yes	Inadequate data	Yes - red legged
British Columbia			Maria Slough		67 (2010)		No		Yes	Yes	Inadequate data	Yes - red legged
British Columbia			Morris Valley		39 (2010)		Yes		Yes	Yes	Inadequate data	Yes - red legged
Washington	Fraser River	Sumas River	Massey Rd	1	Not fully surveyed	Unknown	Unknown	Unknown	Yes	Yes - nearest known subpopulation is Mountain Slough in British Columbia	Yes - in British Columbia Sumas River is highly channelized	Yes - red legged
Washington	Nooksack	Black Slough	Black Slough	3	116 (2012)	116	No	No	No	No	No	Yes - red legged
Washington	Straits of Georgia	Upper and Middle Samish River	Samish River	7	610 (2012)	610	No	No	No	No	No	Yes - red legged
Washington	Upper Chehalis River	Dempsey Creek	Dempsey Creek	Multiple	178(2013)	1,665	No	No	All of Dempsey Creek is occupied to mouth of Black River. Along the Black River it is < 5km to Blooms Ditch	No, all sites are within < 10 km from another site.	No	Yes - red legged
		Salmon Creek	Salmon Creek	2	141 (2013)		No		The known breeding location is < 5km from Blooms Ditch			
		Blooms Ditch at 110th	Blooms Ditch at 110th	1	0 (2013)		Yes		Frogs have been observed at various locations alongs Blooms Ditch. From the confluence with Black River it is < 5km to Dempsey, Salmon, and the 123rd occupied sites			
		Black River at 123rd	Black River at 123rd	Multiple	589 (2013)		No		From this occupied site it is 5km to Blooms Ditch			
		Allen Creek	Allen Creek	Multiple	435 (2013)		No		Frogs in Allen Creek may be using either Allen Creek or Blooms Ditch (may be hydrologically connected during winter flooding). However, along Allen Creek it is > 5 km to any other occupied area.			

Highlighted Fields Represent Changes from Proposed Listing Threats Matrix

UNIT DESCRIPTORS				Climate change					
				Seasonal water inputs	Seasonal water inputs	Seasonal water inputs/seasonal precipitation cycle	Seasonal water inputs/seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Would a major decrease or loss in the seasonal snow pack impact the hydrology at this site?**	**Would a change from a snow-dominated regime to a rain-dominated regime impact this site?**	**Would changes to the snow pack and/or an extended summer dry season be expected to cause lentic habitats at the site that are currently perennial to dry seasonally?**	**Would changes to the snow pack and/or an extended summer dry season be expected to cause lotic habitats at the site that are currently perennial to dry seasonally?**	**Assuming a wetter autumn and winter, would there still be shallow, sun-exposed, seasonal wetlands available during the breeding season at this site?**	**Assuming an extended summer dry period, would suitable waters persist in areas occupied by tadpoles long enough for them to complete metamorphosis?**
British Columbia	Lower Fraser River		Aldergrove	no	n/a	yes	inadequate data	no	no
British Columbia			Mountain Slough	Yes	yes	inadequate data	inadequate data	inadequate data	no
British Columbia			Maria Slough	Yes	yes	inadequate data	inadequate data	no	no
British Columbia			Morris Valley	Yes	yes	inadequate data	inadequate data	no	inadequate data
Washington	Fraser River	Sumas River	Massey Rd	np	n/a	inadequate data	inadequate data	inadequate data	inadequate data
Washington	Nooksack	Black Slough	Black Slough	no	n/a	inadequate data	inadequate data	inadequate data	inadequate data
Washington	Straits of Georgia	Upper and Middle Samish River	Samish River	no	n/a	inadequate data	inadequate data	no	inadequate data
Washington	Upper Chehalis River	Dempsey Creek	Dempsey Creek	no	n/a	yes	inadequate data	no	inadequate data
		Salmon Creek	Salmon Creek		n/a	inadequate data	inadequate data	inadequate data	inadequate data
		Blooms Ditch at 110th	Blooms Ditch at 110th		n/a	yes	inadequate data	inadequate data	inadequate data
		Black River at 123rd	Black River at 123rd		n/a	inadequate data	inadequate data	most likely, but probably not in current oviposition locations	inadequate data
		Allen Creek	Allen Creek		n/a	yes	yes	inadequate data	inadequate data

UNIT DESCRIPTORS				Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Could an extended summer dry period enhance conditions at the site for expansion of reed canarygrass ?**	**Could an extended summer dry period enhance conditions at the site for expansion of shrub wetland (e.g. willow, hardhack)?**	**Could an extended summer dry period enhance conditions at the site for expansion of deciduous trees such as alder, aspen and/or willow?**	**Could an extended summer dry period enhance conditions at the site for expansion of lodgepole pine (i.e. increase fire frequency and/or suitable soil moisture)?**
British Columbia	Lower Fraser River		Aldergrove	yes	yes	yes	no
British Columbia			Mountain Slough	yes	yes	yes	no
British Columbia			Maria Slough	yes	yes	yes	no
British Columbia			Morris Valley	yes	yes	yes	no
Washington	Fraser River	Sumas River	Massey Rd	inadequate data	inadequate data	inadequate data	n/a
Washington	Nooksack	Black Slough	Black Slough	inadequate data	inadequate data	inadequate data	n/a
Washington	Straits of Georgia	Upper and Middle Samish River	Samish River	inadequate data	inadequate data	inadequate data	n/a
Washington	Upper Chehalis River	Dempsey Creek	Dempsey Creek	yes	yes	no	n/a
		Salmon Creek	Salmon Creek	inadequate data	inadequate data	no	n/a
		Blooms Ditch at 110th	Blooms Ditch at 110th	inadequate data	inadequate data	inadequate data	n/a
		Black River at 123rd	Black River at 123rd	inadequate data	most likely yes	inadequate data	n/a
		Allen Creek	Allen Creek	inadequate data	inadequate data	inadequate data	n/a

UNIT DESCRIPTORS				Small Population Sizes					Isolation and fragmentation			Hybridization
									Dispersal Isolation between occupied sites within watershed	Genetic Isolation between occupied sites within watershed	Physical Barriers to dispersal between occupied sites within watershed	
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Number of unique breeding locations within drainage	Estimated number of breeding females at the site.	Estimated number of breeding females within drainage.	Is the estimated population size at the site less than 50 breeding females (=50 egg masses)?	Is the estimated population size in the drainage less than 50 breeding females (=50 egg masses)?	Is aquatic distance between any occupied sites in watershed > 5 km	Is aquatic distance between any occupied sites in watershed > 10 km	Are there any known physical barriers between occupied locations? (dams, dewatering, etc.)	Is there co-occurrence with Cascades frogs or red-legged frogs?
		Beaver Creek	Beaver Creek	Multiple	281 (2013)		Yes		Beaver Creek occupied area is > 5 km from any other known occupied area			
		Mima Creek	Mima Creek	2	16 (2013)		Yes		Mima Creek is > 5 km from the nearest known locations along the mainstem Black River (123rd) and from those in Allen Creek		No	Yes-red legged
		Fish Pond Creek	Fish Pond Creek	1	25 (2013)		Yes		Fish Pond Creek is hyrdrologically disconnected from breeding locations along the Black River		Yes	Yes - red legged
Washington	Middle Columbia-Hood River	Trout Lake Creek	Trout Lake	Multiple	1062 (2012)	1062	No	No	All breeding locations within drainage are aquatically connected. OSF in this drainage are not aquatically connected to any other drainages	No, all sites are within < 10 km from another site.	No	Yes - Cascades
Washington	Klickitat River	Outlet Creek	Conboy Lake	Multiple	1357 (2013)	1,357	No	No	During summer and winter frogs are restricted to the canal and possibly Conboy Lake (when it has water)	No	Frogs are restricted to canal (Bird Creek) during late summer/fall/winter. There are water management structures throughout refuge, but these are used to benefit OSF.	Yes - limited overlap with red legged
Oregon	Lower Deschutes sub-basin	Camas Creek	Camas Prairie	1	84 (2011)	84	No	No	Population of OSF at Camas Prairie have no hydrologic connection to populations in other watersheds. It is isolated.		No	Yes - Cascades

