



US Army Corps of Engineers
Omaha District

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT & FINDING OF NO SIGNIFICANT IMPACT

**CONTROL OF SALTCEDAR AND RUSSIAN OLIVE
FORT PECK RESERVOIR, MONTANA
APRIL 2016**



Fort Peck Reservoir

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April 2016

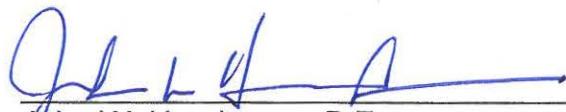
In accordance with the National Environmental Policy Act (NEPA) and implementing regulations, a supplemental Environmental Assessment (EA) has been prepared for the proposed herbicidal control of saltcedar (*Tamarix spp.*) and Russian olive (*Elaeagnus angustifolia*) at the Fort Peck Reservoir in McCone, Valley, Garfield, Phillips, Petroleum and Fergus Counties, Montana. The Fort Peck Reservoir is proposing control of these invasive species in accordance with the National Invasive Species Act of 1996 and the Corps' Invasive Species Policy Memorandum dated June 2, 2009.

Three alternatives for the control of invasive species at the Fort Peck Reservoir were analyzed and two were brought forward for further consideration: the No Action Alternative (Alternative 1) and Alternative 2- Aerial Application of the Herbicides *Triclopyr* and *2,4-d* (Preferred Alternative). The No Action Alternative is carried through analysis in order to establish a baseline of present conditions and the future of the proposed project area without action. The Action Alternative is the preferred alternative as it would proactively reduce invasive saltcedar and Russian olive within the proposed project area. The third alternative, control of saltcedar and Russian olive through water level manipulation in the Fort Peck Reservoir, was analyzed but eliminated from further consideration as it could conflict with the eight authorized purposes, is not economically feasible, nor an effective management tool for upland populations.

The EA and comments received from the resource agencies were used to determine whether the proposed action would require the preparation of an Environmental Impact Statement (EIS). All environmental, social, and economic factors relevant to the proposal were considered in this EA. No significant adverse impacts to these resources are expected to occur; in fact, the proposed project could contribute to improving the quality of habitat to provide increased benefits to native resident and migratory fish and wildlife species. The proposed action will be in compliance with applicable environmental statutes.

It is my finding, based on the EA that the proposed federal activity will not have any significant adverse impacts on the environment and will not constitute a major federal action significantly affecting the quality of the human environment. Therefore, an EIS will not be prepared.

Date: 21 APRIL 2016



John W. Henderson, P.E.
Colonel, Corps of Engineers
District Commander

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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
CONTROL OF SALT CEDAR AND RUSSIAN OLIVE
FORT PECK RESERVOIR, MONTANA
April 2016

1. INTRODUCTION

Saltcedar (*Tamarix spp.*), belonging to the family Tamaricaceae, which is comprised of four genera and more than 100 species, is a deciduous woody shrub that originates from Eurasia, Africa, India and Japan. No species from the family Tamaricaceae is native to North America, and only one genus, *Tamarix*, of the four genera occurs in North America. This invasive plant species was thought to be first introduced to North America in the early 1800s along the east coast where it was sold as an ornamental shrub and also as a windbreak species. By the mid-1800s saltcedar was being sold in nurseries in California. From the 1920s to 1960s an estimated 10,000 acres had exploded to over 1.2 million total acres within the United States (Zouhar, 2003). In 2011, Montana Fish, Wildlife and Parks (MFWP) added saltcedar to its Aquatic Nuisance Species Priority List as a Priority Class 4 (MFWP, 2011). A Priority Class 4 means that this species is present and has the potential to spread throughout Montana but there are current management strategies available for control.

Saltcedar is now established throughout much of the United States, primarily along riparian corridors. Established monotypic stands outcompete native vegetation and decrease biodiversity which in turn provides limited habitat and food value for wildlife. Saltcedar is also known to alter the ecology and hydrology of native riparian systems (USDA, 2010). The dense root system can slow water flow which increases sediment deposition and creates stagnant water conditions (MFWP, n.d.). Russian olive (*Elaeagnus angustifolia*) is another noxious species of concern that will be addressed in this Environmental Assessment (EA). This species also shares the same riparian habitat preferences as saltcedar. It is native to western Asia, parts of tropical Asia and southeastern Europe and was introduced to the western and central United States in the late 1800s as an ornamental and a windbreak species. Russian olive can quickly colonize an area due to a high tolerance of varying climatic conditions and rapid seed proliferation and dispersion (Collins, 2002).

This document supplements the *Environmental Assessment and Finding of No Significant Impact, Control of Saltcedar and Russian Olive, Fort Peck Reservoir, Montana* (USACE, 2013). The December 2013 EA (see Appendix D) disclosed the potential environmental impacts of providing chemical control of the invasive saltcedar and Russian olive through the aerial application of the herbicides *imazpyr* and *glyphosate* for large infestations, and the application of the herbicides *triclopyr*, *imazapyr* and *glyphosate* through foliar, cut-stump and basal bark methods at the Fort Peck Reservoir in McCone, Valley, Garfield, Phillips, Petroleum and Fergus Counties, Montana. This Supplemental EA defines the potential environmental effects of using *triclopyr* and 2,4-D for aerial application of large infestations of saltcedar and Russian olive.

The U.S. Army Corps of Engineers (Corps) has made plans with the Montana Saltcedar Team (MST) and adjacent landowners to treat an area surrounding Seven Blackfoot Creek on Fort Peck in the summer of 2016. In April of 2014, the Missouri River Conservation Districts Council (MRCDC) formed the MST which is composed of a multi-organizational group to collectively combat saltcedar infestations within the Missouri and Musselshell River Basins in Montana. Members include representatives from the Corps along with multiple Conservation Districts and County Weed Boards, MFWP, Bureau of Land Management (BLM), U.S. Department of Agriculture (USDA) Research Service, U.S. Fish and Wildlife Service (USFWS)- Charles M. Russell National Wildlife Refuge (CMRNWR), the Musselshell Watershed Coalition and the MRCDC.

1.1 Project Authority

The proposed project is in accordance with the Corps' Invasive Species Policy Memorandum dated June 2, 2009 (see Appendix A) which establishes a consistent, nationwide policy that is applied to all Civil Works projects and programs. The Corps recognized the need to create such a policy to compliment the National Invasive Species Act of 1996 (NISA) (16 U.S.C. § 4701 [PL 104-332]) which arose from the Non-indigenous Aquatic Nuisance Species Prevention and Control Act of 1990 (16 U.S.C. 4701, as amended through PL 106-580, December 29, 2000), to create measures to prevent or reduce invasive and non-native species as a component of all Corps Operations and Maintenance (O&M) Civil Works projects. In addition, this policy supports the Corps Environmental Operating Principles (EOP) and is applied to the execution of all Civil Works programs, to include Operations, Civil Works, Planning, Regulatory Actions, the U.S. Army Engineer Research and Development Center (ERDC) and the Invasive Species Leadership Team (ISLT).

This project is also supported by Executive Order (EO) 13112 which seeks to prevent the introduction of invasive species and authorizes control of said species to minimize economic, ecological and human health impacts.

1.2 Project Location

The Fort Peck Dam and Reservoir is located at river mile (RM) 1,771.5 in the Missouri River Basin. When the reservoir is at its maximum operating pool of 2,250 feet mean sea level (msl), the water surface of the lake is approximately 249,000 acres with approximately 1,520 miles of shoreline. When the reservoir is at its normal conservation pool of 2,234 feet msl the water surface of the lake is approximately 246,000 acres. The location of the proposed project would take place along the shoreline and in adjacent upland areas of the Fort Peck Reservoir area in McCone, Valley, Garfield, Phillips, Petroleum and Fergus Counties, Montana (refer to Figure 1). No herbicide would be applied to surface waters of the Reservoir.

2. PURPOSE AND NEED

The purpose of the proposed project is to control the spread of saltcedar and Russian olive within the Fort Peck Reservoir by utilizing a variety of methods. The need for the proposed project

stems from the requirement to meet the National Invasive Species Act of 1996 as well as to comply with the Corps' agency policy on control of noxious weeds. An additional need is to protect area recreation, fish and wildlife and the habitat upon which the species of the Fort Peck Reservoir and adjacent areas depend on. Assessing herbicides, such as *triclopyr* and 2,4-D, in addition to the previously approved herbicides in the 2013 EA for aerial application will allow the Corps to more effectively and efficiently control infestations. Having multiple approved herbicides to utilize on a rotating basis may potentially help prevent a phenomenon known as herbicide resistance (further discussed in Section 3.2).

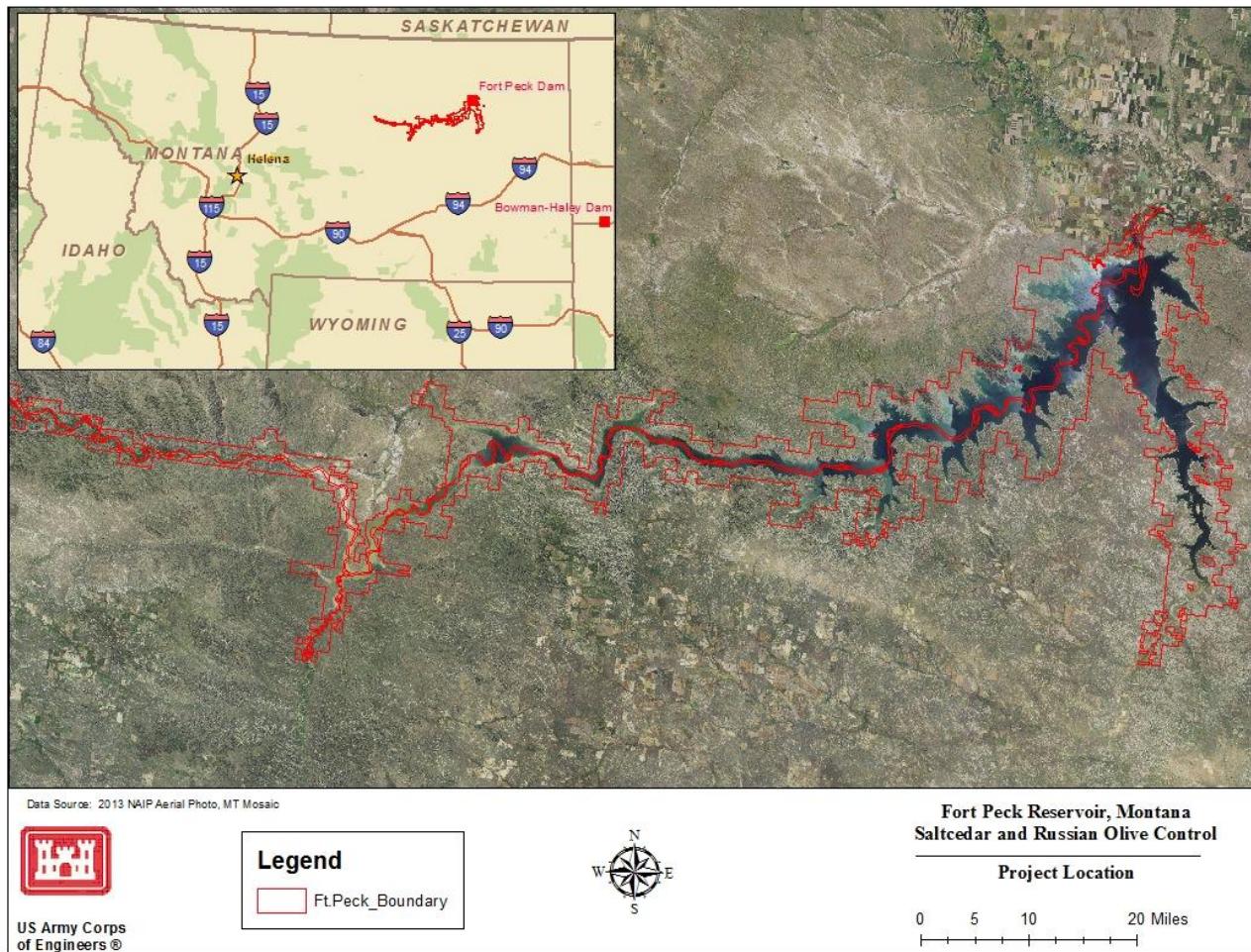


Figure 1. Proposed project location (property within red border) along the shoreline and adjacent upland areas of the Fort Peck Reservoir, Montana

3. ALTERNATIVES CONSIDERED

3.1 Alternative 1: No Action

Under the No Action Alternative, no herbicides containing the chemicals *triclopyr* and 2,4-D would be used to aerially treat saltcedar and Russian olive. However, *imazapyr* and *glyphosate*

may continue to be used for aerial spraying activities and *triclopyr* may continue to be utilized in accordance with the December 2013 EA and subsequent Finding of No Significant Impact (FONSI) (see Appendix D).

