US Army Corps of Engineers ®
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MOSQUITO CONTROL ACTIVITIES LICENSES FOR BENTON COUNTY, FRANKLIN COUNTY, COLUMBIA AND WEST UMATILLA MOSQUITO CONTROL DISTRICTS

PM-EC-2014-0063

ENVIRONMENTAL ASSESSMENT

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1.0 INTRODUCTION

This environmental assessment (EA) considers and describes the environmental effects of the U.S. Army Corps of Engineers (Corps), Walla Walla District (District) issuing a 5-year license to Mosquito Control Districts (MCD) in Benton, Franklin, Walla Walla, and Umatilla Counties to conduct mosquito control activities on federal lands managed by the District (Figure 1). As required by the National Environmental Policy Act (NEPA) of 1969 and subsequent implementing regulations promulgated by the Council on Environmental Quality, this assessment is being prepared to determine whether the proposed action constitutes a "…major Federal action significantly affecting the quality of the human environment…" and whether an environmental impact statement is required. The information contained in this EA is considered to be of sufficient depth to define the nature and scope of the impacts associated with the proposed issuing of licenses to the MCDs for conducting mosquito control activities on District managed lands.

Figure 1: General Area of Proposed Mosquito Control Project

1.1 Background

In the 1970s, the District established a mosquito control program that involved contracting with local MCDs to undertake mosquito control spraying on District lands. The program remained in effect until somewhere between 1994 and 1996 when the Corps reassessed its funding policies

and determined that mosquito control activities were not part of its authorized routine purposes. Current Corps policy on pest control now provides for Corps response only when a duly authorized public health agency declares an emergency health hazard involving Corps managed property. In such instances, nuisance pest and mosquito control efforts shall only be performed on Corps managed public recreation areas, lands adjacent to these areas, operation and maintenance areas, and certain dredge material disposal areas. Subsequent to the Corps' revised mosquito control funding policy, local MCDs continued to undertake mosquito control activities on Corps land as needed, but at the MCDs' expense.

In 2011, the District updated and revised its pest management program. In the course of this action, the District learned it was not in full compliance regarding the use of chemicals for pest management control. By extension, the District recognized the need to ensure that MCD mosquito control activities on District managed federal lands were also in compliance with current chemical requirements and guidelines (Figure 2).