UNIT DESCRIPTORS				Climate change					
				Seasonal water inputs	Seasonal water inputs	Seasonal water inputs/seasonal precipitation cycle	Seasonal water inputs/seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Would a major decrease or loss in the seasonal snow pack impact the hydrology at this site?	Would a change from a snow-dominated regime to a rain-dominated regime impact this site?	Would changes to the snow pack and/or an extended summer dry season be expected to cause lentic habitats at the site that are currently perennial to dry seasonally?	Would changes to the snow pack and/or an extended summer dry season be expected to cause lotic habitats at the site that are currently perennial to dry seasonally?	Assuming a wetter autumn and winter, would there still be shallow, sun-exposed, seasonal wetlands available during the breeding season at this site?	Assuming an extended summer dry period, would suitable waters persist in areas occupied by tadpoles long enough for them to complete metamorphosis?
		Beaver Creek	Beaver Creek		n/a	yes	inadequate data	no	inadequate data
		Mima Creek	Mima Creek	No	n/a	yes	inadequate data	inadequate data	inadequate data
		Fish Pond Creek	Fish Pond Creek	no	no	yes	yes	inadequate data	inadequate data
Washington	Middle Columbia-Hood River	Trout Lake Creek	Trout Lake	Yes	yes	yes	inadequate data	no	inadequate data
Washington	Klickitat River	Outlet Creek	Conboy Lake	Yes	yes	yes	inadequate data	no	inadequate data
Oregon	Lower Deschutes sub-basin	Camas Creek	Camas Prairie	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data

UNIT DESCRIPTORS				Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Could an extended summer dry period enhance conditions at the site for expansion of reed canarygrass ?**	**Could an extended summer dry period enhance conditions at the site for expansion of shrub wetland (e.g. willow, hardhack)?**	**Could an extended summer dry period enhance conditions at the site for expansion of deciduous trees such as alder, aspen and/or willow?**	**Could an extended summer dry period enhance conditions at the site for expansion of lodgepole pine (i.e. increase fire frequency and/or suitable soil moisture)?**
		Beaver Creek	Beaver Creek	yes	yes	no	n/a
		Mima Creek	Mima Creek	yes	yes	yes	n/a
		Fish Pond Creek	Fish Pond Creek	yes	yes	yes	n/a
Washington	Middle Columbia-Hood River	Trout Lake Creek	Trout Lake	yes	yes	inadequate data	n/a
Washington	Klickitat River	Outlet Creek	Conboy Lake	yes	yes	no	yes
Oregon	Lower Deschutes sub-basin	Camas Creek	Camas Prairie	Inadequate data	Inadequate data	Inadequate data	Yes

UNIT DESCRIPTORS				Small Population Sizes					Isolation and fragmentation			Hybridization
									Dispersal Isolation between occupied sites within watershed	Genetic Isolation between occupied sites within watershed	Physical Barriers to dispersal between occupied sites within watershed	
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Number of unique breeding locations within drainage	Estimated number of breeding females at the site.	Estimated number of breeding females within drainage.	Is the estimated population size at the site less than 50 breeding females (=50 egg masses)?	Is the estimated population size in the drainage less than 50 breeding females (=50 egg masses)?	Is aquatic distance between any occupied sites in watershed > 5 km	Is aquatic distance between any occupied sites in watershed > 10 km	Are there any known physical barriers between occupied locations? (dams, dewatering, etc.)	Is there co-occurrence with Cascades frogs or red-legged frogs?
		Isolated	Hosmer Lake	1	129 (2006)	129	No	No	OSF population at Hosmer Lake have no hydrologic connection to others in the drainage.		Hosmer Lake is hydrologically isolated from known sites within the watershed (e.g., Lava and Little Lava Lakes)	
		Isolated	Lava Lake	1	99 (2006)_	99	No	No	OSF population at Lava Lake have no hydrologic connection to others in the drainage.		Lava Lake is hydrologically isolated from other known sites within the watershed (e.g. Hosmer and Little Lava Lake).	No
		Deschutes River	Little Lava Lake	3	22 (2006)	232	No	No	Little Lava Lake and Upper and Lower Blue Pools are within 5 km distance.	Little Lava Lake and Blue Pools are within 10 km of adult OSF locations at the outlet of the Deschutes River into Crane Prairie Reservoir.	No	No
			Upper and Lower Blue Pool		210 (2006)		No	No				No
		Cultus Creek	Winopee Lake	2	330 (2006)	336	No	No	Frogs in Winopee and Muskrat Lakes are aquatically connected within 5km. However, they are separated by more than 10 km with known sites at Crane Prairie Reservoir, where limited surveys have been conducted.		Open water habitat within Cultus Lake may serve as a barrier between frogs at Muskrat Lake and Crane Prairie Reservoir.	No
			Muskrat lake		31 (2006)		Yes					No
		Deer Creek	Little Cultus Lake	1	36 (2006)	36	Yes	Yes	Yes	Little Cultus Lake site is aquatically connected within 10 km to the ODFW gold fish pond breeding site adjacent to Crane Prairie Reservoir. However there is a long distance of open water within the reservoir between these sites.	Crane Prairie Reservoir may be a barrier to connectivity due to the large expanse of open water between sites.	

UNIT DESCRIPTORS				Climate change					
				Seasonal water inputs	Seasonal water inputs	Seasonal water inputs/seasonal precipitation cycle	Seasonal water inputs/seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Would a major decrease or loss in the seasonal snow pack impact the hydrology at this site?	Would a change from a snow-dominated regime to a rain-dominated regime impact this site?	Would changes to the snow pack and/or an extended summer dry season be expected to cause lentic habitats at the site that are currently perennial to dry seasonally?	Would changes to the snow pack and/or an extended summer dry season be expected to cause lotic habitats at the site that are currently perennial to dry seasonally?	Assuming a wetter autumn and winter, would there still be shallow, sun-exposed, seasonal wetlands available during the breeding season at this site?	Assuming an extended summer dry period, would suitable waters persist in areas occupied by tadpoles long enough for them to complete metamorphosis?
		Isolated	Hosmer Lake	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Isolated	Lava Lake	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Deschutes River	Little Lava Lake	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Upper and Lower Blue Pool	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Cultus Creek	Winopee Lake	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Muskrat lake	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Deer Creek	Little Cultus Lake	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data

UNIT DESCRIPTORS				Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Could an extended summer dry period enhance conditions at the site for expansion of reed canarygrass ?	Could an extended summer dry period enhance conditions at the site for expansion of shrub wetland (e.g. willow, hardhack)?	Could an extended summer dry period enhance conditions at the site for expansion of deciduous trees such as alder, aspen and/or willow?	Could an extended summer dry period enhance conditions at the site for expansion of lodgepole pine (i.e. increase fire frequency and/or suitable soil moisture)?
		Isolated	Hosmer Lake	Inadequate data	Inadequate data	Inadequate data	Yes
		Isolated	Lava Lake	Inadequate data	Inadequate data	Inadequate data	Yes
		Deschutes River	Little Lava Lake	Yes	Inadequate data	Inadequate data	Yes
			Upper and Lower Blue Pool	Yes	Inadequate data	Inadequate data	Yes
		Cultus Creek	Winopee Lake	Inadequate data	Inadequate data	Inadequate data	Yes
			Muskrat lake	Inadequate data	Inadequate data	Inadequate data	Yes
		Deer Creek	Little Cultus Lake	Inadequate data	Inadequate data	Inadequate data	Yes