According to the Corps' 2008 *Fort Peck Dam/Fort Peck Lake Master Plan and Integrated EA*, no detailed methods or materials are described for specific treatment of invasive species other than stating that "the Corps is working cooperatively with other federal, state and local agencies to address the noxious weed problem at a statewide level" (USACE, 2008). The Montana Noxious Weed Summit Advisory Council (MNWSAC) is a conglomerate of state, federal and Tribal representatives that developed *Montana's Statewide Strategic Plan for Invasive Aquatic Plant Management and Resource Protection* (MNWSAC, 2011). This plan outlines various control methods, starting with public awareness and education to chemical and mechanical management strategies of invasive species. Non-chemical measures may also continue to be utilized to assist in controlling saltcedar and Russian olive; however, such methods typically prove laborious or ineffective and do not treat large-scale infestations.

3.2 Alternative 2: Aerial Application of *Triclopyr* and 2,4-D to Control Saltcedar and Russian Olive

Under Alternative 2, areas of large infestations of saltcedar and Russian olive could be treated with the post-emergent herbicides *triclopyr* and 2,4-D through aerial spraying from a helicopter or fixed-wing aircraft. Both of these herbicides have formulations which have been approved for use in aquatic environments by the U.S. Environmental Protection Agency (EPA).

Herbicide resistance is a phenomenon in which a plant has the ability to survive and reproduce following exposure to a dose of herbicide that is normally lethal. In some cases this occurs naturally due to selection, or it may be induced as the result of random and infrequent mutations. Herbicides are active at one or more target sites within a plant, impacting enzymes or proteins or disrupting a chemical pathway. Often a resistant weed that has been selected by pressure from one herbicide will become resistant to all herbicides that act on that target site. The most likely way to cause evolution of resistant weed populations is to exert selection pressure on weeds with the same herbicides over several generations. Thus, ways to actively prevent potential herbicide resistance in targeted weed populations is to rotate utilization of herbicides with different modes of action (Prather et al., 2000). By evaluating the most effective and environmentally compatible herbicides for treatment of saltcedar and Russian olive, as well as developing treatment strategies that would prevent potential herbicide resistance in these noxious species, it is anticipated that the Corps' proposed measures would be more effective in managing infestations within the Fort Peck Reservoir area.

Triclopyr [3,5,6-trichloro-2-pyridinyloxyacetic acid] is a selective, systemic herbicide used to treat broadleaf weeds and brush. *Triclopyr*, an auxin mimic, works by moving through plant tissue and interrupting cell growth and division. *Triclopyr* triethylamine salt (TEA) was first registered in 1979 and *triclopyr* butoxyethyl ester (BEE) was registered in 1980. Both formulations were reregistered in 1998. It has a soil half-life of approximately 30 days and is degraded through microbial metabolism, photolysis (chemical breakdown through light) and

hydrolysis (chemical breakdown through water). Renovate 3®* (*triclopyr* TEA) is the only formulation of *triclopyr* that has been approved for use in aquatic environments by the EPA. The maximum allowed application rate of 6 lb/ae (pound per acid equivalent) per acre, per year would not be exceeded for forestry sites as recommended by the Renovate 3® label (see Appendix C).

2,4-D [2, 4-dichlorophenoxyacetic acid] is also a selective, systemic herbicide used to treat broadleaf weeds. Like *triclopyr*, it also behaves as an auxin mimic which stimulates uncontrolled growth and eventually causes plant death. The herbicide is absorbed through the leaves and translocated to the meristem. 2,4-D has been used since the mid-1940's as an herbicide, with over 600 end-use products registered with the EPA. The herbicide was in special review status since 1986, due to carcinogenicity concerns (specifically non-Hodgkin's lymphoma) and in 1988, this special review was waived as no carcinogenic link could be established. In 1992, a science advisory committee concluded that data were not sufficient to establish a cause and effect relationship between 2,4-D and cancer and was thus, classified as a Group D, which is not classifiable to cancer. Reregistration occurred in 2005 (EPA, 2005). AquaKleen®* and Navitgate®* are 2,4-D BEE granular formulations approved for use in aquatic environments. Both product formulations of 2,4-D state a maximum application rate of 200 lb/acre per year and this application rate would not be exceeded as prescribed by the product labels.

Additionally, some combination of these herbicides may also be utilized to treat large infestations of saltcedar and Russian olive, such as AquaSweep®* which contains both *triclopyr* and 2,4-D.

Aerial spraying would take place only to treat large areas of infestation of saltcedar and Russian olive through the use of a helicopter or fixed-wing aircraft with an attached spray system. The process would start at a staging area coordinated by the Fort Peck Project Office where the aircraft would be loaded with water, herbicide, a surfactant and a drift retardant. A surfactant is used to enhance the performance of an herbicide by allowing the chemical mixture to spread, stick to and penetrate the plant. A surfactant with an LD₅₀ (median lethal dosage) of less than 10 mg/L (milligrams per liter) and labeled for use at aquatic sites, such as Agri-Dex®* or equivalent surfactants, would be added to the tank mixture.

A drift retardant with an LD₅₀ of less than 10 mg/L labeled for use at aquatic sites, such as IN-PLACE®* or an equivalent agent, would also be used. A drift retardant is an additive to the mixture which increases the viscosity of the liquid, thereby increasing drop size and making it less susceptible to wind. Drift retardants and surfactants will be collectively known as adjuvants throughout this document. An adjuvant is any additive used in conjunction with an herbicide to increase biological or herbicidal activity, efficacy or may alter physical properties of an herbicide to widen its range of usefulness. This total mixture of herbicide, water and selected adjuvants would be aerially applied by an appropriately licensed applicator. Two weeks prior to herbicide application at a proposed area, the spraying location and staging areas would be advertised in a press release in order to inform the public of temporary area closures (see Section 5.17).

*Product names are provided solely for reference and should not be considered endorsements

Best management practices (BMPs) would be implemented to minimize drift during helicopter application. See Appendix E for a complete list of BMPs. All product labels and EPA guidance would be followed. See Appendix C for product labels and Material Safety Data Sheets (MSDS). It is important to note that adjuvants are not under the same registration guidelines as herbicides and the EPA does not register or approve the labeling of spray adjuvants.

All aerial herbicide spraying would be conducted from May to October on an annual basis as typically winds are much calmer and there is less precipitation during this time frame. In accordance with the Montana Pollution Discharge Elimination System (MPDES) permit (see Appendix G; Section 5.5.2) the 1,000-acre annual treatment threshold established for Tier I aerial pest control would not be exceeded. Additionally, soil monitoring would take place on treated areas. Random transects would be selected in treatment areas prior to treatment and samples would be taken on an annual basis for three years post-treatment to ensure soil quality and environmental health is not being negatively affected.

4. ALTERNATIVES ANALYZED BUT NOT BROUGHT FORWARD FOR FURTHER CONSIDERATION

4.1 Alternative 3: Water Level Manipulation

Maintaining the Fort Peck Reservoir at full pool capacity for an extended period of time could naturally reduce and eliminate shoreline populations of saltcedar and Russian olive, as was apparent during the 2011 period-of-record high water event. An all-time elevation record was set through the combination of rain and snowmelt, reviewing reservoir averages from January to June of 2011, approximately 17 vertical feet was gained.

The natural increase in reservoir water levels inundates shoreline stands; however, maintaining the reservoir at full pool capacity for controlling invasive species is not a viable alternative as it would greatly affect the multipurpose objectives of the Missouri River Reservoir System (System) and could cause adverse impacts to downstream users. The Corps operates and manages the System for eight congressionally authorized purposes; 1) flood control; 2) water supply; 3) navigation; 4) water quality; 5) irrigation; 6) recreation; 7) hydropower and 8) fish and wildlife. Furthermore, operation of the System must comply with other applicable federal statutory and regulatory requirements, including the Endangered Species Act. Water is allocated throughout the Missouri River Basin to satisfy these purposes.

In addition, water level manipulation would be ineffective in controlling stands that occur in the adjacent upland areas of the Fort Peck Reservoir. It is reasonable to assess that even if shoreline populations were controlled through water level manipulation, upland stands would still need to be managed through herbicidal control. If upland stands of saltcedar and Russian olive were not managed, there is a high potential that these species would re-colonize shoreline areas previously eradicated as saltcedar reproduces through vegetative shoots and seeds that are dispersed by water and wind.

Because this alternative is not compatible with the Corps' congressionally authorized purposes, nor does it effectively manage upland populations of invasive saltcedar and Russian olive, it is not being brought forward for further consideration.

5. EXISTING CONDITIONS AND ENVIRONMENTAL CONSEQUENCES

The December 2013 EA contains a description of the affected environment that requires little supplementation for this proposed project. The resource categories in this section mirror the organization of the December 2013 EA which is provided in Appendix D. The existing conditions were thoroughly documented and evaluated in this previous NEPA document. For this supplemental EA, additional narrative on existing conditions is provided below only in cases where:

- 1) Substantive changes to the project area have occurred since the analysis conducted in 2013;
- 2) New resources not covered in the previous EA could potentially be affected; or
- 3) Some aspects of existing resources will be uniquely affected by the proposed activities.

Environmental consequences have been integrated with the affected environment to show the degree of potential impacts to individual resources; these impacts may either be positive or negative in nature. An assessment of the environmental consequences provides the scientific and analytic basis for alternative comparison. Impacts are described in terms of duration and intensity:

Impact Duration: The following terms will be used to describe the duration of an impact.

- 1) Short-term: Temporary impacts caused by the construction and/or implementation of an alternative.
- 2) Long-term: Impact persists after the action has been completed and/or after the action is in full and complete operation.

Impact Intensity and Context:

- 1) Negligible: Impacts may occur, but the change would be localized and so small that it would not be of any measurable or perceptible consequence.
- 2) Minor: Impact could result in a change to a population or individuals of a species or to a portion of a habitat or resource. The change would be measurable but small, localized, and of little consequence to the resource.
- 3) Moderate: Impact could result in some change to a population or individuals of a species or habitat. The change would be measurable and of consequence, but would be of moderate scale and would occur over a limited area.
- 4) Major: Impact could result in a considerable change to a population or individuals of a species, resource or habitat. The change would be measurable, extensive, and would occur over a wide geographic area.

5.1 Physiography and Topography

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of physiography and topography.

5.1.1 No Action

Under the No Action Alternative, no aerial application of *triclopyr* or 2,4-*D* herbicides would take place to control invasive saltcedar and Russian olive; however, previously authorized herbicides could still be utilized. No negative impacts would occur to physiography or topography through the implementation of this action.

5.1.2 Alternative 2 (Preferred Alternative)

Under Alternative 2, the herbicides *triclopyr* and 2,4-*D* would be used to aerially treat large infestations of saltcedar and Russian olive. This proposed action would have no adverse effects on physiography or topography.

5.2 Climate

According to the most recent National Climate Assessment in 2014, Montana falls within Great Plains Region. It is anticipated that rising temperatures will continue to increase demand for water and energy which will lead to continued stress on natural resources, increase competition for water among communities, agriculture, energy production and ecological needs. Current projections suggest this region will experience more frequent and intense droughts, severe rainfall events and heat waves. Even under a scenario of substantial reductions in greenhouse gas emissions, it is anticipated days that experience over 100°F would double in the northern Great Plains by mid-century. Minimum annual temperatures will also increase (Shaffer et al., 2014).

It is suggested that successful adaptation of human and natural systems to climate change would benefit from recognition of and commitment to addressing these challenges, such as regional-scale planning and local-to-regional implementation, mainstreaming climate planning into current natural resource, public health and emergency management processes and renewed emphasis on restoration of ecological systems (Shaffer et al., 2014).

5.2.1 No Action

The No Action Alternative would have no negative impacts on climatic conditions of the proposed project area.

5.2.2 Alternative 2 (Preferred Alternative)

Carbon dioxide (CO₂) emissions are becoming an increasing concern on the negative impacts to global warming and climate change. Climate change is a natural trend in our planet's history. Over 650,000 years, seven cycles of glacial advancement and retreats have occurred, impacting

climate change. The last ice age occurred about 7,000 years ago which marks the current climate era of today. The heat-trapping nature of CO₂ has been demonstrated in the relatively sudden and dramatic shift to warmer temperatures. Atmospheric CO₂ has historically been below 300 mg/L, but since 1950 has precipitously inclined to today's current level, over 380 mg/L (NASA, 2013).

BMPs, such as avoiding idling engines and utilizing only the smallest amounts of chemicals necessary, would be implemented. One of *triclopyr*'s final degradates is CO₂ (see Section 5.3.2). As responsible stewards of the environment, it is important to reduce the carbon footprint of all actions where feasible and practical. No major long-term adverse effects are expected with the action alternative as the amount of CO₂ emitted from the use of *triclopyr* or through the use of associated equipment is not expected to be in excessive quantities.

5.3 Soils

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of soils.