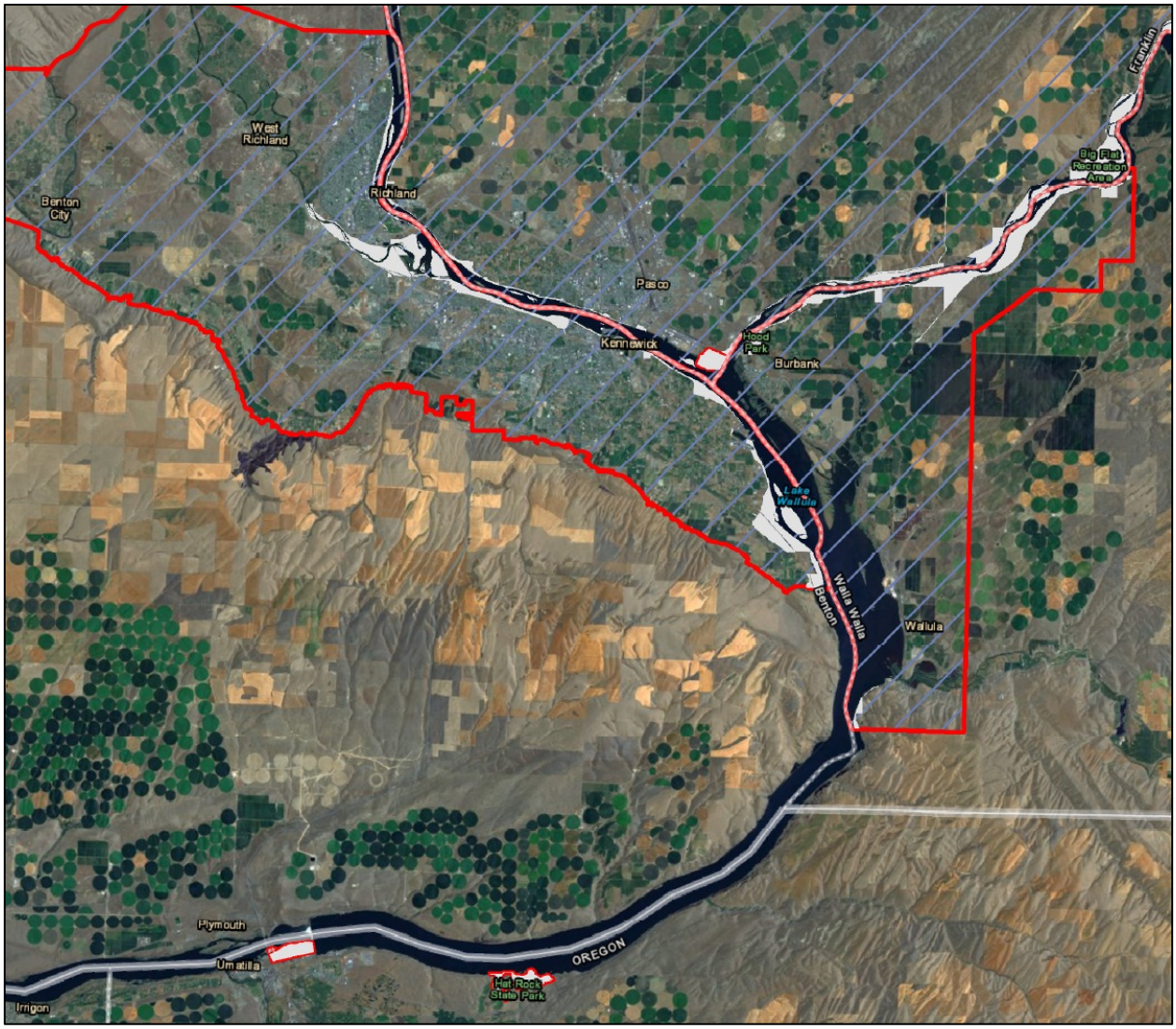

Figure 2: Corps Managed Lands (light-shaded areas) covered by MCD Activities

Currently, there are four local MCDs requesting approval to access portions of District managed federal lands to conduct mosquito control activities. These are Benton County, Franklin County, Columbia and West Umatilla Mosquito Control Districts. Benton County MCD covers 7 municipalities from two counties, including: Kennewick, Richland, West Richland, Benton City and Prosser in Benton County, as well as Grandview and Mabton in Yakima County. The Franklin County MCD covers primarily Pasco and rural Franklin County. Columbia MCD manages mosquito control in Walla Walla County primarily along the Snake and Columbia Rivers and the West Umatilla MCD covers a 515 square mile area of western Umatilla County.

Collectively, these four MCDs have requested access to just over 6,230 acres of District-managed lands to conduct mosquito control activities (Table 1). However, not all of the

requested lands are mosquito habitat and only a small portion would actually be impacted by mosquito control activities.

Table 1: District Managed Lands Identified for MCD Mosquito Control Activities

Site	MCD	County	Acres
ACME	BCMCD	Benton	302
Bateman Island	BCMCD	Benton	190
Brushpile	BCMCD	Benton	1,558
Clover Island	BCMCD	Benton	54
Columbia Park	BCMCD	Benton	461
Columbia Point	BCMCD	Benton	229
Delta East	BCMCD	Benton	210
Delta West	BCMCD	Benton	348
Duportail Bridge	BCMCD	Benton	50
Hover Park	BCMCD	Benton	210
Howard Amon Park	BCMCD	Benton	37
Leslie Grove Park	BCMCD	Benton	162
Two Rivers Park	BCMCD	Benton	223
Shoreline	BCMCD	Benton	92
Valley View Area	BCMCD	Benton	171
Pump House Peninsula	CMCD	Walla Walla	135
Hood Park	CMCD	Walla Walla	138
Charbonneau Park	CMCD	Walla Walla	244
Sacajawea State Park	CMCD	Franklin	284
Richland Bend	FCMCD	Franklin	45
Hobos Hideout	FCMCD	Franklin	15
Hat Rock State Park	WUMCD	Umatilla	719
McNary Wildlife Area	WUMCD	Umatilla	285
Umatilla Old Town	WUMCD	Umatilla	72
Total			6,234

2.0 PURPOSE AND NEED

The District proposes to issue licenses to the Benton County, Franklin County, Columbia and West Umatilla MCDs to conduct mosquito control activities on District managed federal lands. Issuance of the licenses ensures that necessary authorization is provided for the MCDs to operate on District managed lands, ensures mosquito control activities comply with appropriate statutory and environmental requirements, and ensures activities are compatible with the District's overall pest management program and objectives.

3.0 ALTERNATIVES

This section describes alternatives for meeting the identified project purpose and need. In this particular instance, there are only two alternatives – i.e. no action and the proposed action.

3.1 Alternative 1 – No Action

Under the no action alternative, there would be no mosquito control activities of any type occurring on District land and the District would not issue licenses to the MCDs. No effort would be made to limit the development or spread of mosquitoes on District managed lands. While the "no action" alternative does not meet the project purpose and need requirement, under Council on Environmental Quality guidelines, it serves as the project baseline for environmental conditions and therefore is carried forward for analysis.

3.2 Alternative 2 – (Proposed Action)

(NOTE: The following discussion is taken from the District's biological assessment (BA) prepared for this action. Information for the BA was gathered from federal (e.g. Corps, Environmental Protection Agency, Fish and Wildlife Service) and state (e.g. Washington Department of Fish and Wildlife) agency reports, journals (e.g. American Fisheries Society) along with other technical books and documents.)

Under Alternative 2, the District would allow MCDs to conduct mosquito control activities on identified parcels of District managed lands (Figure 2). Mosquito control activities would focus on four main areas: 1) monitoring and surveillance; 2) trail/access maintenance; 3) biological control; and 4) chemical application (Table 2). These activities would be used to varying degrees by each county and are discussed below.

Table 2: Proposed Mosquito Control Activities by MCD on District Managed Lands

	Mosquito Control Districts			
Activity	**Benton**	**Franklin**	**Umatilla**	**Columbia**
Monitoring/Surveillance				
Trapping/Sampling	X	X	X	X
Trail Management				
Vegetation Removal	X	X		X
Trail Maintenance	X	X		X
Biological Control				
Mosquito Fish *				X
Chemical Control				
Aerial Application – Fixed Wing	X	X	X	X
Aerial Application – Helicopter			X	X
Truck Mounted Application	X	X	X	X
ATV Mounted Application	X	X	X	X

Backpack Application	X	X	X	X

*Existing populations only. No new stocking of mosquito fish is proposed.

3.2.1 Monitoring/Surveillance

3.2.1.a Larval

Surveillance of larval mosquitoes would be conducted by MCD staffs on a regular basis and could range from weekly to monthly depending on the time of year, weather conditions and location. Surveillance would include water sampling and examination of larval samples in the field or laboratory to determine the abundance, species, and life-stage of mosquitoes present. The information could be compared to historical records and could be used as a basis for treatment decisions.