UNIT DESCRIPTORS				Small Population Sizes					Isolation and fragmentation			Hybridization
									Dispersal Isolation between occupied sites within watershed	Genetic Isolation between occupied sites within watershed	Physical Barriers to dispersal between occupied sites within watershed	
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Number of unique breeding locations within drainage**	**Estimated number of breeding females at the site.**	**Estimated number of breeding females within drainage.**	**Is the estimated population size at the site less than 50 breeding females (=50 egg masses)?**	**Is the estimated population size in the drainage less than 50 breeding females (=50 egg masses)?**	**Is aquatic distance between any occupied sites in watershed > 5 km**	**Is aquatic distance between any occupied sites in watershed > 10 km**	**Are there any known physical barriers between occupied locations? (dams, dewatering, etc.)**	**Is there co-occurrence with Cascades frogs or red-legged frogs?**
Oregon	Upper Deschutes River	Deschutes River	Crane Prairie Reservoir (ODFW Gold fish pond-discovered 2012)	Unknown	40 (2012)	Unknown	Unknown	Unknown		This site has aquatic connection to Little Cultus Lake breeding site and adults sites at out of Deschutes River into Crane Prairie Reservoir. However, Movement within the vicinity of the reservoir and is unknown.		No
			Crane Prairie Reservoir		Unknown	Unknown	Unknown	Unknown	Undetermined	Undetermined	Undetermined	No
			Wickiup Reservoir	Unknown	Unknown	Unknown	Unknown	Unknown	Undetermined	Undetermined	Undetermined	No
		Odell Creek/Davis Lake	Odell Creek fen - Scotty Big Boy	1	68 (2012)	68	No	No	Odell Creek fen site is only known breeding site within the Odell Creek/Davis Lake isolated watershed and within 10km of historic breeding sites at Davis Lake. Frogs have not been detected at Davis Lake since 2000.			Yes - Cascades
			Davis Lake	2 historic (Ranger and Odell Creeks)	7 egg masses at mouth of Odell Creek last seen in 2000.	OSF breeding sites at Davis Lake are no longer active						Yes - Cascades
		Unnamed tributary to Deschutes River	Dilman Meadow	1	63 (2012)	800 (based on 2012 surveys and not including Old Mill Pond or 2013 sites))	No	No	Frogs at Dilman Meadow are greater than 10 km aquatic distance from those at Sunriver.	Sunriver is within 10km aquatic distance from Slough Camp. Slough Camp is located downstream of Benham Falls. Therefore, upstream movement from Slough Camp is likely restricted. The new Old Mill Pond site is great than 10km aquatic distance from Slough Camp.	These sites are isolated from those above Wickiup Reservoir. The reservoir and associated dam are likely a barrier to upstream and possibly downstream movement. Additionally, the seasonally manipulated flows out of the reservoir likely affect connectivity of frog populations along the mainstem Deschutes River.	No
		Deschutes River	Dead Slough	5	**19 (2013)**		Yes	No				
			La Pine SP SW oxbow		**2 (2013)**		Yes					
			Sunriver		727 (2012)		No		Sunriver is within 5km of breeding sites on the lower Little Deschutes River (i.e., Crosswater).			No
			Slough Camp		10 (2012)		Yes		Slough Camp is greater than 5km downstream of Sunriver and greater then 5km upstream of Old Mill.			No
			Old Mill Pond (new site as of August 2012)		Unknown		No		Old Mill is greater than 5km downstream of Slough Camp.			No

Highlighted Fields Represent Changes from Proposed Listing Threats Matrix

UNIT DESCRIPTORS				Climate change					
				Seasonal water inputs	Seasonal water inputs	Seasonal water inputs/seasonal precipitation cycle	Seasonal water inputs/seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Would a major decrease or loss in the seasonal snow pack impact the hydrology at this site?**	**Would a change from a snow-dominated regime to a rain-dominated regime impact this site?**	**Would changes to the snow pack and/or an extended summer dry season be expected to cause lentic habitats at the site that are currently perennial to dry seasonally?**	**Would changes to the snow pack and/or an extended summer dry season be expected to cause lotic habitats at the site that are currently perennial to dry seasonally?**	**Assuming a wetter autumn and winter, would there still be shallow, sun-exposed, seasonal wetlands available during the breeding season at this site?**	**Assuming an extended summer dry period, would suitable waters persist in areas occupied by tadpoles long enough for them to complete metamorphosis?**
Oregon	Upper Deschutes River	Deschutes River	Crane Prairie Reservoir (ODFW Gold fish pond-discovered 2012)	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Crane Prairie Reservoir	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Wickiup Reservoir	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Odell Creek/Davis Lake	Odell Creek fen - Scotty Big Boy	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Davis Lake	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Unnamed tributary to Deschutes River	Dilman Meadow	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Deschutes River	Dead Slough						
			La Pine SP SW oxbow						
			Sunriver	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Slough Camp	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Old Mill Pond (new site as of August 2012)	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data

UNIT DESCRIPTORS				Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Could an extended summer dry period enhance conditions at the site for expansion of reed canarygrass ?**	**Could an extended summer dry period enhance conditions at the site for expansion of shrub wetland (e.g. willow, hardhack)?**	**Could an extended summer dry period enhance conditions at the site for expansion of deciduous trees such as alder, aspen and/or willow?**	**Could an extended summer dry period enhance conditions at the site for expansion of lodgepole pine (i.e. increase fire frequency and/or suitable soil moisture)?**
Oregon	Upper Deschutes River	Deschutes River	Crane Prairie Reservoir (ODFW Gold fish pond-discovered 2012)	Inadequate data	Inadequate data	Inadequate data	Yes
			Crane Prairie Reservoir	Inadequate data	Inadequate data	Inadequate data	Yes
			Wickiup Reservoir	Inadequate data	Inadequate data	Inadequate data	Yes
		Odell Creek/Davis Lake	Odell Creek fen - Scotty Big Boy	Inadequate data	Inadequate data	Inadequate data	Yes
			Davis Lake	Inadequate data	Inadequate data	Inadequate data	Yes
		Unnamed tributary to Deschutes River	Dilman Meadow	Inadequate data	Inadequate data	Inadequate data	Yes
		Deschutes River	Dead Slough				
			La Pine SP SW oxbow				
			Sunriver	Inadequate data	Inadequate data	Inadequate data	Yes
			Slough Camp	Inadequate data	Inadequate data	Inadequate data	No
			Old Mill Pond (new site as of August 2012)	Inadequate data	Inadequate data	Inadequate data	No