5.3.1 No Action

Under the No Action Alternative, *triclopyr* and 2,4-D would not be aerially applied to large infestations of saltcedar and Russian olive surrounding Fort Peck Reservoir. However, previously approved herbicides would continue to be used. Should infestations become resistant to previously approved herbicides, it is possible that soil conditions could potentially deteriorate within the Fort Peck Reservoir area if the invasive saltcedar and Russian olive are not controlled.

Vegetative communities have the ability to alter and form soil chemistry. Saltcedar, as its name implies, extracts salt from the groundwater and subsequently excretes these compounds through tissues and deposits them onto the soil surface through leaf senescence (death) and exudation (emission) (Ladenburger et. al., 2006 as cited in Cederborg, 2008). When excess soluble salts are present, nutrients such as calcium and magnesium become severely decreased. Additionally, sodium can disrupt particles that hold certain soil types together, causing erosion and runoff (Cederborg, 2008).

5.3.2 Alternative 2 (Preferred Alternative)

In soil, *triclopyr* acid is somewhat persistent and mobile under normal environmental conditions, *triclopyr* TEA dissociates to the acid within minutes. In soil, the predominant degradation mechanism for triclopyr acid is biotic metabolism, and in aerobic conditions, has a half-life of approximately 8 to 18 days (EPA, 1998). *Triclopyr* TEA will rapidly disassociate in water to parent compounds triclopyr acid/anion and triethanolamine. Triethanolamine will dissociate to the triclopyr anion at a pH > 5, meaning *triclopyr* acid will be the predominant residual compound left in the environment. *Triclopyr* acid degrades to 3,5,6,-trichloro-2-pyridinol (TCP) and 3,5,6-trichloro2-methoxypyridine (TMP) where the ultimate degradate is CO₂. In studies conducted by EPA, both TCP and TMP were recovered in vegetated soil up to 36 weeks (252

days) and recovered in bare soil up to 63 weeks (441 days) after treatment (EPA, 1998). Treatment would only take place in vegetated areas, and the use of this chemical would only be concentrated to stands of saltcedar and Russian olive.

2,4-D is considered non-persistent in terrestrial environments. Degradation through microbial metabolism in aerobic soil has a half-life of approximately 6 days and a half-life of approximately 231 days if degraded through soil metabolism in anaerobic conditions (EPA, 2005). Photodegradation of 2,4-D may also occur and has a half-life of approximately 68 days on the soil surface. Several degradates have been detected in laboratory studies, though none warranted further analyses in water or terrestrial ecological assessment studies (EPA, 2005). 2,4-D is also fairly mobile, with a low binding affinity in mineral soils and sediment. For 2,4-D esters, such as AquaKleen® and Navigate®, degradation is dependent upon abiotic and microbial-mediated processes, therefore, many environmental variables and various soil properties can theoretically impact persistence of these formulations. Registrant-sponsored research indicates esters such as these BEE formulation residues were detected in sediment samples immediately post-treatment to 186 days post treatment. BEE formulations have a higher persistence in sediment due to the slow release of the granule formulation or the slow de-esterification process which binds to the soil (EPA, 2005).

No major long-term impacts are likely to occur to soil from the proper and careful use of the herbicides *triclopyr* and 2,4-D. All product labels and EPA guidance would be followed. Additionally, soil monitoring would take place on treated areas. Random transects would be selected in treatment areas prior to treatment and samples would be taken on an annual basis for three years post-treatment to ensure soil quality and environmental health is not being negatively affected.

5.4 Wetlands

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of wetlands.

5.4.1 No Action

Under the No Action Alternative, neither *triclopyr* nor 2,4-D would be aerially applied to control saltcedar and Russian olive within the Fort Peck Reservoir area; however, previously approved herbicides would continue to be used. Development of an herbicide resistance from the overuse of previously approved *imazapyr* or *glyphosate* could negatively impact wetlands as not only could water quality potentially degrade (see Section 5.5.1) but native wetland vegetation could be out-competed from both large or small, localized infestations along the shoreline and within the Project lands of Fort Peck. Wetland habitat could be severely diminished within the Fort Peck Reservoir area if these invasive species are not effectively controlled. If herbicide resistance occurs and other herbicides are not approved for use, impacts could be major and long-term to wetland communities across the Fort Peck Reservoir area.

5.4.2 Alternative 2 (Preferred Alternative)

By implementing Alternative 2, the aquatically approved formulations of *triclopyr* and 2,4-*D* would be aerially applied to large infestations of invasive saltcedar and Russian olive. No long-term adverse impacts are expected to occur to wetlands from this proposed action, as aerial spraying would take place along the shoreline of the Reservoir above the water mark or only in previously established wetlands that have already become degraded with heavy infestations of these invasive species would be treated.

Additionally, BMPs to reduce aerial drift and runoff would be followed, such as not applying herbicides if wind speeds are greater than 10 mph and herbicide application would not take place if rain is imminent within 48 hours (see Appendix E for a complete list of BMPs). All product labels and EPA guidance would be followed (see Appendix C for product labels and MSDS).

5.5 Water Quality

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of water quality.

5.5.1 No Action

Under the No Action Alternative, no negative impacts to water quality would occur. The herbicides *triclopyr* and 2,4-*D* would not be used for aerial application; however, the previously approved herbicides *imazapyr* and *glyphosate* may be used to treat infestations of saltcedar and Russian olive. Should infestations of saltcedar and Russian olive develop a resistance to the previously approved herbicides, water quality could be negatively affected if these invasive species become unmanaged. Large infestations could alter flows through increased siltation. Dense root systems can penetrate to a depth of 30 feet which can greatly contribute to increased transpiration rates that reduce water flow (USDA, 2010). This can increase sedimentation and create stagnant water conditions (MFWP, n.d.).

5.5.2 Alternative 2 (Preferred Alternative)

Under Alternative 2, aerial application of *triclopyr* is not expected to have harmful effects on water quality as only aquatically approved formulations of this chemical would be utilized and no herbicide would be directly applied to surface waters. *Triclopyr* is not currently regulated under the Safe Drinking Water Act (SDWA); therefore, no maximum contaminant level (MCL) has been established. *Triclopyr* does not meet the detection triggers in groundwater for recommending restricted use; however, this is in part due to limited monitoring of residues within the United States. Where data is available, the degradate of *triclopyr*, TCP, was found at 30 to 40 mg/L in 30-45 centimeters (cm) of soil one week, two weeks and eight weeks after treatment, suggesting there may be limited leaching of *triclopyr* and TCP under certain conditions (EPA, 1998). Environmental fate studies reviewed by EPA have shown that *triclopyr* is non-persistent on surface waters. *Triclopyr* TEA has a half-life of 0.7 to 1.7 days in natural water. While no herbicides are being applied directly on surface waters, there is only a small

potential for *triclopyr* to be transported to surface waters via runoff, as this chemical does not adhere to soil or soil particles (EPA, 1998). Application of this herbicide would not take place if rain is imminent within 48 hours post-treatment in order to minimize runoff potential.

A modeling effort was conducted on 2,4-*D*, which is regulated under the SWDA, to estimate residues in surface water used for drinking water. Based on established parameters and monitoring data, it was determined that 2,4-*D* is detected in groundwater and surface water, as well as finished drinking water. Maximum concentrations in surface source water and ambient groundwater were 58 µg/L and 14.8 µg/L, respectively. The highest median 2,4-*D* concentration of 1.18 µg/L from finished drinking water was derived from the National Drinking Water Contaminant Occurrence Database. Utilizing these modeling efforts, an established MCL of 70 µg/L for aquatic applications and 118 µg/L for terrestrial application was defined as reasonable and practical values to be used for surface water concentration limits. Only terrestrial application would occur under this alternative and all labels would be followed. Post-treatment, no restrictions exist on eating fish from treated water, human drinking water or pet/livestock drinking water (EPA, 2005).

Adjuvants are not regulated by EPA, therefore, no established concentrations for drinking water currently exist for these products. Aerial application of herbicides and associated adjuvants would not be applied directly to surface waters. The potential of adverse effects with the use of these products to water quality are extremely minimized as all spraying would focus on vegetated environments and the likelihood of aerial drift and runoff would only take place in negligible quantities if at all.

Herbicide treatments to, over, or adjacent to surface water may require a Montana Pollutant Discharge Elimination System (MPDES) permit. In November 2011, a Pesticide General Permit (# MTG870000) was issued by Montana Department of Environmental Quality (MDEQ) to authorize biological or chemical pesticide discharges (see Appendix G). A Tier I requirement necessitates a submission of a Notice of Intent (NOI) package prior to discharging. For aerial application (i.e. forest canopy), such as the Preferred Alternative, a Tier I treatment area annual threshold of 1,000 acres has been established. The Corps will work with MDEQ to obtain all proper and necessary permits. All product labels' guidance would be strictly adhered to. Additionally, the use of the drift retardants and surfactants would help minimize contamination to adjacent, non-target areas and assist by ensuring the chemicals better adhere to the plants (see Appendix C for a complete listing of all product labels and MSDS).

5.6 Air Quality

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of air quality.

5.6.1 No Action

Under the No Action Alternative, no negative impacts to air quality are expected to occur. *Triclopyr* and 2,4-*D* herbicides would not be used to treat invasive saltcedar and Russian olive

through aerial application; however, *imazapyr* and *glyphosate* would continue to be used in accordance with the 2013 EA.

5.6.2 Alternative 2 (Preferred Alternative)

The herbicide application involved is not expected to have an appreciable effect on overall air quality due to the rapid dilution of these chemicals in the air. Overall Ambient Air Quality Standards (AAQS) would likely only experience localized, short-term and negligible impacts during spraying activities. Once spraying activities have concluded, air quality would be expected to return to ambient conditions. All proper and necessary BMPs would be implemented, all MSDS' and product labels would be followed, and therefore, no long-term adverse impacts are anticipated.

Additionally, emissions from equipment use are not expected to have lasting effects on air quality. BMPs, such as powering off equipment when not in use would be implemented to reduce impacts to air quality.

5.7 Noise

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of existing noise conditions.

5.7.1 No Action

Under the No Action Alternative, no significant increase in noise levels would occur. Aerial spraying of *imazapyr* and *glyphosate* may still occur, as prescribed in the 2013 EA. Therefore, temporary noise disturbances as expected under the Preferred Alternative are the same for the No Action Alternative.

5.7.2 Alternative 2 (Preferred Alternative)

Short-term and negligible noise disturbances during treatment periods would occur in the form of equipment use, such as helicopters, fixed-wing aircraft and sprayers. BMPs, such as turning off equipment when not in use would be implemented to reduce noise impacts. Once spraying activities have concluded, noise levels would return to ambient existing conditions.

5.8 Fish

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of fisheries at Fort Peck.

5.8.1 No Action

Under the No Action Alternative, the herbicides *triclopyr* and *2,4-D* would not be used to aerially treat saltcedar or Russian olive; however, previously authorized herbicides may still be utilized. While there would be no direct negative impacts, there could be indirect adverse effects

to fish under the No Action Alternative should infestations of saltcedar and Russian olive develop an herbicide resistance to *imazapyr* and *glyphosate*. By not effectively controlling these invasive species, they could potentially overtake susceptible aquatic habitats. As mentioned previously (see Section 5.5.1), dense stands of saltcedar can alter hydrology. It is reasonable to hypothesize that the increased sedimentation from the dense root system could dry up small springs, marshes and ephemeral streams surrounding the reservoir that native fish species may utilize.

5.8.2 Alternative 2 (Preferred Alternative)

Under Alternative 2, herbicides will not be applied directly over surface waters, however; there is a possibility of small amounts of the herbicides to enter into a water body through aerial drift or runoff. Only the formulations of *triclopyr* and 2,4-D approved for use in aquatic environments would be utilized for aerial treatment.

Triclopyr acid and *triclopyr* TEA is considered practically non-toxic to fish (see Table 1). Both *triclopyr* acid and TEA had an LC₅₀ (median lethal concentration) over 100 mg/L in both the cold-water and warm-water test species (NPIC, 2002). An early life stage study was also conducted using fathead minnow (*Pimephales promelas*) for *triclopyr* TEA as this herbicide was intended for use in aquatic environments and as such, is likely to be continuous or recurrent regardless of toxicity. Results indicated that *triclopyr* TEA may affect fish lengths at levels greater than 104 mg/L and a lowest observable effect concentration (LOEC) of 162 mg/L, therefore a maximum acceptable toxicant concentration (MATC) of 130 mg/L was established for early life stage fish. Because of rapid microbial degradation under aerobic conditions, it is not expected that bioaccumulation in fish would occur, though no fully-acceptable laboratory tests studying bioaccumulation in fish has been reviewed for *triclopyr* derivatives (EPA, 1998). Additionally, as stated previously, no direct application to surface waters would occur under the Preferred Alternative and the chance of runoff would be minimized by the use of adjuvants and utilizing BMPs. All product labels and MSDS' would be followed. Results from acute and chronic laboratory studies on freshwater fish for *triclopyr* TEA formulations indicate that potential for acute high risk, risk to endangered species, chronic risk and restricted use levels are not exceed at registered maximum application rates.