3.2.1.b Adult

Surveillance for adult mosquitoes would be undertaken to confirm concentrations, determine appropriate control measures, identify mosquito species which may carry disease, and test mosquitoes for the presence of disease. Adult mosquitoes would be sampled using standardized trapping techniques. Collected mosquitoes would be counted and identified to species. The spatial and seasonal abundance of adult mosquitoes would be monitored from April through September and compared to historical data. Adult mosquito surveillance information would be augmented by additional data from public complaints and on-sight observation by technical staff. Analysis of service requests and field level surveillance would allow MCD staffs to gage the success of control efforts and to locate undetected sources of mosquito development. Adult mosquito populations and species present could be used as a basis for treatment decisions.

3.2.1.c Disease

MCD staffs may test adult mosquito samples for West Nile virus (WNV) using the rapid analytic measurement platform (RAMP) test. Samples which test over 299 on the RAMP are considered positive for WNV. Samples under 299 which are questionable could be sent to Oregon State University for polymerase chain reaction (PCR) confirmation. Mosquito samples which have not been RAMP tested could be sent to the University of California Davis and tested for WNV, St. Louis encephalitis, and Western equine encephalitis.

3.2.2 Trail/Access Management

Vegetation on District lands would be periodically mowed, pruned, or removed by MCD staff to clear obstructions, increase predator access, and improve access for mosquito control personnel to enter mosquito surveillance or treatment sites. No channel clearing would be proposed for District lands. Trail maintenance and invasive species removal would be conducted using hand tools and all terrain vehicle (ATV) or tractor mounted mowers. Because this work would be

temporary and labor intensive, it would require routine maintenance on an annual or biennial basis.

3.2.3 Biological Control

Biological control involves the reduction of pest populations by natural enemies. For mosquitoes, a common biological control that could be used is the mosquitofish (*Gambusia affinis*). However, mosquitofish can also be a major pest when introduced outside their natural range. They are aggressive and have been known to feed on eggs, larvae, and juveniles of various native fishes and amphibians. Because of these negative impacts, Gambusia is a regulated species in Washington State, and cannot be introduced without a fish stocking permit. Currently, mosquitofish only occur on Corps project lands in the Hood Park area. Only existing stocks would continue to be used; no new populations would be introduced on Corps lands.

3.2.4 Chemical Control

Chemical control products (including bacteria) would be applied by hand, backpack, ATV mounted and truck mounted sprayer, and by helicopter or airplane. All products used on Corps land would be Environmental Protection Agency (EPA) approved and would be applied based on label instructions/appropriate equipment calibration and taking into account wind speed, time of day, method of application and where chemicals can and cannot be applied. The two main categories of mosquito control products are larvicides and adulticides which can be applied by a number of methods to control either mosquito larval or adult stages (Table 3).

Table 3: Mosquito Control Pesticides proposed for use on Corps Managed Lands.

Active Ingredient	Use	Trade Name	Application Method
Bti-Bacillus thuringiensis isrealensis	Larvicide	Aquabac, Teknar, Vectobac	hand, backpack, ATV, and aircraft
Bs- Bacillus sphaericus	Larvicide	Vectolex, Spheratax, FourStar	hand, backpack, ATV, and aircraft
Methoprene	Larvicide	Altosid	hand, backpack, ATV, and aircraft
Mineral Oil	Larvicide	CocoBear, BVA 2	backpack and ATV
Monomolecular film	Larvicide	Agnique	Hand, backpack
Spinosad	Larvicide	Natular	hand, backpack, ATV, and aircraft
Bifenthrin	Adulticide (barrier*)	Wisdom, Masterline	backpack
Deltamethrin	Adulticide (barrier)	Suspend	backpack
Etofenprox	Adulticide	Zenivex	Backpack, Truck-

	(ULV**)		mounted ULV or aircraft
Garlic Oil	Adulticide (barrier)	ATSB Mosquito Bait	backpack
Naled	Adulticide (ULV)	Dibrom Concentrate	aircraft
Permethrin	Adulticide (ULV)	BioMist, Aqualuer, Kontrol, Aqua Reslin, Permanone	Backpack, Truck-mounted ULV or aircraft
Piperonyl Butoxide	Adulticide (ULV)	Not applicable (synergist)	Backpack, Truck-mounted ULV or aircraft
Prallethrin	Adulticide (ULV)	Duet	Backpack, Truck-mounted ULV or aircraft
Pyrethrins	Adulticide (ULV)	Evergreen, Pyronyl, Pyrocide	Backpack, Truck-mounted ULV or aircraft
Sumithrin	Adulticide (ULV)	Anvil	Backpack, Truck-mounted ULV or aircraft

*Barrier sprays are applied to vegetation to target resting mosquitoes. Droplet size is 60-100 microns.
**ULV sprays are aerosol clouds targeting flying mosquitoes. Droplet size is less than 60 microns.