UNIT DESCRIPTORS				Small Population Sizes					Isolation and fragmentation			Hybridization
									Dispersal Isolation between occupied sites within watershed	Genetic Isolation between occupied sites within watershed	Physical Barriers to dispersal between occupied sites within watershed	
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Number of unique breeding locations within drainage	Estimated number of breeding females at the site.	Estimated number of breeding females within drainage.	Is the estimated population size at the site less than 50 breeding females (=50 egg masses)?	Is the estimated population size in the drainage less than 50 breeding females (=50 egg masses)?	Is aquatic distance between any occupied sites in watershed > 5 km	Is aquatic distance between any occupied sites in watershed > 10 km	Are there any known physical barriers between occupied locations? (dams, dewatering, etc.)	Is there co-occurrence with Cascades frogs or red-legged frogs?
Oregon	Little Deschutes sub-basin	Big Marsh Creek	Big Marsh	Multiple breeding locations throughout marsh	2,662 (2012)	2,662	No	No	Most sites along mainstem Little Deschutes River are within 5km of each other. However, there is one location along the Little Deschutes River where a distance between sites is greater than 10km. There is a deficiency of surveys for OSF in this area (upstream of 100 RD).		There are no known barriers to movement between Big Marsh, Crescent Creek and the Little Deschutes River.	Yes - Cascades
		Crescent Creek	Crescent Creek Highway 58	Multiple breeding locations at 5 locations along Crescent Creek	24 (2012)	minimum of 178	Yes					No
			Black Rock lava pond		36 (2012)		Yes					No
			Crescent Upper Oxbow		35 (2012)		Yes					No
			Crescent Creek 62 RD		62 (2012)		No					No
			Crescent Creek BLM oxbows		21 (2006)		Yes					No
		Little Deschutes River	5830 Road dogleg	multiple breeding locations at 13 currently known locations along river system	2 (2012)	minimum of 471	Yes	No				No
			Hwy 58 area sites (Upper oxbow, Mowich log pond)		1 (2012)		Yes					No
			100 road mill pond and oxbows		27 (2012)		Yes					No
			LDR 62 road oxbow, floodplain pool, gravel pit, beaver		164 (2012)		No					No
			Middle Little Deschutes Complex 1		8 (2012)		Yes					No
			Middle Little Deschutes Complex 2		15 (2012)		Yes					No
			Leona Park		88 (2012)		No					No
			Oxbows behind LaPine Highschool		5 (2009)		Yes					No
			Rosland Park		15 (2012)		Yes					No
			Riverside oxbow		10 (2012)		Yes					No
			Casey Tract		23 (2012)		Yes					No
			Thousand Trails		10 (2012)		Yes					No
			Crosswater (N. driving range pond, bullfrog pond, Fairway 2)		101 (2012)		No					No
		Long Prairie Creek	Long Prairie marsh (lowest reach)	3	1 (2006)	Unknown	Yes	Unknown	Few surveyed sites within the Long Prairie drainage are within 10 km distance. Lowest reach of Long Prairie is within 5 km of sites on the Little Deschutes River.		Connectivity of sites on Long Prairie are likely affected by changes in hydrologic flows for irrigation. Lowest reach of Long Prairie is connected with populations on the Little Deschutes River.	No
			Long Prairie upper BLM		Adults - no recent breeding		Insufficient Data					No
			Mickle site		2 (2012)		Yes					No

Highlighted Fields Represent Changes from Proposed Listing Threats Matrix

UNIT DESCRIPTORS				Climate change					
				Seasonal water inputs	Seasonal water inputs	Seasonal water inputs/seasonal precipitation cycle	Seasonal water inputs/seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Would a major decrease or loss in the seasonal snow pack impact the hydrology at this site?**	**Would a change from a snow-dominated regime to a rain-dominated regime impact this site?**	**Would changes to the snow pack and/or an extended summer dry season be expected to cause lentic habitats at the site that are currently perennial to dry seasonally?**	**Would changes to the snow pack and/or an extended summer dry season be expected to cause lotic habitats at the site that are currently perennial to dry seasonally?**	**Assuming a wetter autumn and winter, would there still be shallow, sun-exposed, seasonal wetlands available during the breeding season at this site?**	**Assuming an extended summer dry period, would suitable waters persist in areas occupied by tadpoles long enough for them to complete metamorphosis?**
Oregon	Little Deschutes sub-basin	Big Marsh Creek	Big Marsh	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Crescent Creek	Crescent Creek Highway 58	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Black Rock lava pond	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Crescent Upper Oxbow	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Crescent Creek 62 RD	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Crescent Creek BLM oxbows	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Little Deschutes River	5830 Road dogleg	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Hwy 58 area sites (Upper oxbow, Mowich log pond)	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			100 road mill pond and oxbows	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			LDR 62 road oxbow, floodplain pool, gravel pit, beaver	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Middle Little Deschutes Complex 1	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Middle Little Deschutes Complex 2	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Leona Park	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Oxbows behind LaPine Highschool	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Rosland Park	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Riverside oxbow	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Casey Tract	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Thousand Trails	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Crosswater (N. driving range pond, bullfrog pond, Fairway 2)	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Long Prairie Creek	Long Prairie marsh (lowest reach)	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Long Prairie upper BLM	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Mickle site	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data

UNIT DESCRIPTORS				Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Could an extended summer dry period enhance conditions at the site for expansion of reed canarygrass ?**	**Could an extended summer dry period enhance conditions at the site for expansion of shrub wetland (e.g. willow, hardhack)?**	**Could an extended summer dry period enhance conditions at the site for expansion of deciduous trees such as alder, aspen and/or willow?**	**Could an extended summer dry period enhance conditions at the site for expansion of lodgepole pine (i.e. increase fire frequency and/or suitable soil moisture)?**
Oregon	Little Deschutes sub-basin	Big Marsh Creek	Big Marsh	Yes	Inadequate data	Inadequate data	Yes
		Crescent Creek	Crescent Creek Highway 58	Inadequate data	Inadequate data	Inadequate data	Yes
			Black Rock lava pond	Inadequate data	Inadequate data	Inadequate data	Yes
			Crescent Upper Oxbow	Inadequate data	Inadequate data	Inadequate data	Yes
			Crescent Creek 62 RD	Inadequate data	Inadequate data	Inadequate data	Yes
			Crescent Creek BLM oxbows	Inadequate data	Inadequate data	Inadequate data	Yes
		Little Deschutes River	5830 Road dogleg	Inadequate data	Inadequate data	Inadequate data	Yes
			Hwy 58 area sites (Upper oxbow, Mowich log pond)	Inadequate data	Inadequate data	Inadequate data	Yes
			100 road mill pond and oxbows	Inadequate data	Inadequate data	Inadequate data	Yes
			LDR 62 road oxbow, floodplain pool, gravel pit, beaver	Inadequate data	Inadequate data	Inadequate data	Yes
			Middle Little Deschutes Complex 1	Inadequate data	Inadequate data	Inadequate data	Yes
			Middle Little Deschutes Complex 2	Inadequate data	Inadequate data	Inadequate data	Yes
			Leona Park	Inadequate data	Inadequate data	Inadequate data	Yes
			Oxbows behind LaPine Highschool	Inadequate data	Inadequate data	Inadequate data	Yes
			Rosland Park	Inadequate data	Inadequate data	Inadequate data	Yes
			Riverside oxbow	Inadequate data	Inadequate data	Inadequate data	Yes
			Casey Tract	Yes	Inadequate data	Inadequate data	Yes
			Thousand Trails	Inadequate data	Inadequate data	Inadequate data	Yes
			Crosswater (N. driving range pond, bullfrog pond, Fairway 2)	Inadequate data	Inadequate data	Inadequate data	Yes
		Long Prairie Creek	Long Prairie marsh (lowest reach)	Inadequate data	Inadequate data	Inadequate data	Yes
			Long Prairie upper BLM	Inadequate data	Inadequate data	Inadequate data	Yes
			Mickle site	Inadequate data	Inadequate data	Inadequate data	Yes