Table 1. EPA Ecotoxicological Categories for Aquatic Organisms.

Acute Toxicity in Fish and Invertebrates (mg/L test solution)	Toxicity Ranking
<0.1	Very Highly Toxic
0.1-1.0	Highly Toxic
>1-10	Moderately Toxic
>10-100	Slightly Toxic
>100	Practically Non-toxic

*Derived from http://www.dec.ny.gov/docs/materials_minerals_pdf/triclopyrcis.pdf

Formulations of 2,4-*D* approved for use in aquatic environments are also considered practically non-toxic. Additionally, according to an Environmental Fate and Effects risk assessment study, no acute or chronic level of concern (LOC) exceedances for fish through runoff/drift from use on terrestrial sites occurred. Available data indicate that 2,4-*D* does not bioaccumulate at significant levels in fish (EPA, 2005). LC₅₀ levels for a fresh, warmwater species such as bluegill sunfish (*Lepomis macrochirus*) are 263 mg/L.

Agri-Dex ® is considered practically non-toxic to fish, and it has an LC₅₀ of greater than 1,000 mg/L according to a study on bluegill and rainbow trout (*Oncorhynchus mykiss*) (Diamond & Durkin, 1997).

All product labels and MSDS' would be followed (see Appendix C). No long-term or major, adverse impacts are expected to occur with the implementation of the Preferred Alternative with the proper and careful use of the herbicides. No direct application to surface waters would occur and the likelihood of runoff is minimized with the use of adjuvants. Additionally, both *triclopyr* and 2,4-*D* disrupt metabolic processes unique to vegetation by working as an auxin-mimic. These pathways do not occur in fauna.

5.9 Mammals

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of existing conditions pertinent to mammals.

5.9.1 No Action

Under the No Action Alternative, *triclopyr* and 2,4-*D* would not be aerially applied to saltcedar or Russian olive. However, previously approved herbicides and methods of application would continue to be utilized. Should herbicide resistance occur with previously approved herbicides, not utilizing the herbicides *triclopyr* or 2,4-*D* could potentially negatively affect the wildlife that utilize the Fort Peck Reservoir area habitat. As previously stated, saltcedar and Russian olive are highly invasive and tend to form dense stands of a monoculture. By reducing native vegetation, this would lead to a reduction in mammal biodiversity. Saltcedar provides little to no forage, as the seeds have a low protein content and the scale-like leaves are not considered suitable for browsing herbivores such as deer, elk and moose (Hoddenbach, 1987). Russian olive may provide some benefits to mammals as some species feed on the drupes; however, the overall detrimental effects such as displacement of wildlife that infestations can create far outweigh any foraging benefits.

5.9.2 Alternative 2 (Preferred Alternative)

If saltcedar and Russian olive develop an herbicide resistance to previously approved herbicides, the approval of the additional herbicides *triclopyr* and 2,4-*D* may assist controlling heavily infested areas. If saltcedar and Russian olive can be controlled, native vegetation could return to these areas, leading to an increase in wildlife biodiversity.

In studies reviewed by EPA *triclopyr* had an LD₅₀ of 630 mg/kg for acute oral testing and is therefore considered practically non-toxic to small mammals (see Table 2) as the LOC was not exceeded for the maximum amounts of herbicide allowable for application in one season on product labels (EPA, 1998). Developmental effects from oral dosing on pregnant rabbits occurred at 300 mg/kg/day in TEA formulations. Fetuses lacked bone tissue formation, a decrease in mean body weight and an increase in skeletal abnormalities. As such, the TEA formulation has a lowest observed effect level (LOEL) of 300 mg/kg and also a no observed effect level (NOEL) of 30 mg/kg. Long-term exposure studies found that dogs fed 20 mg/kg/day for 228 days exhibited decreased body weight, blood chemistry anomalies and an increase in liver and kidney weights. Lower doses (2.5-5 mg/kg/day) given over 183 days showed no symptoms (NPIC, 2002; Hanley et al., 1984).

Table 2. EPA Ecotoxicological Categories for Mammals.

Acute Oral Toxicity in Mammals (mg/kg body weight)	Toxicity Ranking
<10	Very Highly Toxic
10-50	Highly Toxic
>50-100	Moderately Toxic
>500-2000	Slightly Toxic
>2000	Practically Non-toxic

*Derived from http://www.dec.ny.gov/docs/materials_minerals_pdf/triclopyrcis.pdf

2,4-*D* is also considered practically non-toxic to mammals (refer to Table 2), studies reviewed by EPA concluded an acute oral LD₅₀ of 579 to 1,300 mg/ae/kg (milligram/acid equivalent/kilogram). The no observed adverse effect level (NOAEL) in the rat chronic toxicity study was 5 mg/kg/day, with a lowest observed adverse effect level (LOAEL) of 75 mg/kg/day based on decreased body-weight gain and alterations in blood chemistry. The NOAEL in the rabbit developmental toxicity study was 30 mg/kg/day, and the LOAEL was 90 mg/kg/day based on clinical signs, loss of righting reflex, and abortions (EPA, 2005).

All product labels would be followed in order to minimize any potential effects of application on mammals. Application rates would not be exceeded and all guidance from EPA would be followed. No long-term adverse effects are expected to occur to mammals as the most common mode of toxicity is orally at high doses for long durations. Any mammal ingesting these herbicides from a secondary source, such as plant material, would not likely consume the amount necessary to exceed the prescribed LOEL for the individual chemicals.

5.10 Birds

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of bird species that utilize the proposed project area.

5.10.1 No Action

Under the No Action Alternative, the aquatically approved formulations of *triclopyr* and 2,4-*D* would not be aerially applied to control infestations of saltcedar or Russian olive. Previously approved herbicides may still be utilized according to the 2013 EA (see Appendix D). Should herbicide resistance occur with the continued use of previously approved herbicides, infestations of saltcedar and Russian olive may not be adequately controlled. While some songbirds do utilize Russian olive for nesting and many species of waterfowl, game birds and songbirds forage on its drupes, overall habitat diversity would continue to degrade as monotypic stands would take over native plant communities. Saltcedar provides virtually no benefits to birds. According to a study of bird populations along the lower Colorado River, lower species richness and total density resulted in areas infested with saltcedar compared to areas with native vegetation (Anderson & Ohmart, 1984). In order to maintain native avian diversity found within the Fort Peck Reservoir, saltcedar and Russian olive need to be effectively controlled.

5.10.2 Alternative 2 (Preferred Alternative)

Under this alternative, the aquatically approved formulations of 2,4-*D* and *triclopyr* would be utilized for aerial application to large infestations of saltcedar and Russian olive. *Triclopyr* TEA formulations are considered slightly toxic (refer to Table 3). Acute oral studies performed on mallards concluded an LD₅₀ of 2,055 mg/kg for *triclopyr* TEA formulations. Data collected on the major degradate of *triclopyr*, TCP, concluded that it is slightly toxic to practically non-toxic. On a subacute dietary basis, *triclopyr* is practically non-toxic to birds, and TCP has a low toxicity. Chronic studies were also performed on birds because of *triclopyr*'s ability to somewhat persist in the environment, and it was determined reproduction may be affected at levels greater than 100 mg/L (EPA, 1998). No significant adverse effects are expected at concentrations that are greater than expected environmental concentrations (EEC) provided all product labels and prescribed application rates are followed.

Table 3. EPA Ecotoxicological Categories for Birds

Toxicity in Birds		Toxicity Ranking
Acute Oral (mg/kg body weight)	Dietary (mg/kg feed)	
<10	<50	Very Highly Toxic
10-50	50-500	Highly Toxic
>50-100	>50-1000	Moderately Toxic
>500-2000	>1000-5000	Slightly Toxic
>2000	>5000	Practically Non-toxic

*Derived from http://www.dec.ny.gov/docs/materials_minerals_pdf/triclopyrseis.pdf

For 2,4-D, toxicity values of all the various formulations were pooled as they were determined to be within one or two orders of magnitude for all the chemical forms. Studies reviewed by the EPA on birds were conducted with the active ingredient and converted to the acid equivalent. Results concluded that 2,4-D is moderately to practically non-toxic to birds on an acute oral basis since the LD₅₀ ranged from 415 mg/ae/kg to 1,000 mg/ae/kg (see Table 3). A chronic NOEC of 962 mg/L was determined based on endpoints of eggshell cracks and a decrease in numbers of eggs laid per clutch (EPA, 2005).

As previously stated, all herbicides would be used in accordance with product labels and applications rates and product usage would not exceed seasonal or annual limitations. No significant or long-term adverse effects are expected to occur to birds in treatment areas, as application duration and herbicide amounts would not be excessive.

5.11 Reptiles and Amphibians

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of herpetofauna that utilize the Fort Peck Reservoir and surrounding areas.

5.11.1 No Action

If the No Action Alternative is implemented, negative impacts to herpetofauna could occur if saltcedar and Russian olive develop an herbicide resistance to previously approved herbicides and thus are not effectively controlled. A study conducted in Arizona selected four habitat sites, one site being a dense strip of mature saltcedar trees that bordered the Gila River, to test for herpetofauna density. Of the four habitats, the saltcedar site had three to five times less individuals and the conclusion was formed that due to the dense canopy the saltcedar formed, the herbaceous layers and light penetration were reduced. Because the structural diversity of the site was compromised, there would likely be less use of herpetofauna and the limited light reduced the temperature which can negatively impact poikilothermic (gaining heat from the environment) species (Jakle & Gatz, 1985).

5.11.2 Alternative 2 (Preferred Alternative)

Unfortunately, not much information is available on herbicide effects specific to herpetofauna. Typically, for reregistration with the EPA, toxicological results from studies conducted on fish or birds are often extrapolated to herpetofauna. Toxicity studies conducted on fish are often substituted toxicity endpoints for aquatic-phase amphibians. Birds are utilized as surrogates for terrestrial-phase amphibians and reptiles. It is important to note the physiological differences of birds to herpetofauna, birds are homeotherms (temperature regulated) whereas poikilotherms tend to have lower metabolic rates and lower caloric requirements. Because of this, dietary studies conducted on birds are likely to result as an over-estimation of exposure and risk to terrestrial-phase herpetofauna (OPP, 2009).

There also have been no studies, acute or chronic, specifically analyzing the effects of *triclopyr* on herpetofauna, though. According to the *Environmental Impact Statement for Permitted Use*

of *Triclopyr*, no laboratory work was conducted on *triclopyr* TEA against aquatic-phase amphibians but it is “anticipated that amphibians will be affected by *triclopyr* TEA both acutely and chronically at concentrations similar to affecting fish” (WSDE, 2004). *Triclopyr* TEA and its degradate are considered practically non-toxic to slightly toxic to birds, and therefore, this information is substituted for terrestrial-phase herpetofauna (EPA, 1998).

According to the Reregistration Eligibility Decision for 2,4-D (EPA, 2005), while effects studies were not required for amphibians, freshwater amphibian studies were conducted on northern leopard frog (*Rana pipiens*) tadpoles and results indicate that 2,4-D is practically non-toxic to tadpoles.

Care would be utilized and all product guidance would be followed in order to minimize potential exposure and reduce adverse impacts to reptiles and amphibians.

5.12 Mussels and Macroinvertebrates

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of mussels and macroinvertebrates that inhabit the proposed project area.

5.12.1 No Action

Under the No Action Alternative, direct and indirect negative impacts could occur to macroinvertebrates through the loss of quality habitat if saltcedar and Russian olive cannot be effectively managed. If these two invasive species continue to outcompete native plant communities, overall ecosystem biodiversity becomes severely compromised.

5.12.2 Alternative 2 (Preferred Alternative)

Under the Preferred Alternative, aquatically approved formulations of *triclopyr* and 2,4-D would be used for aerial application to treat large infestations of saltcedar and Russian olive. Exposure to mussels would occur through direct contact to surface water, and the proposed project does not include applying herbicide directly to surface waters, therefore no adverse impacts are anticipated with the use of either herbicide.

Studies were conducted using *Daphnia magna* (a freshwater water flea) to determine potential toxicity of *triclopyr*. In acute studies, *triclopyr* acid and *triclopyr* TEA were both found to be practically non-toxic to aquatic invertebrates. In chronic studies, TEA was found to affect total young and mean brood size of *D. magna*. While there is no EPA protocol for assessing risks to non-target insects, all forms of *triclopyr* were found to be practically non-toxic to honeybees, so it is not expected that insects would not be adversely affected with the proper and careful use of this herbicide (EPA, 1998).

2,4-D is considered practically non-toxic to the honeybee, the LD₅₀ in the acute toxicity study was greater than 100 µg/bee (EPA, 2005). All product labels and guidance from EPA would be followed in order to minimize potential harmful effects to macroinvertebrates.

Additionally, established BMPs (see Appendix E) such as cleaning all boats, equipment and gear used at sites applied with herbicide would be thoroughly cleaned, decontaminated and inspected for zebra mussels in order to prevent the spread of this invasive mollusk.