3.2.4.a Larval Chemical Control (Larvicides)

Larvicides would be added to the water and could be applied by hand or power backpack, from ATVs, or using helicopters and airplanes. (NOTE: Larvicides are designed for water application.) Products used for larviciding include bacterial products, surface agents, and insect growth regulators. Criteria for larvicide application are based on site type as well as the number and species of larvae present. When established thresholds for species are exceeded, larvicide application would occur. The number and extent of larvicide application during a given year would be dependent on climate, weather patterns, and water level manipulations. Some of the more common larval chemical controls which would be used are:

- Bacterial products: Incorporate naturally occurring microorganisms which have been found to effectively kill mosquito larvae. *Bacillus thuringiensis israelensis* (Bti) is the primary material used for larval mosquito control because it is highly effective and has a low toxicity to non-target species.
- Surface agents: Refined mineral oils or monomolecular films which spread across the surface of the water. Surface agents can cause suffocation and/or drowning of mosquitoes and are the only products available to target pupal stage mosquitoes.

- Insect growth regulators: Chemicals which mimic juvenile growth hormones in insects. They work by either altering the production of chitin (the compound insects use to make their exoskeleton) or by altering an insect's development into adulthood. Some growth regulators force the insect to develop too rapidly while others stop development. Methoprene is a common insect growth regulator used by MCDs.

Larvicide effectiveness (i.e. potency and duration) is dependent upon the product used:

- Bti is typically single brood, so less than one week but new FourStar products are being developed which last 40 days.
- Methoprene has formulations that are 7 – 180 days
- Surface oils – 1-3 days
- Monomolecular film – 21 days
- Bacillus sphaericus – 21 days

Environmental factors would also affect this number - e.g. greater water volume/flow decreases the residual activity.

3.2.4.b Adult Chemical Control (Adulticides)

Adulticiding would be initiated when there is potential for pest borne disease transmission in a region or when adult mosquito populations exceed treatment thresholds (i.e. large numbers present). The most common method of adult mosquito control is ultra-low volume (ULV) spraying which uses a very fine mist of droplets to evenly apply small quantities of the designated product to an area. ULV adulticides would be applied when mosquitoes are most active – typically early evening or pre-dawn. ULV applications would be done only when environmental conditions ensure desirable product movement and minimal deposition.

MCDs could use four types of ULV Sprayers on Corps lands - powered backpack, powered ATV, truck-mounted or aerial. Widespread ULV aerial spraying could be used as a quick response to reduce the number of adult mosquitoes. The most common pesticide used during aerial applications is naled. Naled is preferred because its greater density allows better penetration in vegetated mosquito habitats and a corresponding greater reduction in adult mosquitoes.

Barrier spraying would be done using a backpack sprayer that produces a mist rather than an aerosol cloud. Spray mists use a larger droplet size and are applied to the vegetation where mosquitoes rest during the day to produce a residual effect that is not possible with ULV spraying. This type of spraying might be used before special events or in locations which receive high visitation such as parks and golf courses.

As with larvacides, the potency and duration of adulticides are dependent on the product used. ULV products are only effective for a few hours at the most. Once the droplets dissipate and

evaporate they are too small and widespread to impact mosquitoes. While there is no specific reentry restriction, some MCDs use an hour after application as a reasonable waiting period before potential contact with humans. Barrier sprays such as bifenthrin are less of a skin irritant than deltamethrin, but either are safe to touch once dry which could be within 30 minutes of application.

Project Timeline

Mosquito control is cyclical in nature and will occur annually. Depending on weather patterns, mosquito control activities by MCDs would normally begin in early March and extend through October. Work days may begin before light and can end after dark.

4.0 AFFECTED ENVIRONMENT and ENVIRONMENTAL IMPACTS

This section identifies and describes: (1) the affected environment – i.e. the existing natural, cultural and socioeconomic resources which have the potential to affect or to be affected by the alternatives, and (2) what the effects on those resources might be. Although the full range of existing resources within the project area were initially considered, only those resources determined relevant to the proposed action were included in the affected environment. While the intent is to focus on relevant resources, it is also important to recognize that the level of relevance of each identified resource to the proposed action is not the same. Some resources figure more prominently in the action than others. For purposes of this EA, all relevant resources are identified but not all are discussed in detail. Table 4 provides a list of the relevant resources identified for the Project.

Table 4: Mosquito Control Project Relevant Environmental Resources

Resource/Further Discussion	Condition/Status
Biological/YES	Under the No Action Alternative, no mosquito control activities would occur on District managed federal lands. This would remove any potential for physical discomfort/irritation to humans resulting from contact with mosquito control products. However, in the absence of any control efforts, it is anticipated that mosquito numbers would greatly increase. This would result in greater inconvenience and nuisance to both humans and animals. In some instances, there could be a threat to human/animal health and welfare. Mosquitoes are known carriers of diseases (e.g. West Nile virus) which can cause illness and in some cases, even death. In addition, mosquitoes can congregate in such large numbers that they can seriously affect domestic animals (e.g. cattle, horses, etc.) due to blood loss, annoyance and infection. They can also cause death by suffocation due to large numbers being inhaled by animals and physically blocking their air passages.