UNIT DESCRIPTORS				Small Population Sizes					Isolation and fragmentation			Hybridization
									Dispersal Isolation between occupied sites within watershed	Genetic Isolation between occupied sites within watershed	Physical Barriers to dispersal between occupied sites within watershed	
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Number of unique breeding locations within drainage	Estimated number of breeding females at the site.	Estimated number of breeding females within drainage.	Is the estimated population size at the site less than 50 breeding females (=50 egg masses)?	Is the estimated population size in the drainage less than 50 breeding females (=50 egg masses)?	Is aquatic distance between any occupied sites in watershed > 5 km	Is aquatic distance between any occupied sites in watershed > 10 km	Are there any known physical barriers between occupied locations? (dams, dewatering, etc.)	Is there co-occurrence with Cascades frogs or red-legged frogs?
Oregon	Mckenzie River sub-basin	isolated	Penn Lake	1	127 (2006)	127	No	No	These two populations are hydrologically disconnected from one another but are in close proximity.		Two populations appear to be isolated. However, numerous wetlands in this area may facilitate connectivity.	Yes - Cascades
		isolated	Unnamed Marsh	1	60 (2006)	60	No	No				Yes - Cascades
Oregon	Middle Fork Willamette sub-basin	Salt Creek	Gold Lake Bog	1	729 (2007)	729	No	No	Population of OSF at Gold Lake have no hydrologic connection to populations in other watersheds. It is isolated.		n/a. This is the single known site. No connection to other populations.	No
Oregon	Upper Klamath	Spencer Creek	Buck Lake	Multiple	11 (min. pop. est.)	11	Yes	Yes	Yes	Yes	Yes	No, but maybe Cascades frogs in the Mt Lakes Wilderness area
		Keene Creek	Parsnip Lakes	Multiple	14 (min. pop. est.)	14	Yes	Yes	Yes	Yes	Unknown	Unknown
Oregon	Upper Klamath Lake	Sevenmile Creek	Sevenmile	Multiple	30 (min. pop. est.)	30	Yes	Yes	Yes	Yes to crane creek and beyond	Dewatering below the diversion will dry up the creek system	Yes (AM 6/20/2012 pers comm and SMP)
		Wood River	Wood River Wetland	Multiple	69 (min. pop. est.)	136	No	No	No	No to wood river yes to fourmile and inhospitable	There are a couple of weirs on the mainstem of the wood river which would eliminate tadpole movement but not adults	No -none seen or found on the east side of the valley
			Wood River headwaters south to Loosely Road (2 surveys)	Multiple	64 (min. pop. est.)	136	No	No	No	No to wood river yes to fourmile and inhospitable	Unknown	Unknown
			Wood River Loosely Road to mouth (1 survey)	Multiple	3 (min. pop. est.)	136	No	No	No	No to wood river yes to fourmile and inhospitable	Unknown	Unknown
		Fourmile Creek	Fourmile Creek (2010)	Multiple	5 (min. pop. est.)	5	Yes	Yes	No-but inhospitable habitat	No to Crane Creek (inhospitable); Yes to Sevenmile and Wood River	None on Fourmile Creek; Fourmile Canal inhospitable	Yes - cascade frogs have been found just south of Fourmile Spring (RR 6/20/2012 pers comm)
		Crane Creek	Crane Creek	Multiple	16 (min. pop. est.)	16	Yes	Yes	yes-sevenmile; no fourmile inhospitable	Yes to Sevenmile; No to Fourmile, but is inhospitable	Unknown	Unknown

Highlighted Fields Represent Changes from Proposed Listing Threats Matrix

UNIT DESCRIPTORS				Climate change					
				Seasonal water inputs	Seasonal water inputs	Seasonal water inputs/seasonal precipitation cycle	Seasonal water inputs/seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Would a major decrease or loss in the seasonal snow pack impact the hydrology at this site?	Would a change from a snow-dominated regime to a rain-dominated regime impact this site?	Would changes to the snow pack and/or an extended summer dry season be expected to cause lentic habitats at the site that are currently perennial to dry seasonally?	Would changes to the snow pack and/or an extended summer dry season be expected to cause lotic habitats at the site that are currently perennial to dry seasonally?	Assuming a wetter autumn and winter, would there still be shallow, sun-exposed, seasonal wetlands available during the breeding season at this site?	Assuming an extended summer dry period, would suitable waters persist in areas occupied by tadpoles long enough for them to complete metamorphosis?
Oregon	Mckenzie River sub-basin	isolated	Penn Lake	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		isolated	Unnamed Marsh	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
Oregon	Middle Fork Willamette sub-basin	Salt Creek	Gold Lake Bog	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
Oregon	Upper Klamath	Spencer Creek	Buck Lake	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Keene Creek	Parsnip Lakes	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
Oregon	Upper Klamath Lake	Sevenmile Creek	Sevenmile	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Wood River	Wood River Wetland	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Wood River headwaters south to Loosely Road (2 surveys)	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Wood River Loosely Road to mouth (1 survey)	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Fourmile Creek	Fourmile Creek (2010)	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Crane Creek	Crane Creek	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data

UNIT DESCRIPTORS				Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Could an extended summer dry period enhance conditions at the site for expansion of reed canarygrass ?**	**Could an extended summer dry period enhance conditions at the site for expansion of shrub wetland (e.g. willow, hardhack)?**	**Could an extended summer dry period enhance conditions at the site for expansion of deciduous trees such as alder, aspen and/or willow?**	**Could an extended summer dry period enhance conditions at the site for expansion of lodgepole pine (i.e. increase fire frequency and/or suitable soil moisture)?**
Oregon	Mckenzie River sub-basin	isolated	Penn Lake	Inadequate data	Inadequate data	Inadequate data	Yes
		isolated	Unnamed Marsh	Inadequate data	Inadequate data	Inadequate data	Yes
Oregon	Middle Fork Willamette sub-basin	Salt Creek	Gold Lake Bog	Inadequate data	Inadequate data	Inadequate data	Yes
Oregon	Upper Klamath	Spencer Creek	Buck Lake	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Keene Creek	Parsnip Lakes	Inadequate data	Inadequate data	Inadequate data	Inadequate data
Oregon	Upper Klamath Lake	Sevenmile Creek	Sevenmile	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Wood River	Wood River Wetland	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Wood River headwaters south to Loosely Road (2 surveys)	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Wood River Loosely Road to mouth (1 survey)	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Fourmile Creek	Fourmile Creek (2010)	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Crane Creek	Crane Creek	Inadequate data	Inadequate data	Inadequate data	Inadequate data

UNIT DESCRIPTORS				Small Population Sizes					Isolation and fragmentation			Hybridization
									Dispersal Isolation between occupied sites within watershed	Genetic Isolation between occupied sites within watershed	Physical Barriers to dispersal between occupied sites within watershed	
State or Province	SubBasin	Occupied river drainage	Population/ subpopulation/ site name(s)	Number of unique breeding locations within drainage	Estimated number of breeding females at the site.	Estimated number of breeding females within drainage.	Is the estimated population size at the site less than 50 breeding females (=50 egg masses)?	Is the estimated population size in the drainage less than 50 breeding females (=50 egg masses)?	Is aquatic distance between any occupied sites in watershed > 5 km	Is aquatic distance between any occupied sites in watershed > 10 km	Are there any known physical barriers between occupied locations? (dams, dewatering, etc.)	Is there co-occurrence with Cascades frogs or red-legged frogs?
Oregon	Williamson River	Williamson River	Upper Williamson River (2011 poor survey conditions)	Multiple	2 (min. pop. est.)	171	Yes	No	Yes	Yes - Klamath Marsh	Only has hydrologic connectivity to Jack Creek during high water years-20 miles of drainage; unknown to the marsh	No
			Klamath Marsh	Multiple	169 (min. pop. est.)	171	No	No	Yes	Yes - Williamson river	Dry ground	Unknown
		Jack Creek	Jack Creek	2	17 (min. pop. est.)	17	Yes	Yes	Yes	Yes-very little overland water movt	Yes - overground hydrologic connectivity exists sporadically during high water spring run-off (AM 6/20/2012 pers com)	No (AM 6/20/2012 pers com)

UNIT DESCRIPTORS				Climate change					
				Seasonal water inputs	Seasonal water inputs	Seasonal water inputs/seasonal precipitation cycle	Seasonal water inputs/seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Would a major decrease or loss in the seasonal snow pack impact the hydrology at this site?**	**Would a change from a snow-dominated regime to a rain-dominated regime impact this site?**	**Would changes to the snow pack and/or an extended summer dry season be expected to cause lentic habitats at the site that are currently perennial to dry seasonally?**	**Would changes to the snow pack and/or an extended summer dry season be expected to cause lotic habitats at the site that are currently perennial to dry seasonally?**	**Assuming a wetter autumn and winter, would there still be shallow, sun-exposed, seasonal wetlands available during the breeding season at this site?**	**Assuming an extended summer dry period, would suitable waters persist in areas occupied by tadpoles long enough for them to complete metamorphosis?**
Oregon	Williamson River	Williamson River	Upper Williamson River (2011 poor survey conditions)	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Klamath Marsh	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Jack Creek	Jack Creek	Yes	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data