5.13 Species of Special Concern

In accordance with Section 7 of the Endangered Species Act (7 U.S.C. § 136, 16 U.S.C. § 1531; ESA), the U.S. Fish and Wildlife Service (USFWS) was consulted to obtain information on federally-listed threatened and endangered species that have the potential to occur within the proposed project area. Letters, dated December 9, 2015, were sent to the USFWS' Ecological Services Montana Field Office and the Region 6 Montana Fish, Wildlife and Parks Office. No response was received from either agency. A follow-up email was sent to USFWS on February 10, 2016, again seeking correspondence in accordance with Section 7 of ESA and the Fish and Wildlife Coordination Act (FWCA). To date, no response has been received.

Additionally, utilizing the USFWS' on-line tool, the Information for Planning and Conservation (IPaC) website (see Appendix F for the complete generated report), 7 threatened, endangered or candidate species were identified as potentially occurring within the area. Four birds, the endangered interior least tern (*Sterna antillarum*), whooping crane (*Grus Americana*), the threatened piping plover (*Charadrius melanotos*) and rufa red knot (*Calidris canutus rufa*) were identified. One fish, the endangered pallid sturgeon (*Scaphirhynchus albus*) and one mammal, the black-footed ferret (*Mustela nigripes*) were also identified as potentially occurring in the vicinity of the proposed project area.

Of note, at the time of the original EA in 2013, the greater sage-grouse (*Centrocercus urophasianus*) was identified as a candidate species for listing under the ESA. As of September 22, 2015, the USFWS officially determined that protection for the greater sage-grouse is no longer warranted, and thus, withdrew the species from the candidate species list. However, this bird is still a bird of conservation concern (see Section 5.13.7). Additionally, on April 5, 2016 the USFWS issued a 12-month findings on the candidate species the Sprague's pipit (*Anthus spragueii*) that concluded a listing was not warranted. At the time of the original EA in 2013, this species was also identified as a candidate for listing under the ESA.

5.13.1 Pallid Sturgeon

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of pallid sturgeon.

5.13.1.1 No Action

Under the No Action Alternative, no negative impacts would occur to the pallid sturgeon, other than indirect impacts from a reduced terrestrial biodiversity. Reduced biodiversity leads to a weakened ecosystem, and this could eventually have negative impacts on the aquatic habitat or food sources that the pallid sturgeon relies on. Additionally, as stated in previous sections (see

Section 5.5.1 and Section 5.8.1), water quality can become reduced from the behavior of saltcedar, as its dense stands alter hydrology through sedimentation, and dense root systems can stagnate water, increasing temperature and lowering dissolved oxygen levels. By not controlling these invasive species, there is potential for negative impacts to occur in shallower, shoreline susceptible aquatic habitats that may be used as foraging habitat for pallid sturgeon as smaller prey fish are often found in these conditions.

5.13.1.2 Alternative 2 (Preferred Alternative)

While no spraying would be applied directly to the water surface, aerial spraying would take place between May and October, during the active growing season of saltcedar and Russian olive. As previously stated in Section 5.8.2, the aquatically approved formulations of *triclopyr* and 2,4-D are considered practically non-toxic to fish, as the pathways these chemicals inhibit are only found in flora. All label guidance would be followed and care would be exercised to avoid any negative impacts to pallid sturgeon. No short- or long-term effects are expected to occur to pallid sturgeon through the aerial application of these herbicides, therefore, a “no effect” determination has been made for Alternative 2.

5.13.2 Interior Least Tern and Piping Plover

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of interior least tern and piping plover existing conditions at the Fort Peck Reservoir.

5.13.2.1 No Action

Under this alternative, no adverse effects are expected to occur to the interior least tern or piping plover. Aquatically approved formulations of *imazapyr* and *glyphosate* would continue to be used to aerially apply herbicide to large infestations of saltcedar and Russian olive; however, *triclopyr* and 2,4-D would not be permitted to be used for aerial applications. Indirect, undesirable impacts through overall habitat degradation of reduced vegetative biodiversity may occur to these species should saltcedar and Russian olive continue to infest the shoreline of Fort Peck Reservoir.

5.13.2.2 Alternative 2 (Preferred Alternative)

The interior least tern and piping plover both typically nest between mid-May to mid-July and chick rearing takes place from approximately mid-June to mid-August. No spraying or human disturbance would occur near actively nesting interior least terns or piping plovers. As stated in Section 5.10.2, *triclopyr* and 2,4-D are considered practically non-toxic to birds. While both interior least tern and piping plover typically dwell on riverine sandbar habitat not connected to the shoreline, and it is not anticipated these species would be nesting adjacent or within large infestations of saltcedar and Russian olive, it is possible they could be flying over areas proposed for herbicide treatment. Prior to spraying any area, the site would be assessed to ensure that no terns or plovers would be nesting within a treatment area. Short-term, temporary impacts may occur to these species in the form of human disturbance. It is anticipated the birds would disperse from any human activity, and return upon completion of spraying activities. The

proposed action does not include directly treating the surface waters or sandbars, which is the nesting habitat of these birds. No long-term negative impacts are expected to occur through the implementation of the preferred alternative, therefore; a “*may affect, not likely to adversely affect*” determination has been made for both bird species.

5.13.3 Whooping Crane

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of the whooping crane.

5.13.3.1 No Action

No adverse impacts to the whooping crane are expected to occur if the No Action Alternative is implemented.

5.13.3.2 Alternative 2 (Preferred Alternative)

Under Alternative 2, no negative effects are expected to occur to the whooping crane. As previously stated, *triclopyr* and 2,4-D are considered practically non-toxic to birds as these chemicals target pathways found only in flora. As is true for interior least terns and piping plovers, it is possible that whooping cranes could be flying over or potentially present near areas proposed for treatment. Short-term, temporary impacts may occur in the form of human disturbance. It is anticipated the birds would disperse from any human activity, and return upon completion of spraying activities. Concentration levels set forth by the EPA would not be exceeded and all product labels would be followed. A “*may affect, not likely to adversely affect*” determination has been made for the whooping crane.

5.13.4 Black-footed Ferret

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of the black-footed ferret.

5.13.4.1 No Action

By reducing or eradicating dense stands of invasive saltcedar and Russian olive, native species would thrive, lending to a more holistic and natural food chain which could indirectly benefit the black-footed ferret. The No Action Alternative would do nothing to improve the quality of habitat for the black-footed ferret. There are currently no known populations of the black-footed ferret in the proposed project area or surrounding area.

5.13.4.2 Alternative 2 (Preferred Alternative)

Under this alternative, no long-term adverse impacts are expected to occur to the black-footed ferret. If this species is within the Fort Peck Reservoir area as it was historically found, the herbicides would have little to no negative impacts on them. As stated in Section 5.9.2, the proposed chemicals to be used under this alternative are practically non-toxic to mammals. The

pathways these herbicides target are found only in flora, in order to cause significant harm to mammals, measurable quantities would have to be consumed. All product labels would be followed and application rates and seasonal quantities would not be exceeded. A “no effect” determination has been made for the black-footed ferret.

5.13.5 Bald Eagle

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of bald eagle existing conditions within the proposed project area.

5.13.5.1 No Action

If saltcedar and Russian olive are not effectively managed, potential future impacts could occur to the bald eagle. While they nest in mature trees, typically cottonwood (*Populus deltoides*), if saltcedar and Russian olive continue to invade and establish on the banks of the Fort Peck Reservoir, cottonwood regeneration could suffer. Additionally, the reduced vegetation and wildlife biodiversity could negatively impact their diet.

5.13.5.2 Alternative 2 (Preferred Alternative)

Because bald eagles are a riparian associated species, they are known to utilize the trees along the riverbank in the proposed project area. Care would be taken to minimize any impact to this species. Prior to spraying, bird surveys would be conducted. If an active nest is located within the proposed spraying area, application activities would immediately cease and guidance from USFWS would be sought. Impacts to the bald eagle under the Preferred Alternative are anticipated to be temporary and minor in nature.

5.13.6 Migratory Birds

All federal agencies are subject to the provisions of the Migratory Bird Treaty Act (MBTA) which regulates the take of any migratory bird species. If a Corps project is expected to impact any migratory bird species, coordination with the USFWS is typically initiated in order to minimize impacts to these species. The Fort Peck Reservoir area falls within the Central Flyway Route which merges easterly towards the Mississippi Flyway as it follows along the Missouri River. The following table summarizes migratory species of conservation concern identified in the IPaC Trust Resources Report (see Appendix F).

Table 4. Migratory birds of special conservation concern potentially existing within or near Fort Peck Reservoir

COMMON NAME	SCIENTIFIC NAME	SEASON PRESENT
American Bittern	<i>Botaurus lentiginosus</i>	Breeding
Baird's Sparrow	<i>Ammodramus bairdii</i>	Breeding
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Year-round
Black Tern	<i>Chlidonias niger</i>	Breeding
Brewer's Sparrow	<i>Spizella breweri</i>	Breeding
Burrowing Owl	<i>Athene cunicularia</i>	Breeding
Common Tern	<i>Sterna hirundo</i>	Breeding
Dickcissel	<i>Spiza americana</i>	Breeding
Ferruginous Hawk	<i>Buteo regalis</i>	Breeding
Golden Eagle	<i>Aquila chrysaetos</i>	Year-round
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Breeding
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	Year-round
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Breeding
Long-billed Curlew	<i>Numenius americanus</i>	Breeding
Marbled Godwit	<i>Limosa fedoa</i>	Breeding
McCown's Longspur	<i>Calcarius mccownii</i>	Breeding
Mountain Plover	<i>Charadrius montanus</i>	Breeding
Peregrine Falcon	<i>Falco peregrinus</i>	Breeding
Prairie Falcon	<i>Falco mexicanus</i>	Year-round
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Breeding
Short-eared Owl	<i>Asio flammeus</i>	Year-round
Swainson's Hawk	<i>Buteo swainsoni</i>	Breeding
Upland Sandpiper	<i>Bartramia longicauda</i>	Breeding
Western Grebe	<i>Aechmophorus occidentalis</i>	Breeding
Yellow Rail	<i>Coturnicops noveboracensis</i>	Breeding

5.13.6.1 No Action

Under this alternative, *triclopyr* and 2,4-D would not be aerially applied to control invasive saltcedar and Russian olive. Should these invasive species develop an herbicide resistance to previously approved herbicides, direct and indirect adverse impacts could arise if the No Action Alternative is implemented. Many species of migratory birds rely on a diverse ecosystem for food, nesting and brooding habitat, shelter and reproduction. If overall native vegetation and biodiversity is reduced by not effectively managing invasive saltcedar and Russian olive, this could adversely impact the habitat that migrating bird species depend on.

5.13.6.2 Alternative 2 (Preferred Alternative)

No adverse impacts to migratory birds are expected to occur as a result of implementing Alternative 2 (see Section 5.9.2). In fact, habitat utilized by some migratory birds, such as passerine songbirds would improve as reducing noxious, invasive species allows for native communities to re-establish. Native species returning to the area create a greater level of biodiversity, as large monoculture stands of saltcedar and Russian olive would provide limited dietary and habitat value to migratory bird species. The increased biodiversity would have positive direct and indirect benefits on migratory birds. To ensure minimal impacts would occur to migratory birds, all chemical product labels, EPA guidance and BMPs would be followed.

5.14 Vegetation

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of existing vegetation conditions within the proposed project area.

5.14.1 No Action

If the No Action Alternative is implemented, severe consequences could occur to native vegetation as plant communities and biodiversity are reduced in areas of saltcedar and Russian olive infestations. Monotypic stands of saltcedar and Russian olive lead to the overall reduction of native plant communities and biodiversity and can have trophic impacts that could affect the entire ecosystem.

5.14.2 Alternative 2 (Preferred Alternative)

Under this alternative, there is potential for adverse effects to non-target vegetation; however, the broad aerial application method would only take place in areas of heavy invasive saltcedar and Russian olive infestations which already have limited native plant communities. Because there is a risk to harm non-target plants from the application of herbicides, BMPs must be utilized to minimize spray drift, such as applicators using a courser droplet size, applications not taking place if wind speeds are greater than 10 miles per hour and the boom length not exceeding 75% of the rotor blade diameter (see Appendix E for a complete list of BMPs). All established BMPs, product labels and EPA guidance would be followed to minimize adverse impacts to native and non-target vegetation. No long-term consequences are expected to occur, in fact, native plant diversity is expected to increase with the implementation of this alternative.

5.15 Socioeconomics and Environmental Justice

No supplemental information required. Please see the 2013 EA (Appendix D) for socioeconomic and environmental justice existing conditions within the proposed project area.

5.15.1 No Action

Under this alternative, no adverse impacts would occur regarding socioeconomic and environmental justice.