	The proposed action would result in the use of chemicals over a wide geographic area to control mosquito numbers. Under such circumstances, the concentration/application of mosquito control products is critical to avoid negative impacts to both humans and ESA listed species. The District determined the proposed action "may affect, but is not likely to adversely affect" Snake River fall Chinook, Snake River spring/summer Chinook, Snake River sockeye, Snake River steelhead, Upper Columbia River spring Chinook, Upper Columbia River steelhead, Middle Columbia River steelhead, and bull trout. The project would have no effect on the remaining identified species. The District also determined the proposed action would not likely adversely affect salmon, steelhead, or bull trout critical habitat. The District determined the proposed action would have no effect on lynx or gray wolf critical habitat. The Corps has started consultation with NMFS and USFWS under Section 7 of the Endangered Species Act (ESA). The results of ESA consultation would be described in the final, signed FONSI, should it be determined an Environmental Impact Statement is not required for this project.
Water Quality/NO	Under the No Action Alternative, mosquito control pesticides would not be used. This would remove the possibility of water contamination through accidental spill or over-application of these pesticides. Under the proposed alternative, larvicides would be applied to the water using application guidelines provided on the product label. The amount of larvicide in the water would not pose a health risk to humans or animals. The MCDs' application methods in Washington and Oregon are covered by state issued permits.
Cultural Resources/NO	The No Action Alternative would result in no mosquito control activities occurring on District managed federal lands. This would remove the possibility of ground disturbance associated with mosquito control activities (e.g. road/trail maintenance, vegetation removal/clearing) impacting cultural resources. The proposed alternative could result in possible ground disturbance associated with road/trail maintenance and vegetation removal/clearance. The District determined the proposed action would not have an adverse affect on historic properties and has started consultation. Final results of consultation would be described in the signed Finding of No Significant Impact (FONSI) should it be determined an

	Environmental Impact Statement is not required for this project.
Recreation/NO	Under the No Action Alternative, no mosquito control activities would be done on District managed federal lands. This would remove any potential for physical irritation/inconvenience or public health concerns regarding the use of mosquito control products. However, in the absence of any control efforts, it is anticipated that mosquito numbers would greatly increase. The predominant mosquito species on District managed federal lands is Aedes vexans which has strong flight potential. This undoubtedly would result in mosquitoes becoming a major nuisance for much of the recreating public as most of the prime recreation areas are located on or near water. Under the proposed action, both larvicides and adulticides would be used. Applications would normally be done by spraying and would occur in the morning (larvicides and adulticides) or late in the day (adulticides). Contact with larvicides as a result of spraying would not cause health issues for humans or animals. With adulticides however, there could be some physical discomfort/irritation if they get on human skin and/or eyes but would not result in serious health issues. While adulticide applications could affect recreation in terms of where and when they would occur, these applications are usually done after closing times (i.e. after 9pm) for parks/recreation areas located on District lands. Barrier spraying applications are done during the day but would not be conducted if people are present.
Vegetation/NO	Under the No Action Alternative, mosquito control products would not be used. By removing the application of these specific chemicals, it ensures that any potential impacts resulting from pesticide contact with vegetation would not occur. Under the proposed action, both larvicides and adulticides would be used and in some instances would be applied directly to vegetation (particularly adulticides). Neither product kills vegetation although larvicide application of surface oils can result in the discoloration of plants. However, this effect is only temporary and the original vegetation color would return.
Noise/NO	Under the No Action Alternative, no mosquito control activities would be done on District managed federal lands. Since most mosquito control activities involve the application of pesticides which in turn usually require the use of some type of motorized equipment, the No Action Alternative would not generate any noise specifically associated with mosquito control.

	The proposed alternative would result in the application of both larvicides and adulticides. Control product application is normally done through some method of spraying (e.g. aerial (plane or helicopter), backpack, truck/ATV mounted ULV, etc.) using appropriate equipment. The noise generated by the equipment/vehicles used to apply the control products is the same noise that is heard on a daily basis – e.g. airplanes, trucks, air blowers, etc.) Further, the noise is of very limited duration and at the same level as what is routinely heard. In addition, product application on District managed federal lands would be done at locations where and at times when the numbers of people present would be minimal.
Wetlands/NO	Under the No Action Alternative, mosquito control products would not be used. This removes the possibility of any effects occurring as a result of mosquito control activities. Existing conditions would continue but without possible mosquito control impacts. Under the proposed alternative, mosquito control activities could be done in or near existing wetlands. Should this happen, potential effects would be the same as those already described/discussed above for biological, water quality and vegetation resources.
Air Quality/NO	Under the No Action Alternative, mosquito control activities would not occur and therefore, there would be no potential for introducing possible contaminants/pollutants into the air. Air quality would remain at its present level although gradual air degradation could happen with continued population increase and municipal development within the MCD areas. District managed federal lands identified for mosquito control activities are currently in attainment status and meeting state air quality standards. The proposed alternative would include the application of both larvicides and adulticides by various spraying methods. While product application would introduce chemical droplets into the air, the amount and size would be at such low levels (per product label directions) that there would be no threat to human or animal welfare. Adulticides can cause some physical discomfort/irritation if they get on skin or eyes but pose no serious threat to human/animal health and have not been known to cause any respiratory problems if inhaled. (Individuals with existing respiratory issues could experience some discomfort. If requested, MCDs do provide advanced notice of

	pending mosquito control product applications.) Within an hour of spray application, control products have settled out of the air. The limited amount of control products used in spraying and their relatively fast settling out of the air would not result in District lands identified for mosquito control going out of attainment or being in non-compliance with state air quality standards.
Environmental Justice/NO	Mosquito control activities would not be done under the No Action alternative and therefore, there would be no potential for disproportionate effects occurring to any specific socioeconomic groups or geographic areas. The proposed alternative would authorize MCD mosquito control activities on selected parcels of Corps managed federal lands. The nature of the control activities would be predominantly chemical application primarily in the form of spraying. While application activities would normally occur early or late in the day, there is still the potential for limited and temporary effects (e.g. area avoidance, skin irritation, etc.). The District land parcels for which the MCDs have requested access are public lands and therefore open to everyone. The mosquito control activities proposed on District lands would not have a greater affect on any one specific socioeconomic or cultural group.
Climate Change/NO	The Council on Environmental Quality (CEQ), in NEPA guidance for documenting effects of climate change and Greenhouse Gas (GHG) emissions, uses 25,000 metric tons of carbon dioxide (CO_2)-equivalent GHG emissions on an annual basis as threshold guidance that agencies should consider as an indicator that a quantitative and qualitative assessment should be provided to decision makers and the public. The EPA provides an average estimate of 4.7 metric tons of CO_2 produced per passenger vehicles per year. While the No Action alternative would maintain existing conditions, there would continue to be an increase in GHG due to the increase in population/vehicle use along with other activities which could result in GHG emissions. Under the proposed alternative, the type and number of vehicles and equipment needed on a seasonal basis for mosquito control work for all 4 MCDs would not generate 25,000 metric tons of carbon dioxide equivalent GHG emissions.