UNIT DESCRIPTORS				Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle	Seasonal precipitation cycle
State or Province	**SubBasin**	**Occupied river drainage**	**Population/ subpopulation/ site name(s)**	**Could an extended summer dry period enhance conditions at the site for expansion of reed canarygrass ?**	**Could an extended summer dry period enhance conditions at the site for expansion of shrub wetland (e.g. willow, hardhack)?**	**Could an extended summer dry period enhance conditions at the site for expansion of deciduous trees such as alder, aspen and/or willow?**	**Could an extended summer dry period enhance conditions at the site for expansion of lodgepole pine (i.e. increase fire frequency and/or suitable soil moisture)?**
Oregon	Williamson River	Williamson River	Upper Williamson River (2011 poor survey conditions)	Inadequate data	Inadequate data	Inadequate data	Inadequate data
			Klamath Marsh	Inadequate data	Inadequate data	Inadequate data	Inadequate data
		Jack Creek	Jack Creek	Inadequate data	Inadequate data	Inadequate data	Inadequate data

Oregon Spotted Frog Threats Synthesis

Definitions

Impact - The degree to which a species is observed, inferred, or suspected to be directly or indirectly threatened in the area of interest (sub-basin for this analysis). The impact of each stress is based on Severity and Scope rating and considers only present and future threats. Threat impact reflects a reduction of a species population or decline/degradation of the area of an ecosystem. The median rate of population reduction or area decline for each combination of scope and severity corresponds to the following classes of threat impact: very high (75% declines), high (40%), medium (15%), and low (3%).

Scope – Proportion of the species that can reasonably be expected to be affected by the threat within 10 years. Usually measured as a proportion of the species' population in the area of interest. (Pervasive = 71–100%; Large = 31–70%; Restricted = 11–30%; Small = 1–10%), in this case at the sub-basin scale.

Severity – Within the scope, the level of damage to the species from the threat that can reasonably be expected to be affected by the threat within a 10 year or three-generation timeframe. Usually measured as the degree of reduction of the species' population. For this analysis, the scale is the sub-basin. (Extreme = 71–100%; Serious = 31–70%; Moderate = 11–30%; Slight = 1–10%)

Timing – High = continuing; Moderate = only in the future (could happen in the short term [less than 10 years or 3 generations]) or now suspended (could come back in the short term); Low = only in the future (could happen in the long term) or now suspended (could come back in the long term); Insignificant/Negligible = only in the past and unlikely to return, or no direct effect but limiting.

Stress – The condition or aspect (key ecological, demographic, or individual attribute) of the conservation target that is impaired or reduced by a threat (e.g., directly or indirectly results from human activities).

SubBasin	Genetics	Aquatic connection to other SubBasins?	Significance to range	Threat Factor A - Habitat					Threat Factor B - Overutilization				
				Impact	Scope	Severity	Timing	Stress	Impact	Scope	Severity	Timing	Stress
Lower Fraser River	Each of the 4 populations are genetically distinct (Maria Slough and Morris Valley being the most closely related). All are isolated from other population clusters. All are genetically distinct from US populations that have been tested. "The current Canadian populations appear to have small effective population sizes, and inbreeding is probably occurring, although its extent and effects on viability are unknown (Blouin pers. comm. 2009 cited in COSEWIC 2011).	Unlikely - Distance between frogs in this sub-basin and those in the Sumas River is more than 20 miles (35 km)	Genetically differentiated; northern-most populations; low elevation	Very High	Pervasive - all breeding locations are experiencing impacts to habitat through rcg invasion, stream/ditch maintenance, conversion to agriculture, and/or grazing	Extreme - All four current breeding locations are subject to one or more habitat destruction/modification	High-ongoing	reduced breeding habitat; lower summer and winter survival	Unknown - eggs are collected from occupied sites for reintroductio n efforts				
Lower Chilliwack River	No genetic analysis	Unlikely - Distance between frogs in this sub-basin and those in the Lower Fraser River is more than 20 miles (35 km)	With a significant restoration of habitat, this population could be reconnected to Lower Fraser River sub-basin	Unknown - presumed to be High-Very High due to similarity with SF Nooksack and Samish River locations	Unknown - presume to be pervasive: grazing and rcg invasion and possibly hydrologic changes dues to ditching and draining.	Extreme: only 1 known breeding location in the sub-basin	High-ongoing	reduced breeding habitat; lower summer and winter survival	Not Applicable				
S.F. Nooksack River	No genetic analysis	None		Very High	Pervasive - all breeding locations are experiencing impacts to habitat through rcg invasion, riparian plantings under the CREP and NCRS programs, and removal of beaver	Extreme - without management of rcg and shrub/tree plantings needed to restore breeding habitat	High-ongoing	reduced breeding habitat	Not Applicable				
Samish River	No genetic analysis	None	Fairly large number of individuals spread throughout the upper watershed; Loss would increase gap in range;	Very High	Pervasive - all breeding locations are experiencing impacts to habitat through rcg invasion, woody shrub/tree plantings, water quality, and beaver removal	Extreme - without management of rcg and shrub/tree plantings needed to restore breeding habitat	High-ongoing	reduced breeding habitat	Not Applicable				
Black River	Genetically distinct and isolated from other Oregon spotted frog clusters	None	Genetically differentiated; lowest elevation sites left in range; loss would result in a signficant gap in the range (range would be restricted to extreme northern WA and Fraser River in the Puget Trough and the eastern Cascades)	Very High	Pervasive - all breeding locations are experiencing impacts to habitat from rcg invasion and woody shrub plantings	Extreme - without management of rcg and shrub/tree plantings needed to restore breeding habitat	High - all primary habitat impacts are ongoing	reduced breeding habitat	Low	Small - small number of egg masses currently collected	Slight - Moderate - as population declines, percentage affected increases if current level of collection continues	High - Ongoing	Breeding - removes eggs; unknown how severe impact is to egg mass
White Salmon River	Genetically related to Middle Klickitat River (Outlet Creek)	None	Along with Outlet Creek, the OSF population in this drainage is genetically differentiated from rest of OSF;	Very High	Pervasive - all breeding locations are experiencing impacts to habitat from rcg invasion and beaver are actively removed	Extreme - without management of rcg	High - all primary habitat impacts are ongoing	reduced breeding habitat	Not Applicable				
Middle Klickitat River	Genetically related to White Salmon River (Trout Lake Creek(	None	Along with Trout Lake Creek, the OSF population in this drainage is genetically differentiated from rest of OSF; used to be the largest population, severe declines in the last decade	Very High	Pervasive - all breeding locations are experiencing impacts to habitat from rcg invasion, tree encroachment, and water mgmt (too high/low during breeding; water not retained throughout tadpole rearing; frogs restricted to canal during winter)	Extreme - if follows current rate of decline and water management is not adjusted	High - all primary habitat impacts are ongoing	directly affecting breeding, summer and winter survival	Low	Small - small number of egg masses currently collected	Slight - Moderate - as population declines, percentage affected increases if current level of collection continues	High - Ongoing	Breeding - removes eggs; unknown how severe impact is to egg mass
Lower Deschutes River	Geographically isolated, lowest genetic diversity and only remaining representative of major genetic group that is almost extinct (Blouin 2010).	Unlikely	Single population (i.e., Camas Prairie) remaining in Lower Deschutes sub-basin. Therefore, loss could cause large gap in range between WA and OR.	Medium	Pervasive - Tree and shrub encroachment	Moderate	High - Ongoing	Breeding habitat loss at only known site in sub-basin	Not Applicable				