5.15.2 Alternative 2 (Preferred Alternative)

The proposed project is not expected to have measurable impacts on demographic distributions. No environmental or health impacts are expected for local human residents, since the population of the area is low with no residences or towns nearby the project area. Any minor effects to the local population would not be expected to disproportionately affect low income or minority components of the population.

5.16 Cultural Resources

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of cultural resources within the proposed project area.

5.16.1 No Action

The No Action Alternative would have no adverse impacts on cultural resources.

5.16.2 Alternative 2 (Preferred Alternative)

The Preferred Alternative would have no potential to negatively affect historic resources as the proposed work involves no excavation of any kind.

5.17 Recreation

No supplemental information required. Please see the 2013 EA (Appendix D) for a description of existing recreation conditions at Fort Peck Reservoir.

5.17.1 No Action

Under the No Action Alternative, intrinsic and aesthetic value may be lost to the areas infested by saltcedar and Russian olive as effected habitat would continually degrade. This could have negative impacts on recreational activities and opportunities.

5.17.2 Alternative 2 (Preferred Alternative)

The application of herbicides may temporarily disrupt some of these recreational activities at the project sites, and additionally, there will be temporary closures and restrictions to areas in and around the treated locations. As stated in Section 3.2, two weeks prior to herbicide application at a proposed area, spraying location and staging areas would be advertised in a press release in order to inform the public of the temporary area closures. After completion of annual sprayings, the area would re-open with no expected long-term adverse effects.

6. CUMULATIVE IMPACTS

The combined incremental effects of human activity are referred to as cumulative impacts (40 CFR 1508.7). While these incremental effects may be insignificant on their own, accumulated over time and from various sources, they can result in serious degradation to the environment. The cumulative impact analysis must consider past, present and reasonably foreseeable actions in the study area. The analysis also must include consideration of actions outside of the Corps, to include other state and federal agencies. As required by NEPA, the Corps has prepared the following assessment of cumulative impacts related to the alternatives being considered in this EA.

Substantial cumulative impacts have occurred throughout the Missouri River, which likely contributed to the decline of federal and state listed threatened and endangered species known to occur within and along the Missouri River. Anthropogenic alteration of the river hydrographs and dynamic processes has resulted in dramatic changes, and the loss of properly functioning conditions. When considering the cumulative impacts of the proposed work to take place in this area, it is also important to note recent and similar projects taking place in the same footprint.

In 2004, China strain of the saltcedar leaf beetle (*Diorhabda elongata*) was released in McCone County in hopes of biologically controlling saltcedar within the Fort Peck Reservoir, which has thus far proven ineffective (further described in the 2013 EA, Appendix D). Chemical control is being sought as a potential control mechanism, specifically, through the herbicides 2,4-D and *triclopyr*, as well as the previously assessed and approved herbicides, *imazapyr* and *glyphosate*. Section 5.3.2 discusses the varying half-lives and chemical residues in soil, which it should be noted, can be lengthy in anaerobic conditions. However, no residual long-term effects are expected from the use of 2,4-D and *triclopyr* as these herbicides do not bioaccumulate. While chemical breakdown for these herbicides typically occurs faster in aquatic environments where they hydrolyze, degradation for these chemicals would primarily occur through microbial metabolism or photolysis as treatment sites are not directly associated with surface waters. In order to minimize and monitor chemical residues, soil testing would be done by sampling transects within treatment sites pre- and three years' post- application. Furthermore, all product labels and EPA guidance would be followed during mixing and application periods, maximum concentration levels would not be exceeded, safety procedures would be followed and appropriate permits would be obtained prior to using the herbicides.

Other work utilizing herbicides within the Fort Peck Reservoir area includes field trials conducted in the summer of 2012 by the Corps' Engineering and Research Development Center (ERDC) on controlling Eurasian watermilfoil (*Myriophyllum spicatum*) within the Fort Peck Reservoir. The aquatically approved herbicides *endothall* and *triclopyr* were utilized as outlined in the Corps' *Environmental Assessment and Finding of No Significant Impact: Control of Eurasian Water Milfoil, Fort Peck Project Area, Various Counties, Montana* (May 2011 EA) and an ERDC published report, *Demonstration and Evaluation of Eurasian Watermilfoil Control using Aquatic Herbicides in Fort Peck Lake, MT* (Pennington et. al, 2013). Additionally, a *Supplemental Environmental Assessment and Finding of No Significant Impact: Control of Aquatic Invasive Species, Fort Peck Reservoir, Montana, October 2013* (USACE, 2013) further analyzed additional control methods with the herbicides *penoxsulam* and *flumioxazin* to allow ERDC additional field trials and treatment alternatives in treating Eurasian watermilfoil and other aquatic invasive species. In the summer of 2014 and the fall of 2014, the herbicides *endothall*, *triclopyr* and *diquat* were used in the dredge cuts and Missouri River upstream of the spillway to treat Eurasian watermilfoil. In December of 2013, the *Environmental Assessment and Finding of No Significant Impact, Control of Saltcedar and Russian Olive, Fort Peck Reservoir, Montana* (USACE, 2013; see Appendix D) analyzed the impacts of the aerial application of the herbicides *imazapyr* and *glyphosate* on large infestations of saltcedar and Russian olive. Additionally, this EA addressed potential impacts of the application of the herbicides *triclopyr*, *imazapyr* and *glyphosate* through foliar, cut-stump and basal bark methods.

To date, aerial application has not occurred to large infestations of saltcedar and Russian olive due to funding priorities.

While the proposed project reflected in this supplemental EA targets areas surrounding the reservoir and would not take place on surface waters, only formulations of the assessed herbicides that are approved for aquatic environments by the EPA would be utilized in order to best prevent any harmful or adverse effects to water resources.

Although it is likely these herbicides would not completely eradicate saltcedar or Russian olive without repeated use and measures, it is possible that they would effectively decrease the spread of these invasive species, and substantially improve habitat within the Fort Peck Reservoir; their use does have the potential to provide some incremental cumulative benefits to the Missouri River ecosystem. By implementing EPA regulations and product label guidance, as well as BMPs, there would be no residual or cumulative negative impacts to the affected environment. The use of these herbicides and associated control methods would likely have direct and indirect benefits on the fish and wildlife that rely on the habitat the Fort Peck Reservoir provides.

7. COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

American Indian Religious Freedom Act (AIRFA) of 1978, 42 U.S.C. 1996. *In compliance.* AIRFA protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. The Fort Peck Reservoir project would not adversely affect the protections offered by this act. Access to sacred sites by Tribal members would not be affected.

Bald and Golden Eagle Protection Act, 16 U.S.C. Sec. 668, 668 note, 669a-668d. *In compliance.* This act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions for the scientific or exhibition purposes, for religious purposes of Indian Tribes, or for the protection of wildlife, agriculture or preservation of the species. The proposed project would have no adverse effects on the bald or golden eagle. As noted in Section 5.13.6.2, surveys would be conducted to ensure no active nests are located within the areas proposed for herbicide treatment. It is not anticipated nests will be found in areas heavily infested with saltcedar and Russian olive, as they rely on much larger trees, such as cottonwood, to nest. However, should any active nests be located within proposed treatment areas, application activities would cease and guidance from USFWS would be sought.

Clean Air Act, as amended, 42 U.S.C. 185711-7., et seq. *In compliance.* The purpose of this act is to protect public health and welfare by the control of air pollution at its source and to set forth primary and secondary National Ambient Air Quality Standards to establish criteria for states to attain, or maintain. Some temporary emission releases and minor inhalation risks may occur during spraying activities; however, air quality is not expected to be significantly impacted to any measurable degree by the supplemental action. All safety procedures would be followed during application of herbicides.

Clean Water Act, as amended, (Federal Water Pollution Control Act) 33 U.S.C. 1251., et seq.

In compliance. The objective of this act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (33 U.S.C. 1251). The proposed application of all herbicides would be in accordance with label instructions. No permits are required for the proposed project from Montana Department of Environmental Quality (MDEQ) of MFWP as herbicide is not being applied directly to any water surfaces; however, coordination with these agencies would take place prior to seasonal application. The use of any herbicides would continue to be closely monitored by the Fort Peck Project Office to ensure water quality is maintained.

Comprehensive Environmental Response Compensation and Liability Act (CERCLA). *In compliance.* Typically CERCLA is triggered by (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment which presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 CFR Part 373 requires notification of CERCLA hazardous substances in a land transfer. This project will not involve any real estate transactions.

Endangered Species Act, as amended, 16 U.S.C. 1531, et seq. *In compliance.* Section 7 (16 U.S.C. 1536) states that all federal departments and agencies shall, in consultation with and with the assistance of the Secretary of the Interior, ensure that any actions authorized, funded, or carried out by them do not jeopardize the continued existence of any threatened or endangered (T&E) species, or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary to be critical. This project has been coordinated with the USFWS. A letter dated December 9, 2015 was sent to the USFWS stating that the Corps is proposing to control invasive saltcedar and Russian olive through aerial application of *triclopyr* and 2,4-D. No response was received. A follow-up email was sent to USFWS on February 10, 2016, again seeking correspondence in accordance with Section 7 of ESA and the Fish and Wildlife Coordination Act (FWCA). To date, no response has been received. Utilizing the IPaC system and analysis of noted species can be found in Section 5.13, Species of Special Concern. It has been determined, through this document that it is likely "*no effect*" would occur to pallid sturgeon or black-footed ferret as a result of the proposed project. A "*may affect, not likely to adversely affect*" determination was made for interior least tern, piping plover and whooping crane.

Environmental Justice (E.O. 12898). *In compliance.* Federal agencies shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. The project does not disproportionately impact minority or low-income populations.

Farmland Protection Policy Act (Subtitle I of Title XV of the Agriculture and Food Act of 1981), effective August 6, 1984. *In compliance.* This act instructs the Department of Agriculture, in cooperation with other departments, agencies, independent commissions, and other units of the federal government, to develop criteria for identifying the effects of federal programs on the conversion of farmland to nonagricultural uses. A letter dated December 9, 2015 was sent to the

Natural Resources Conservation Service. A response was received, dated January 19, 2016, stating that according to information provided by the National Cooperative Soil Survey, 37 soil map units were in a “very limited” class for nitrate leaching in the Fort Peck Reservoir area according to the Web Soil Survey Nitrate Leaching Report. These soils would potentially leach pesticides; therefore, a Windows Pesticide Screen Tool was utilized to evaluate the potential of pesticide to move with water and eroded soil. It was determined interaction ratings were “low” to “very low” for all map units, therefore, should all EPA guidance be followed, NRCS determined no minimal to no-long term effect with the Preferred Alternative (see Appendix B).

Federal Water Project Recreation Act, as amended, 16 U.S.C. 460-1(12), et seq. *In compliance.* The act establishes the policy that consideration be given to the opportunities for outdoor recreation and fish and wildlife enhancement in the investigating and planning of any Federal navigation, flood control, reclamation, hydroelectric or multi-purpose water resource project, whenever any such project can reasonably serve either or both purposes consistently. The purpose of this project can be considered fish and wildlife habitat enhancement, and it will not negatively impact recreational use of the river.

Fish and Wildlife Coordination Act, 16 U.S.C. 661, et seq. *In compliance.* A letter dated December 9, 2015 was prepared by the Corps and sent to the USFWS and the MFWP to solicit comment on the proposed project. No response was received. A follow-up email was sent to USFWS on February 10, 2016, again seeking correspondence. To date, no response has been received. This Draft EA was made available to members of the USFWS and MFWP for comments. No further action under the FWCA is required.

Floodplain Management (E.O. 11988). *In compliance.* E.O. 11988 requires federal agencies provide leadership and take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains. These requirements apply in carrying out its responsibilities for 1) acquiring, managing, and disposition of federal lands and facilities; 2) providing federally undertaken, financed, or assisted construction and improvements; and 3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. This project would not adversely affect the flood holding capacity or flood surface profiles of any stream, as such the project is in compliance with the requirements of E.O. 11988.

Invasive Species (E.O. 13112). *In compliance.* E.O. 13112 requires federal agencies to identify actions, to the extent practicable and permitted by law, that affect the status of invasive species. This includes utilization of relevant programs and authorities to 1) prevent the introduction of invasive species, 2) detect and respond rapidly to control populations of such species in a cost-effective and environmentally sound manner, 3) monitor invasive species populations, 4) provide for restoration of native species and habitat conditions in ecosystems that have been invaded, 5) conduct research and develop technologies to prevent introduction and 6) promote public education on invasive species and a means to address them. The proposed project would serve to manage populations of invasive saltcedar and Russian olive.

Land and Water Conservation Fund Act (LWCFA), as amended, 16 U.S.C. 4601-4601-11, et seq. *Not applicable.* Planning for recreation development at Corps projects is coordinated with the appropriate states so that the plans are consistent with public needs as identified in the State Comprehensive Outdoor Recreation Plan (SCORP). The Corps must coordinate with the National Parks Service (NPS) to ensure that no property acquired or developed with the assistance from this act will be converted to other than outdoor recreation uses. If conversion is necessary, approval of NPS is required, and plans are developed to relocate or re-create affected recreational opportunities. No lands involved in the proposed project were acquired or developed with LWCFA funds.