4.1 – Biological

The District reviewed the project area's listed threatened and endangered species which are under the jurisdiction of the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) (Table 5).

Table 5: Endangered Species Act (ESA) Listings for the District's MCD Areas

SPECIES	LISTING STATUS
CHINOOK SALMON	
Upper Columbia River spring-run ESU*	Endangered
Snake River spring/summer run ESU	Threatened
Snake River fall run ESU	Threatened
SOCKEYE SALMON	
Snake River ESU	Endangered
STEELHEAD	
Middle Columbia River DPS**	Threatened
Upper Columbia River DPS	Threatened
Snake River Basin DPS	Threatened
BULL TROUT	
Columbia River DPS	Threatened
PYGMY RABBIT	
Columbia Basin DPS	Endangered
CANADA LYNX	
Contiguous U.S. DPS	Threatened
GRAY WOLF	
U.S.A. – that portion of Washington State west of the centerline of Highway 395 south of Mesa	Endangered
UTE-LADIES'-TRESSES	
Contiguous U.S. DPS	Threatened
NORTHERN WORMWOOD	Candidate
GREATER SAGE GROUSE	Candidate
YELLOW BILLED CUCKOO	Proposed Threatened
WASHINGTON GROUND SQUIRREL	Candidate
UMTANUM DESERT BUCK WHEAT	Threatened
WHITE BLUFFS BLADDERPOD	Threatened

*ESU – Evolutionary Significant Unit
**DPS – Distinct Population Segment

Listed Species

The District determined that the proposed action may affect, but is not likely to adversely affect Snake River fall Chinook, Snake River spring/summer Chinook, Snake River sockeye, Snake

River steelhead, Upper Columbia River spring Chinook, Upper Columbia River steelhead, Middle Columbia River steelhead, and bull trout. The project would have no effect on pygmy rabbit, Canada lynx, gray wolf, Ute ladies'-tresses, Northern wormwood, greater sage grouse, yellow-billed cuckoo, Washington ground squirrel, Umtanum desert buckwheat, and White bluffs bladderpod. These species either do not occur in the project area, or will not be affected by the proposed actions.

Effects of the proposed action may include localized reductions in food resources for juvenile salmonids when the application of mosquito control products are over or near to waters containing listed fish species. Application sites for larval mosquitoes would be relatively small and would occur in backwater sites which are not utilized by listed salmonids. Products applied at these sites are specific to mosquito control and are not generally toxic to listed fish species.

Critical Habitat

The District also reviewed critical habitat within the proposed project area. (Designated critical habitat for anadromous species focuses on certain habitat features called "primary constituent elements" (PCEs) which are essential to support one or more of the life stages of salmonid fishes.) The District determined the proposed action would not likely adversely affect salmon, steelhead, or bull trout critical habitat. There is no designated Canada lynx or gray wolf habitat in the proposed project area. The District determined the proposed action would have no effect on lynx or gray wolf critical habitat (Figure 5).

Effects to critical habitat may include localized reductions in mosquito larvae and the application of products to the surface waters of the Yakima River Delta. However, the effects of the proposed action on PCEs of critical habitat for listed salmonids are expected to be insignificant. Applications to reduce mosquito larvae are relatively small and occur in backwater sites which are not utilized by listed salmonids. Aerial applications occur on a limited basis and dissipate quickly. Changes in forage and water quality would likely be undetectable.

Figure 6: District Determinations for ESA Listed Species and Critical Habitat

Species	**Species Determination**	**Critical Habitat Determination**
NMFS		
Snake River Spring/Summer Chinook	May Affect, Not Likely to Adversely Affect	Not Likely to Adversely Affect
Snake River Fall Chinook	May Affect, Not Likely to Adversely Affect	Not Likely to Adversely Affect
Upper Columbia River Spring Chinook	May Affect, Not Likely to Adversely Affect	Not Likely to Adversely Affect
Snake River Sockeye	May Affect, Not Likely to Adversely Affect	Not Likely to Adversely Affect
Snake River Steelhead	May Affect, Not Likely to	Not Likely to Adversely

	Adversely Affect	Affect
Upper Columbia River Steelhead	May Affect, Not Likely to Adversely Affect	Not Likely to Adversely Affect
Middle Columbia River Steelhead	May Affect, Not Likely to Adversely Affect	Not Likely to Adversely Affect
USFWS		
Bull trout	May Affect, Not Likely to Adversely Affect	Not Likely to Adversely Affect
Pygmy Rabbit	No Effect	None Designated
Canada lynx	No Effect	No Effect
Gray Wolf	No Effect	No Effect
Ute ladies'-tresses	No Effect	None Designated
Northern Wormwood	No Effect	None Designated
Greater Sage Grouse	No Effect	None Designated
Yellow-Billed Cuckoo	No Effect	None Designated
Washington Ground Squirrel	No Effect	None Designated
Umtanum Desert Buckwheat	No Effect	No Effect
White Bluffs Bladderpod	No Effect	No Effect

4.2 – Cumulative Effects

The National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations implementing NEPA require federal agencies to consider the cumulative impacts of their actions. Cumulative effects are defined as, "the impact on the environment which results from the incremental impact of an action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR § 1508.7). Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.