Highlighted Fields Represent Changes from Proposed Listing Threats Matrix

SubBasin	Threat Factor C - Predators and Disease					Threat Factor E - Other human-caused				
	Impact	Scope	Severity	Timing	Stress	Impact	Scope	Severity	Timing	Stress
Lower Fraser River	Very High	Pervasive - predators present at 3 of 4 known breeding locations. Unknown for disease	Unknown	High - predation ongoing	Bullfrogs, green frogs, introduced fish reduce juvenile and adult survival	Very High	Pervasive - All four breeding locations are isolated and subject to small population sizes; Water quality issues are present at 3 of the 4 breeding locations	Serious to Extreme	High-ongoing	Population fitness
Lower Chilliwack River	Low	Small - no known invasive fish or amphibians are known to occur in the known occupied areas.	Slight	Low		Unknown	Full extent of OSF within this area is undetermined; therefore, scope and severity of impacts are undetermined. However, the potential threats include small, isolated population.			Population fitness
S.F. Nooksack River	Low	Small - no known invasive fish or amphibians are known to occur in the known occupied areas.	Slight	Low		Very High	Pervasive - Water quality issues; Black Slough is isolated and known population size is small	Undetermined - full extent and impact of reduced water quality on OSF is undetermined	High-ongoing	Population fitness; summer and overwinter survival
Samish River	Low	Small - introduced cold-water fish occur within known occupied areas, however, cold water fish are unlikely to occur in the oviposition and rearing habitat where they pose the most threat; no known invasive amphibians are known to occur in the known occupied areas.	Slight	Low		High	Pervasive - Water quality is a large issue for this river; breeding areas may be disconnected.	Undetermined - full extent and impact of reduced water quality on OSF is undetermined	High-ongoing	summer and overwinter survival
Black River	Moderate	Large - bullfrogs occur within 50% of the drainages with OSF; Introduced warm and cold water fish species affect summer and overwinter habitats, primarily in the mainstem Black River.	Moderate,no or low densities of bullfrogs where OSF occur	High - ongoing	Bullfrogs reduce juvenile and adult survival; warm and cold water fish reduce tadpole, juvenile and adult survival	High	Pervasive - All of the drainages are disconnected and OSF movement between the drainages is unlikely (not documented through trapping or tracking); low effective population size	Serious	High-ongoing	population fitness
White Salmon River	Very High to High	Large - OSF are restricted to Trout Lake Creek during the summer and winter and overlap with the introduced fish species	Unknown, but most of OSF population is exposed to predators during the summer and winter	High - ongoing	Reduced summer and winter survival of tadpoles and adults	Medium	Restricted- Climate change; susceptible to high population turnover; water quality issues in upper part of watershed; low effective population size	Moderate to Serious: Past population declines have been dramatic.	High-ongoing	population fitness;
Middle Klickitat River	Very High	Pervasive - During summer and winter all OSF are restricted to the ditches and canal, along with bullfrogs and predatory fish. Brown bullheads have been observed in the breeding and rearing areas.	Serious - Extreme - cause of current decline is undetermined, but likely related to reduced summer and overwinter survival	High - ongoing	Bullfrogs reduce juvenile and adult survival; warm and cold water fish reduce tadpole, juvenile and adult survival	High	Pervasive - climate change; susceptible to high population turnover; low effective population size	Serious - ongoing declines are dramatic	High-ongoing	population fitness
Lower Deschutes River	Moderate	Pervasive - cold water non-native fish	Moderate	High - Ongoing	Individual survival as well as reduced breeding success.	Low	Pervasive -Single population at Camas Prairie is isolated.	Slight	High- ongoing	Population fitness

SubBasin	Genetics	Aquatic connection to other SubBasins?	Significance to range	Threat Factor A - Habitat					Threat Factor B - Overutilization				
				Impact	Scope	Severity	Timing	Stress	Impact	Scope	Severity	Timing	Stress
Upper Deschutes River	Three genetic groups identified in the Upper Deschutes sub-basin. High level of genetic differentiation among sites within sub-basin indicates that genetic groups are distinct and isolated.	Aquatically connected to Lower Deschutes sub-basin but over very long distance and through dam complex on lower Deschutes River. No potential for connection of populatiopns between Upper and Lower Deschutes sub-basin. Populations within the Upper Deschutes Basin are separated above and below Wickiup Dam. Populations below Wickiup Dam may have a connection to those in the lower Little Deschutes River.	Approximately 13 known breeding locations are well distributed throughout sub-basin in pond, lake and riverine habitats. Sunriver is one of the largest populations in Oregon.	Medium	Large - 5 out of 14 (36%) breeding sites in the Upper Deschutes Basin affected by managed flows.	Serious: over 10 years	High	Breeding, overwintering and dispersal are affected by the timing of water releases from Wickiup Reservoir.	Not Applicable				
				Medium	Large - 8 out of 14 (57%) sites have reed canarygrass	moderate - most known infestions are small but could pose a threat over the next 10 years.	High	Encroachment of RCG into breeding habitat for OSF.					
				High	Large - 9 out of 14 (64%) sites are being encroached upon by either shrubs or lodgepole pine	Moderate	High	Loss of breeding habitat.					
				High	Pervasive - All breeding habitats in the Upper Deschutes sub-basin sites evolved with fire as a natural disturbance process. The loss of natural fire cycles has allowed succession to continue without disturbance. Early seral habitats are declining.	Moderate	High	Loss of breeding habitat.					
Little Deschutes River	Two genetic groups were identified in the Little Deschutes sub-basin within a Deschutes Basin analysis conducted by Robertson and Funk (2012).	Little Deschutes River is aquatically connected to Upper Deschutes sub-basin populations below Wickiup Reservoir. Aquatically connected to Lower Deschutes sub-basin but over very long distance and through dam complex on lower Deschutes River. No potential for connection of populatiopns between Little Deschutes and Lower Deschutes sub-basins.	Approximately 23 known breeding locations located throughout the Little Deschutes sub-basin in pond and riverine habitats. Big Marsh is the largest population of Oregon spotted frogs in Oregon and possibly range-wide.	High	16 out of 23 (70%) sites in the L.D. subbasin are affected by managed flows to varying degrees.	Serious: over 10 years	High	Depending on location within the sub-basin, breeding, rearing and overwintering may be affected by water management for irrigation.	Not Applicable				
				Medium	Reed canary grass is present at 8 sites within the L.D. sub-basin. Only 13 of the 23 known breeding locations have been surveyed for RCG.	low	High	Potential to affect breeding and rearing habitats.					
				Medium	Resricted -7 out of 23 (30%) of OF sites in the Little Deschutes River sub-basin are grazed by cattle and are affected to varying degrees.	Slight	Moderate	Potential to affect breeding and rearing habitats.					
				High	Pervasive - Many breeding habitats in the Little Deschutes River sub-basin sites evolved with fire as a natural disturbance process. The loss of natural fire cycles has allowed succession to continue without disturbance. Early seral habitats are declining.	Moderate	High - ongoing	Potential to affect breeding and rearing habitats.					
				Medium	Restricted - Development within the Little Deschutes River sub-basin, particulary in the Deschutes South County area, may affect OSF breeding sites.	Moderate	Moderate	Potential to affect breeding and rearing habitats.					