Migratory Bird Treaty Act of 1918 as amended, 16 U.S.C. 703-711, et seq. *In compliance.* The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over utilization. E.O. 13186 (2001) directs executive agencies to take certain actions to implement the act. The Corps would conduct field surveys prior to implementation of the proposed action in order to take great care not to negatively impact migratory birds or their nests during herbicide application.

National Environmental Policy Act (NEPA), as amended, 42 U.S.C. 4321, et seq. *In compliance.* This EA has been prepared for the proposed action and to satisfy the NEPA requirement. An Environmental Impact Statement is not required.

National Historic Preservation Act, as amended, 16 U.S.C. 470a, et seq. *In compliance.* While no excavation activities would occur under the proposed alternative, there is always potential for an unanticipated discovery of cultural resources during activities. In the event that historic resources are found, a district archeologist would be notified. However, no impacts are expected to occur to cultural resources as no excavation would be taking place under the proposed alternative.

Noise Control Act of 1972, 42 U.S.C. 4901, et seq. *In compliance.* While there will be minor noise disturbance during spraying activities, there will be no long-term noise disturbances associated with this project.

North American Wetlands Conservation Act, 16 U.S.C. Sec. 4401 et seq. *Not applicable.* This act establishes the North American Wetlands Conservation Council (16 U.S.C. 4403) (NAWCC) to recommend wetlands conservation projects to the Migratory Bird Conservation Commission (MBCC). Section 9 of the act (16 U.S.C. 4408) addresses the restoration, management, and protection of wetlands and habitat for migratory birds on federal lands. Federal agencies acquiring, managing, or disposing of federal lands and waters are to cooperate with USFWS to restore, protect, and enhance wetland ecosystems and other habitats for migratory birds, fish and wildlife on their lands, to the extent consistent with their mission and statutory authorities.

Protection of Wetlands (E.O. 11990). *In compliance*. Federal agencies shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agencies' responsibilities. The Corps would improve the quality of wetlands by reducing/eradicating the presence of invasive species.

Rivers and Harbors Act, 33 U.S.C. 401, et seq. *In compliance*. This act prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. A Section 10 permit is not required for Corps projects, nor would the proposed project alter navigable waters in any way.

Watershed Protection and Flood Prevention Act, 16 U.S.C. 1101, et seq. *In compliance*. This act authorizes the Secretary of Agriculture to cooperate with states and other public agencies in works for flood prevention and soil conservation, as well as the conservation, development, utilization and disposal of water. This act imposes no requirements on Corps Civil Works projects.

Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271, et seq. *Not applicable*. This act establishes that certain rivers of the Nation, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The area in which the proposed activity would occur is not designated as a wild or scenic river, nor is it on the National Inventory of Rivers potentially eligible for inclusion.

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9. PREPARER

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Appendix A

Invasive Species Policy Memorandum

*Supplemental Environmental Assessment
Control of Saltcedar and Russian Olive
March 2016*



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C. 20314-1000

CECW-ZA

JUN - 2 2009

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: U.S. Army Corps of Engineers Invasive Species Policy

1. BACKGROUND. In executing U.S. Army Corps of Engineers missions, districts are faced with numerous and diverse issues concerning invasive species. These problems occur on Corps managed and/or administered lands and waters, lands and waters being proposed for Federal Civil Works projects, and Corps lands utilized for outgrants and permits. No Corps nationwide policy currently exists for the prevention, control, and assessment of invasive species. The lack of policy has created inconsistencies concerning the prevention and control of invasive species across Corps districts.

2. PURPOSE. This policy memorandum establishes a consistent, nationwide policy that will be applied to all Civil Works projects and programs. It complements the National Invasive Species Act. Measures to either prevent or reduce establishment of invasive and non-native species will be a component of all Corps Operations and Maintenance (O&M) at project sites as well as a part of implementation of a Civil Works project.

3. POLICY APPLICABILITY. This policy memorandum is applicable to the entire spectrum of Civil Works programs and projects and meets the spirit of the National Invasive Species Management Plan. It supports the USACE Environmental Operating Principles and will be applied to invasive species issues in the execution of all Civil Works Programs as follows:

a. Operations. Operating projects will include strategies for invasive species management in their project Operations and Maintenance responsibilities. These strategies will be coordinated with other Federal, State, and local agencies.

b. Civil Works Planning Activities. Civil Works planning documents will address invasive species concerns in their analysis of project impacts. Collaboration with Federal, State and local agencies will be maintained in developing those analyses.

c. Regulatory Actions. The evaluation process for Department of the Army permits may address, through the appropriate public interest review factors (e.g., conservation, general environmental concerns), invasive species concerns in their analysis of impacts at the project site and associated compensatory mitigation projects. An appropriate level of coordination with Federal, State and local agencies will be used to develop those analyses. A Department of the Army permit may include special conditions to require the permittee to control the introduction or spread of invasive species at these sites.

CECW-CO

SUBJECT: U.S. Army Corps of Engineers Invasive Species Policy

d. Engineering Research and Development Center. The Engineering Research and Development Center (ERDC) will serve as the research lead for the Invasive Species Program. ERDC will have representatives on the Invasive Species Leadership Team to support the team and USACE decisions concerning invasive species. ERDC will also share information concerning their activities and solicit input for future research and development work units.

e. Invasive Species Leadership Team (ISLT). The ISLT will provide oversight of the Corps Invasive Species Program established by this policy. In support of the National Invasive Species Management Plan, the ISLT will also provide direction to achieve goals and objectives that compliment the plan that are applicable to Corps Civil Works programs and projects (See Enclosure 1). The ISLT will also provide support for the exchange and sharing of information and to develop and provide strategic recommendations to the Corps and ERDC. Applicable regulations and authorities will be updated as needed. Team members are encouraged to attend their respective Aquatic Nuisance Species (ANS) Regional Panel meetings as schedules and budgets allow. Information concerning ISLT team members, responsibilities, and activities can be found at <http://corplakes.usace.army.mil/employees/islt/islt.html>.

4. FOCUS. The National Invasive Species Management Plan (the Plan) will serve as a blueprint for Corps action on both aquatic and terrestrial invasive species. Information concerning the Plan and the latest invasive species developments can be found at www.invasivespeciesinfo.gov. The Plan is also posted on the Corps Gateway site, <http://corplakes.usace.army.mil/sitemap.html>, under Invasive Species. Actions proposed, permitted or submitted for authorization, either within existing authorities or by way of Congressional action, will follow the concepts promulgated by the Plan. In addition, all such actions will be coordinated with other agencies, States, Non-Governmental Organizations and the public, as appropriate, to prevent and/or control the introduction of invasive species and to minimize their economic, environmental, ecological, and human health impacts.

5. DEFINITIONS AND AUTHORITIES. Refer to Enclosures 2 and 3 respectively.

FOR THE COMMANDER:

3 Encls

*Close collaboration
with partners, and
stakeholders, and
customers will be
key to this
program's success!*

MERDITH W. B. TEMPLE
Major General, USA
Deputy Commanding General
for Civil and Emergency Operations

**CORPS GOALS AND OBJECTIVES TO ACHIEVE THE INTENT OF
THE NATIONAL INVASIVE SPECIES MANAGEMENT PLAN
ENCLOSURE 1**

a. Leadership and Coordination Goal: Work strategically, using all Corps scientific, management, and partnership resources in unison to manage invasive species.

Objectives

- Partner/coordinate with local, State, and Federal agencies and NGO's to manage invasive species at the project, regional, and national levels; examples include the Cooperative Weed Management Areas; Aquatic Nuisance Species Task Force; Federal Interagency Committee on the Management of Noxious and Exotic Weeds, and the 100th Meridian Initiative.

b. Prevention Goal: Prevent introduction and establishment of invasive species to reduce their impact on the environment, economy, and health of the United States.

Objectives

- Identify pathways by which invasive species could potentially invade Corps managed projects.
- Take steps to interdict pathways that are recognized as significant sources for the unintentional introduction of invasive species.
- Implement a process for identifying high priority invasive species that are likely to be introduced unintentionally.
- Develop a communication plan to share information about invasive species infestations on Corps projects (Natural Resources Management Gateway).

c. Early Detection and Rapid Response Goal: Develop and enhance the capacity to identify, report, and effectively respond to newly discovered/localized invasive species.

Objectives

- Develop monitoring plans for Corps managed projects.
- Take steps to improve detection and identification of introduced invasive species.
- Each district and project should assess how their current management may be contributing to invasive species problems.

- Develop a program for coordinating rapid response to incipient invasions on Corps projects.

d. Control and Management Goal: Contain and reduce the spread and populations of established invasive species to minimize their harmful impacts.

Objectives

- Develop and issue a protocol for ranking priority of invasive species control projects at local, regional, and ecosystem-based levels.
- Develop and implement control measures for invasive species in accordance with budget appropriations.
- Develop partnerships to leverage funding.
- Develop budget packages through the annual budgetary process to acquire funding to complete control measures.
- Develop exclusion and sanitation methods for preventing spread of invasive species.
- Develop assessment and monitoring plans for invasive species management areas.
- For compensatory mitigation projects required by Department of the Army permits, include performance standards that involve monitoring for introduction or spread of invasive species at the mitigation site, and require the removal of invasive species if those performance standards are not being met.

e. Restoration Goal: Restore native species and habitat conditions and rehabilitate high-value ecosystems and key ecological processes that have been impacted by invasive species to meet desired future conditions.

Objectives

- Pursue Continuing Authorities Program restoration projects to control invasive species.
- Implement appropriate measures to restore areas where invasive species management activities have occurred to prevent re-colonization.
 - Promote eradication and control measures of exotics related to the aquatic environment as a viable contributive element to DA permit mitigation plans.
- Promote exclusive use of native species in mitigation plantings associated with Regulatory permits.

- Promote exclusive use of native species in plantings associated with construction/restoration activities for Real Estate Outgrants.
- f. **Research Goal.** Conduct appropriate research and development activities to ensure management programs are effective and science based. Sound scientific information is critical in guiding management activities, determining the magnitude of invasive species problems, planning future research and management programs, and improving intervention efforts.

Objectives

- Develop priorities for invasive species research needs. Participate in the research field review.

g. **Information Management Goal:** Implement management actions to track invasive species data.

Objectives

- Input invasive species data into the Operations and Maintenance Business Information Link (OMBIL).
- Input invasive species data into Project Geographic Information Systems, to the extent practical.

h. **Education and Public Awareness Goal:** Education, communication, and interpretation programs can convey how the public can help prevent, identify, detect, and control invasive species and gather public input into program plans and promote partnerships in their implementation.

Objectives

- Partner, develop, and implement a national public awareness campaign.
- Partner, develop, and implement a model public awareness program on Corps projects that incorporates national, regional, state, and local level invasive species public education activities.

DEFINITIONS *
ENCLOSURE 2

- a. Control** - as appropriate, eradicating, suppressing, reducing, or managing invasive species populations; preventing spread of invasive species from areas where they are present; and taking steps such as restoration of native species and habitats to reduce the effects of invasive species and to prevent further invasions.
- b. Federal action** - any activity authorized by a Department of the Army permit under Section 10 of the River and Harbor Act of 1899 or Section 404 of the Clean Water Act, actions authorized by continuing authorities or Congressional Action, or operation and or maintenance of Corps properties.
- c. Introduction** - the intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity.
- d. Invasive species** - An alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. A species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
- e. Native species** - with respect to a particular ecosystem, a species that other than as a result of an introduction historically occurred or currently occurs in that ecosystem.
- f. Non-native species** - with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.
- g. Species** - a group of organisms all of which have a high degree of physical and genetic similarity, generally interbreed only among themselves, and show persistent differences from members of allied groups of organisms.
- h. Steward** - a Natural Resources Manager or Civil Works Planner whose actions impact Federal lands and waters or those lands that may become or be subjected to Federal actions. The definition is not applicable to the Corps Regulatory program since the stewardship responsibility is held by a private entity or another Federal, state, or local government agency.

*(As defined by EO 13112).

AUTHORITIES AND REGULATIONS
ENCLOSURE 3

- a. River and Harbor Act of 1899.
- b. River and Harbor Act of 1958 as amended (PL 85-500), Aquatic Plant Control.
- c. Non-indigenous Aquatic Nuisance Species Prevention and Control Act of 1990. [As Amended Through P.L. 106-580, 29 December 2000].
- d. National Invasive Species Act of 1996, P.L. 104-332.
- e. Invasive Species Executive Order 13112, 3 February 1999.
- f. Salt Cedar and Russian Olive Control Demonstration Act, P.L. 109-320, 11 October 2006.
- g. ER 1130-2-540 1-1, Environmental Stewardship and Operations and Maintenance Policies, 15 November 1996.
- h. ER 200-2-3, Environmental Compliance Policy, 30 October 1996.
- i. ER 1105-2-100, Appendix F – Continuing Authorities Program.
- j. ER 1130-2-500, Chapter 14 - Aquatic Plant Control Program.