Major effects to listed resources near the action area are primarily the result of development, agriculture, and associated water diversion and water control activities. The proposed action occurs near or within the largest metropolitan center of southeastern Washington. Benton and Franklin Counties have a combined population of over 250,000 people that continues to grow. Development is likewise projected to continue at a rapid rate. Additional effects to the mainstem of the Columbia and Snake Rivers would result from the heavy recreational use of the area. The Snake and Columbia Rivers are used for pleasure/recreational boating as well as heavy commercial barge traffic. All water bodies are heavily used for year-round recreation activities including fishing, hunting, boating, bird watching, and swimming.

Future actions which may contribute to cumulative effects would include additional development along the Yakima, Columbia and Snake Rivers. Increased impervious surfaces could add to runoff that may contribute additional oils, pesticides, fertilizers, and hazardous wastes to fish bearing waters. Mosquito control efforts would expand to meet demands from new

development. Snake and Columbia River reservoirs will continue to fluctuate based on available water and annual or emergency repairs/maintenance at the mainstem dams. All of the above activities are reasonably certain to continue but should not result in significant environmental effects.

5.0 ENVIRONMENTAL REVIEW REQUIREMENTS.

5.1 Federal Requirements

5.1.1 National Environmental Policy Act

This EA was prepared, and is being circulated to agencies and the public for review and comment, pursuant to requirements of the NEPA. Full compliance with NEPA would be achieved when the Finding of No Significant Impact (FONSI), if one is determined to be appropriate, is signed.

5.1.2 Clean Air Act, As Amended

The project area meets Washington State's ambient air quality standards. There would be only minor effects to air quality given the nature of the work and limited duration of each mosquito control application. The project area would continue to meet attainment standards.

5.1.3 Clean Water Act

The method of applying mosquito control products is considered a point source discharge (Section 402 of the Clean Water Act). The MCDs' application methods in Washington and Oregon are covered by state issued permits.

5.1.4 Endangered Species Act of 1973, As Amended

Endangered Species Act (ESA) listed species for the project area include: Snake River fall Chinook, Snake River spring/summer Chinook, Snake River sockeye, Snake River steelhead, Upper Columbia River spring Chinook, Upper Columbia River steelhead, Middle Columbia River steelhead, bull trout, pygmy rabbit, Canada lynx, gray wolf, Ute ladies'-tresses, Northern wormwood, greater sage grouse, yellow-billed cuckoo, Washington ground squirrel, Umtanum desert buckwheat, and White bluffs bladderpod.

The District determined the proposed action "may affect, but is not likely to adversely affect" Snake River fall Chinook, Snake River spring/summer Chinook, Snake River sockeye, Snake River steelhead, Upper Columbia River spring Chinook, Upper Columbia River steelhead, Middle Columbia River steelhead, and bull trout. The project would have no effect on the remaining identified species. The District also determined the proposed action would not likely adversely affect salmon, steelhead, or bull trout critical habitat. There is no designated Canada

lynx or gray wolf habitat in the proposed project area. The District determined the proposed action would have no effect on lynx or gray wolf critical habitat.

The Corps started consultation with NMFS and USFWS under Section 7 of the ESA but has not received a response from either agency regarding its determinations. The results of ESA consultation would be described in the final, signed Finding of No Significant Impact (FONSI), should it be determined an Environmental Impact Statement is not required for this project.

5.1.5 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) authorizes the U.S. Fish and Wildlife Service to evaluate the impacts to fish and wildlife species from proposed Federal water resource development projects which could result in the control or modification of a natural stream or body of water that might have effects on the fish and wildlife resources that depend on that body of water or its associated habitats. The proposed action does not modify a natural body of water and therefore does not involve activities subject to the FWCA.

5.1.6 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712, as amended) prohibits the "taking" of and commerce in migratory birds (live or dead), any parts of migratory birds, their feathers, or nests. "Take" as defined in the MBTA, includes any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof by any means or in any manner.

The proposed action would have minor impacts to migratory bird nesting habitat. Vegetation pruning or mowing would be conducted along roads and trails to maintain access to surveillance and treatment sites. In addition, invasive plants would be removed from treatment sites during winter months outside of nesting season for migratory birds. Any vegetation removal conducted during migratory nesting season, would be cleared by a qualified MCD wildlife biologist (either staff member or consultant). The removal of large areas of vegetation is not anticipated and no ground disturbance is planned. Because road and trail maintenance would consist of minor mowing and pruning, and because any additional vegetation removal would be cleared by a qualified biologist or performed outside the nesting season, the District determined there would be no take of migratory birds as a result of the proposed action.

5.1.7 The Bald and Golden Eagle Protection Act (BGEPA)

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions, primarily for Native American Tribes. "Take" under the BGEPA includes both direct taking of individuals and take due to disturbance. Disturbance is further defined in 50 CFR 22.3.

Bald eagles are known to nest throughout District managed lands. While all nest sites have not been documented in the District's boundaries, locations of some are known. Bald eagles can generally be found in the project area during the winter months. They can often be seen roosting and hunting along the Columbia River. Golden eagles are distributed worldwide and occupy habitats from alpine meadows to arid deserts. Washington supports nesting golden eagles east and west of the Cascade Mountains, as well as a winter migratory population. The species has been identified as a state candidate for listing due to declines in the number of nesting pairs at historic nests. There are no known bald or golden eagles nests at the project sites.