Highlighted Fields Represent Changes from Proposed Listing Threats Matrix

SubBasin	Threat Factor C - Predators and Disease					Threat Factor E - Other human-caused				
	Impact	Scope	Severity	Timing	Stress	Impact	Scope	Severity	Timing	Stress
Upper Deschutes River	High	Pervasive: Introduced cold water fish such as brook trout are present in every drainage and at 100 percent of breeding sites.	unknown	High	Introduced non-native cold and warm water fish reduce tadpole, juvenile and adult survival.	High	Pervasive - Sites below Wickiup Dam are isolated from those above Wickiup Dam; The reservoir and associated dam are likely a barrier to upstream and possibly downstream movement. Seasonally regulated flows out of Wickiup Reservoir likely affect connectivity of frog populations along the mainstem Deschutes River. Above Wickiup dam, clusters of breeding sites may be disconnected hydrologicall (e.g., lakes without outlets) or by distances greater than 6 mi. (10 km).	Moderate	High - Ongoing	Lack of connectivity between breeding sites below Wickiup Dam. Reduced overwinter survival below Wickiup Dam. Crane Prairie and Wickiup Reservoirs separate known breeding location by distance greater than 6 mi (10 km).
	Moderate	Large: Introduced warm water fish are present in Davis Lake and Crane Prairie and Wickiup Reservoir. OSF within Davis Lake appear to be extirpated.	serious - Extreme - Warm water fish introductions may be cause for decline in Davis Lake and possible Crane Prairie.	Moderate						
	Moderate	Small threat from bull frogs currently. However, the warming climate may increase suitability of OSF sites for bull frogs. Only known large population of bull frogs occurs at Sunriver.	Moderate	High	Bullfrogs reduce juvenile and adult survival.					
Little Deschutes River	High	Large: Bull frogs have been observed at all sites on Long Prairie and at all sites downstream of LaPine, Oregon along the Little Deschutes River. (8 out of 23 = 35%).	Moderate	High	Bull frogs reduce tadpole and adult survival.	Medium	Small threat from lack of connectivity in the Little Deschutes River sub-basin. Most breeding sites within the Little Deschutes River sub-basin are within 5km and 10km of each other.	Moderate	Moderate	Population fitness
	Moderate	Pervasive: Non native cold water fish are throughout the Little Deschutes sub-basin.	Moderate	High	Introduced cold water fish may reduce tadpol, juvenile and adult survival.	Medium	Restricted threat from hydrologic manipulations resulting in population turnovers. Areas of the sub-basin that are subject to dramatic changes in hydrology (e.g., Long Prairie) may experience high population turnover rates.	Moderate	High - Ongoing	Population fitness

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SubBasin	Genetics	Aquatic connection to other SubBasins?	Significance to range	Threat Factor A - Habitat					Threat Factor B - Overutilization				
				Impact	Scope	Severity	Timing	Stress	Impact	Scope	Severity	Timing	Stress
Mckenzie River	Little genetic information. Population at Marsh/Mud Lake genetically clustered with Upper Deschutes.	None	Two of three remaining populations west of the Cascades in Oregon.	Medium	Pervasive- tree and shrub encroachment	moderate	High - Ongoing	Breeding habitat loss	Not Applicable				
Middle Fork Willamette	Gold Lake population genetically clustered with populations in the Upper Deschutes sub-basin. Robertson and Funk 2012	None	Large, stable population at Gold Lake. Only population remaining in MF Willamette sub-basin. One of three OSF populations remaining on west side of Cascades in OR.	Low	Pervasive - Tree and shrub encroachment	low	High - Ongoing	Breeding habitat loss at only known site in sub-basin	Not Applicable				
Williamson River	The 3 populations within this sub-basin are not overly genetically connected as only one genetic cluster is shared between only 2 populations.	No - the Williamson River goes underground after exiting from Klamath Marsh NWR	This sub-basin contains the highest elevation site in the Klamath Basin as well as the largest and possibly most stable population for the Klamath Basin	High	Large: wetland loss (Jack); degradation of beaver dams (Jack); shrub and tree encroachment (Jack, Williamson); grazing; and development	Moderate: KMNWR has the largest pop in the Basin and scews this perspective-if we lost both Williamson and Jack there would still only be a reduction of less than a third of the population in this sub-basin over 10 years; KMNWR has development, riparian activities	High	Breeding/Rearing/over-wintering habitat loss	Not Applicable				
Upper Klamath Lake	For the 6 populations that occur in this subbasin there are 3 genetic clusters represented. Two of these clusters are found in the Williamson River sub-basin as well.	No and Yes - the Williamson River goes underground after exiting from Klamath Marsh NWR removing the connection between the Williamson sub-basin. Movement between the Lake/River sub-basins would necessitate movement through inhospitable habitat and at least 2 dams.	This sub-basin has the lower elevation riverine systems in the Klamath Basin.	Medium	Large: only sites with known habitat threats are WRW and Sevenmile (RCG and shrub encroachment-WRW; encroachment and water diversion-Sevenmile); water management for grazing occurs throughout sub-basin	Moderate: Both of these locations at this time are managed for OSF (If they are managed the same even with grazing elsewhere in the subbasin only 30% of the population will be conceivably impacted).	High (current water diversion) and depending on future possible actions high suspended (100% water diversion at Sevenmile and possibly water will be used by the BOR at Fourmile)	Breeding/Rearing/over-wintering habitat loss	Not Applicable				
Upper Klamath	Each of the 2 populations are genetically distinct from each other and from all other populations in the Klamath Basin.	Yes - but by great distances and through barriers (at least 2 dams and inhospitable habitat, as well as movement would have to occur upstream)	These are the only populations that occur within lacustrine systems in the Klamath Basin and they the only ones hydrologically connected to the Klamath River. They are our most southern extant populations.	Very High	Pervasive: ditching/water diversion (Buck, Parsnips); redux of beaver dams (both); encroachment (both), grazing, development	Serious: over 10 years	High	Breeding/Rearing/over-wintering habitat loss	Not Applicable				

SubBasin	Threat Factor C - Predators and Disease					Threat Factor E - Other human-caused				
	Impact	Scope	Severity	Timing	Stress	Impact	Scope	Severity	Timing	Stress
Mckenzie River	High to Very High	Pervasive - cold water non-native fish	Moderate	High - Ongoing	Individual survival as well as reduced breeding success.	Medium	Pervasive: Two population remaining in the sub-basin are not hydrologically connected.	Moderate	High	Population fitness
Middle Fork Willamette	High to Very High	Pervasive - cold water non-native fish	Moderate	High - Ongoing	Individual survival as well as reduced breeding success.	Low	Pervasive: Single population at Gold Lake is isolated.	Slight	high- ongoing	Population fitness
Williamson River	High to Very High	Pervasive: KMNWR has warm and cold water non-native fish and potentially bullfrog and it is the largest population in this sub-basin. In addition Jack has tested positive for both Saprolegnia and Chytrid.(UPDATE Refuge biologists state that there are no bullfrogs on the Refuge)	Serious-Extreme: KMNWR has the largest population as well as-two different types of predators. In addition, diseases have been tested positive at Jack Creek. Could expect at least 40% declines and possibly more.	High	Individual survival as well as reduced breeding success.	Low to High	Restricted (documented to occur only at Jack Creek); small population size	Unknown suspect slight to moderate	High	Adult/larval survival/habitat loss
Upper Klamath Lake	Very High	Extreme: Essentially every site with in this sub-basin has either warm or cold water non-native fish, bullfrog, or diseases.	Serious-Extreme: the sites that have bullfrog control are being maintained. If this should stop in the future then the sub-basin populations could crash	High-Moderate (bullfrogs are being controlled at two of the sites currently).	Individual survival as well as reduced breeding success.	High	Large: sites are disconnected hydrologically by great distances and barriers (inhospitable habitat, etc); small population size. Except Wood River Wetland and Wood River Main Channel.	Serious	High	Adult/larval survival/habitat loss
Upper Klamath	High	Large: Buck Lake has both warm and cold water non-native fish. However Parsnips does not. But Buck is the larger of the two populations so more OSF are exposed to these threats	Moderate to Serious: Expect that if half of the sub-basin with the largest population is exposed then could expect a 11-70% reduction over 10 years.	High	Individual survival as well as reduced breeding success.	Very High	Pervasive: Parsnips and Buck are separated hydrologically over great distances from each other and other populations; small population size	Extreme	High	Adult/larval survival/habitat loss

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