Roosting or foraging eagles may be encountered in the project area during mosquito control season. Project activities are not expected to adversely affect eagles or cause delays in foraging activities. Eagles which occupy this area frequently are most likely accustomed to the daily activities and related noise levels typically generated in and around the Tri-Cities. The District believes there would be no disturbance or take of eagles as a result of the proposed action due to few eagles being present in the area, their apparent acclimation to the noise and activity of the area, and ample alternative roosting and foraging sites in the project area,.

5.1.8 Magnuson-Stevens Act – Essential Fish Habitat (EFH)

The consultation requirement of section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) directs federal agencies to consult with NMFS on all actions, or proposed actions which may adversely affect Essential Fish Habitat (EFH). Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside EFH, and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

The project area includes areas designated as EFH under the MSA for various life-history stages of Chinook and Coho salmon. The mid Columbia – Lake Wallula, Hydrologic Unit Code (HUC 17070101), Lower Snake River (HUC 17060110), and Lower Snake River – Tucannon (HUC 17060107) sub-basins have all been identified as EFH for Chinook salmon and Coho salmon.

Based on available information and an analysis of effects, the proposed action may result in short-term, insignificant effects on some habitat parameters. These effects are:

- Potential reductions in mosquito larva and related invertebrates which serve as food resources for listed salmonids
- Aerial applications (3 – 4 times per year) of mosquito adulticides over surface waters of the Yakima River delta

The District believes there would be no adverse effect to EFH based on the low impact of the identified mosquito control products, the minimal short-term impacts associated with the project, and the proposed conservation measures,.

5.1.9 National Historic Preservation Act, As Amended

Under Section 106 of the National Historic Preservation Act (NHPA), the District is required to assess the potential effects of the proposed action on historic properties and to consult and coordinate with both mandated and interested parties. The District determined the proposed project would have a "No Adverse Affect" and has started consultation. Consulting parties include the Washington State Department of Archaeology and Historic Preservation (i.e. State Historic Preservation Officer (SHPO)), Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, Nez Perce Tribe, Confederated Tribes of the Colville Reservation and the Wanapum Band. The results of Section 106 consultation would be described in the signed FONSI should it be determined an Environmental Impact Statement is not required for this project.

5.1.10 Northwest Electric Power Planning and Conservation Act

The project would not conflict with the requirements of the Act.

5.1.11 Executive Order 11988, Flood Plain Management, May 24, 1977

The proposed action does not conflict with the purpose and goal of the E.O.

5.1.12 Executive Order 11990, Protection of Wetlands, May 24, 1977

The proposed action does not conflict with the purpose and goal of the E.O.

6.0 COORDINATION.

This EA is being made available for public and agency review and comment through the District's website (www.nww.usace.army.mil). Table 6 contains the notice list.

Table 7. Notice List

Individual	Organization
Christine Reichgott	Environmental Protection Agency
Rick Terway	City of Pasco Parks and Recreation
Maxine Whattam	City of Kennewick Parks and Recreation
Joe Schiessl	City of Richland Parks and Recreation
Adam Fyall	Benton County Commissioners' Office
Don Butcher	Oregon State Department of Environmental Quality

Bill Duke	Oregon Department of Fish and Wildlife
Heidi Hartman	Oregon Department of Lands
Cameron Sponseller	Oregon Department of Fish and Wildlife
Cheryl Hutchins-Woods	Oregon Department of Environmental Quality (Pendleton)
Mike Ritter	Washington Department of Fish and Wildlife
Eric Quaempts	Confederated Tribes of Umatilla Indian Reservation
Phil Rigdon	Confederated Tribes and Bands of the Yakama Indian Nation
Gary Passmore	Confederated Tribes of the Colville Reservation
Aaron Miles	Nez Perce Tribe
Alyssa Buck	Wanapum Band
Gary Burke	Confederated Tribes of Umatilla Indian Reservation
JoDe Goudy	Confederated Tribes and Bands of the Yakama Indian Nation
Michael Finley	Confederated Tribes of the Colville Reservation
Silas Whitman	Nez Perce Tribe
Rex Buck, Jr.	Wanapum Band
	Walla Walla County Commissioners
	Benton County Commissioners
	Franklin County Commissioners

7.0 REFERENCES

U.S. Army Corps of Engineers. 1996. Engineering Regulation 1130-2-540; Environmental Stewardship Operations and Maintenance Policies. November 1996.

U.S. Army Corps of Engineers, Walla Walla District. 2014. Mosquito Control Program, U.S. Army Corps of Engineers, Walla Walla District Managed Lands; Biological Assessment. November 2014

U. S. Environmental Protection Agency. 2014. "EPA's Pesticide General Permit." Internet: http://water.epa.gov/polwaste/npdes/pesticides/EPAs-Pesticide-General-Permit.cfm accessed November 10, 2014.

U.S. Environmental Protection Agency. 2014. "Greenhouse Gas Emissions from a Typical Passenger Vehicle." Internet: http://www.epa.gov/otaq/climate/documents/420f14040.pdf accessed November 10, 2014

White House. 2010. Memorandum for Heads of Federal Departments and Agencies, Subject: Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions, dated 18 February 2010.

Williams, R.E, Hall, R.D., Broce, A.B., and Scholl, P.J. 1985. Livestock Entomology. John Wiley & Sons. New York, New York.

APPENDIX A

BIOLOGICAL COORDINATION

APPENDIX B

CULTURAL RESOURCES COORDINATION