Appendix B

Agency Coordination

*Supplemental Environmental Assessment
Control of Saltcedar and Russian Olive
March 2016*

RECEIVED
22 Jan 16

Natural Resources
Conservation Service

Montana State Office

10 East Babcock St.
Room 443
Bozeman
Montana, 59715

Voice 406.587.6811
Fax 855.510.7028

January 19, 2015

Eric Laux
Chief, Environmental Resources and Missouri River Recovery Program Plan Formulation
Section
Department of the Army
Corps of Engineers, Omaha District
1616 Capitol Avenue
Omaha, Nebraska 68102-4901

Dear Mr. Laux:

Thank you for your letter of December 9, 2015, soliciting our views and comments on the proposed project of using an aerial application of the herbicide *triclopyr* to treat areas of saltcedar (*Tamarix spp.*) infestations within the Fort Peck Reservoir area in Valley, McCone, Garfield, Petroleum, Fergus and Phillips Counties, Montana.

We used the USACE boundary of Fort Peck shape file that Rebecca Podkowka sent us and the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) soil data information produced by the National Cooperative Soil Survey to assess the potential effects of this project on water quality of Fort Peck Reservoir. The WSS Nitrate Leaching Report Tool was used to assess each soil map unit's potential to leach nitrates through the soil profile adjacent to the Reservoir.

Our staff soil scientist identified 37 soil map units within the boundary area that were in the "very limited" class for nitrate leaching according to the WSS Nitrate Leaching Report Tool. These soils would also have the potential to leach pesticides through the soil profile. We used the Windows Pesticide Screening Tool (WINPST), an environmental risk screening tool for pesticides, to evaluate the potential of pesticides to move with water and eroded soil/organic matter that would potentially affect non-targeted organisms. WINPST has long-term human and fish toxicity data and ratings and these toxicity ratings are combined with off-site movement potential ratings to provide an overall rating of the potential risks from pesticide movement below the root zone and past the edge of a field.

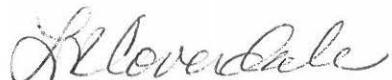
The WINPST "Soil / Pesticide Interaction Loss Potential and Hazard Rating Report" assessment for the 37 soil map units with a "very limited" class for nitrate leaching in the Fort Peck boundary area and the active ingredient *triclopyr* indicated the Soil / Pesticide interaction ratings were "low" or "very low" for all map units. The NRCS's "Integrated Pest Management" conservation practice standard (Code 595) does not require any mitigation for a low or very low rating.

Our analyses suggest that if all label, EPA requirements, and guidance are followed, there should be minimal or no long-term effects to water quality from the application of *triclopyr* to control saltcedar adjacent to the Fort Peck Reservoir.

Mr. Laux
Page 2

If you have questions or require additional information, please contact Kale Gullett, State Resource Conservationist, at (406) 587-6998 or kale.gullett@mt.usda.gov.

Sincerely,



Lisa Coverdale
State Conservationist

cc:

Kale Gullett, State Resource Conservationist, NRCS, Bozeman, MT

Bill Drummond, Soil Scientist, NRCS, Bozeman, MT

Jim Jacobs, Plant Materials Specialist, NRCS, Bozeman, MT

Patrick Hensleigh, Agronomist, NRCS, Bozeman, MT



U.S. Army Corps of Engineers, Omaha District Planning Branch
Attention: CENWO-PM-AC- Rebecca Podkowka
1616 Capitol Ave.
Omaha, Nebraska 68102-4901

Dear Ms. Podkowka,

This is in response to your December 9, 2015, letter, received by the Montana Department of Environmental Quality on December 14, 2015 regarding the U.S. Army Corp of Engineers preparation of a supplemental Environmental Assessment (EA) for the proposed use of the herbicide triclopyr to treat Salt cedar (*Tamarix spp.*) infestations within the Fort Peck Reservoir area.

The State of Montana has a human health standard for triclopyr in surface and groundwater not to exceed 400 µg/L (Circular DEQ-7 Montana Numeric Water Quality Standards, 2012). Based on the information provided in the EA titled "Control of Saltcedar and Russian Olive, Fort Peck Reservoir, Montana, December 2013", there will not be direct application of triclopyr in surface water or during runoff events. Because of the possibility of the herbicide to enter Fort Peck Lake, or surrounding wetlands or ponds by spraying drift or runoff when the herbicide is applied using ground methods, we suggest the use of the EPA-approved aquatic environment herbicide versions (Garlon 3A® and Renovate 3®) in all locations, not just within 50 feet of a wetted perimeter or wetlands as indicated on Section 3.2-alternative 2, EA 2013). Although triclopyr is fairly degradable in soil (Ganapathy, 1997), with a half-life from 12-27 days, in cold temperatures might persist one to two years. To avoid contamination in groundwater, application of the herbicide where soils are permeable and the water table is shallow should be avoided. Based on the labels provided in Appendix C (EA, 2013), preventive measures should be taken when grazing lactating dairy animals and hay harvesting is occurring in the area, and best management practices for application of the herbicide should be implemented according to the instructions on the labels.

There is a fact sheet and an article that might be helpful to include in the supplemental EA. The references are:

Ganapathy, C. 1997. Environmental Fate of Triclopyr. Environmental Monitoring and Pest Management Branch, Department of Pesticide Regulation, Sacramento CA.

Wisconsin Department of Natural Resources. 2012. Triclopyr Chemical Fact Sheet. WDNR, Madison, WI.

Sincerely,

A handwritten signature in black ink that reads "Rosie Sada". The signature is fluid and cursive, with "Rosie" on top and "Sada" below it, slightly overlapping.

Rosie Sada
MT Department of Environmental Quality
Water Quality Standards and Modeling Section

Appendix C

Product Labels/Material Safety Data Sheets

*Supplemental Environmental Assessment
Control of Saltcedar and Russian Olive
March 2016*

Renovate® 3

Specialty Herbicide

SPECIMEN



Aquatic Sites: For control of emersed, submersed and floating aquatic plants in aquatic sites such as ponds, lakes, reservoirs, non-irrigation canals, seasonal irrigation waters and ditches which have little or no continuous outflow, marshes and wetlands, including broadleaf and woody vegetation on banks and shores within or adjacent to these and other aquatic sites.

For use in New York State, comply with Section 24(c) Special Local Need labeling for Renovate® 3, SLN NY-060001

Active Ingredient

triclopyr: 3,5,6-trichloro-2-pyridinylxyacetic acid,	44.4%
triethylamine salt	
Other Ingredients	55.6%
TOTAL	100.0%

Add equivalent: triclopyr - 31.8% - 3 lb/gal

Keep Out of Reach of Children

DANGER / PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

NOTICE: Read the entire label. Use only according to label directions. Before using this product, read *Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies* at end of label booklet. If terms are unacceptable, return at once unopened.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

Renovate is a registered trademark of Dow AgroSciences LLC.

Produced for: SePRO Corporation
11550 North Meridian Street
Suite 600, Carmel, IN 46032, U.S.A.

EPA Reg. 62719-37-67690
FPL20120201

PRECAUTIONARY STATEMENTS

Hazard to Humans and Domestic Animals

DANGER

Corrosive. Causes Irreversible Eye Damage. Harmful If Swallowed Or Absorbed Through Skin. Prolonged Or Frequently Repeated Skin Contact May Cause Allergic Reaction In Some Individuals. Do not get in eyes or on skin or clothing.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants;
- Shoes plus socks;
- Protective eyewear; and
- Chemical resistant gloves (≥ 14 mils) such as butyl rubber, natural rubber, neoprene rubber or nitrile rubber.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

ENGINEERING CONTROLS

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the WPS [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

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First Aid	
If in eyes:	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 - 20 minutes. • Call a poison control center or doctor for treatment advice.
If swallowed:	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In case of emergency endangering health or the environment involving this product, call INFOTRAC at 1-800-535-5053.	
Note to Applicator: Allergic skin reaction is not expected from exposure to spray mixtures of Renovate 3 herbicide when used as directed.	
Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.	

ENVIRONMENTAL HAZARDS

Do not contaminate water when cleaning equipment or disposing of equipment washwaters. Under certain conditions, treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants, which may contribute to fish suffocation. This loss can cause fish suffocation. Therefore, to minimize this hazard, do not treat more than one-third to one-half of the water area in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Consult with the State agency for fish and game before applying to public water to determine if a permit is needed.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

PHYSICAL OR CHEMICAL HAZARDS

Combustible. Do not use or store the product near heat or open flame.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all *Directions for Use* carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls;
- Shoes plus socks;
- Protective eyewear; and
- Chemical-resistant gloves (≥ 14 mils) such as butyl rubber, natural rubber, neoprene rubber or nitrile rubber.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Entry Restrictions for Non-WPS Uses: For applications to non-cropland areas, do not allow entry into areas until sprays have dried, unless applicator and other handler PPE is worn.

GENERAL INFORMATION FOR AQUATIC AND WETLAND SITES

Use Renovate 3 herbicide for control of emerged, submersed and floating aquatic plants in aquatic sites such as ponds, lakes, reservoirs, non-irrigation canals, and ditches which have little or no continuous outflow, marshes and wetlands, including broadleaf and woody vegetation on banks and shores within or adjacent to these and other aquatic sites.

Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product to public waters. State or local public agencies may require permits.

GENERAL USE PRECAUTIONS AND RESTRICTIONS

For use in New York State, comply with Section 24(c) Special Local Need labeling for Renovate® 3, SLN NY-060001.

When applying this product in tank mix combination, follow all applicable use directions, precautions and limitations on each manufacturer's label.

Chemigation: Do not apply this product through any type of irrigation system.

Irrigation: Do not use treated water for irrigation for 120 days following application. As an alternative to waiting 120 days, treated water may be used for irrigation once the triclopyr level in the intake water is determined to be non-detectable by laboratory analysis (immunoassay). There is no restriction on use of water from the treatment area to irrigate established grasses.

Water treated with Renovate 3 may not be used for irrigation purposes for 120 days after application or until residue levels of Renovate 3 are determined by laboratory analysis, or other appropriate means of analysis, to be 1 ppb or less.

Seasonal Irrigation Waters: Renovate 3 may be applied during the off-season to surface waters that are used for irrigation on a seasonal basis provided that there is a minimum of 120 days between applying Renovate 3 and the first use of treated water for irrigation purposes, or until residue levels of Renovate 3 are determined by laboratory analysis, or other appropriate means of analysis, to be 1 ppb or less.

Irrigation Canals/Ditches: Do not apply Renovate 3 to irrigation canals/ditches unless the 120-day restriction on irrigation water usage can be observed or residue levels of Renovate 3 are determined by laboratory analysis, or other appropriate means of analysis, to be 1 ppb or less.

Do not apply Renovate 3 directly to, or otherwise permit it to come into direct contact with grapes, tobacco, vegetable crops, flowers, or other desirable broadleaf plants, and do not permit spray mists containing it to drift into them.

- Do not apply to salt water bays or estuaries.
- Do not apply directly to un-impounded rivers or streams.
- Do not apply on ditches or canals currently being used to transport irrigation water or that will be used for irrigation within 4 months following treatment. It is permissible to treat irrigation and non-irrigation ditch banks.
- Do not apply where runoff water may flow onto agricultural land as injury to crops may result.
- When making applications to control unwanted plants on banks or shorelines of moving water sites, minimize overspray to open water.
- The use of a mist blower is not recommended.

Grazing and Haying Restrictions

Except for lactating dairy animals, there are no grazing restrictions following application of this product.

- **Grazing Lactating Dairy Animals:** Do not allow lactating dairy animals to graze treated areas until the next growing season following application of this product.
- Do not harvest hay for 14 days after application.
- Grazed areas of non-cropland and forestry sites may be spot treated if they comprise no more than 10% of the total grazable area.

Slaughter Restrictions: During the season of application, withdraw livestock from grazing treated grass at least 3 days before slaughter.

Avoiding Injurious Spray Drift

Applications should be made only when there is little or no hazard from spray drift. Very small quantities of spray, which may not be visible, may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants near enough to be injured. It is suggested that a continuous smoke column at or near the spray site or a smoke generator on the spray equipment be used to detect air movement, lapse conditions, or temperature inversions (stable air). If the smoke layers or indicates a potential of hazardous spray drift, do not spray.

Aerial Application: For aerial application near susceptible crops, apply through a Microfoil® or Thru-Valve boom, or use a drift control additive labeled for aquatic use. Other drift reducing systems or thickened sprays prepared by using high viscosity inverting systems may be used if they are made as drift-free mixtures containing thickening agents labeled for use in aquatics or applications made with the Microfoil or Thru-Valve boom. Keep spray pressures low enough to provide coarse spray droplets. Spray boom should be no longer than 3/4 of the rotor length. Do not use a thickening

agent with the Microfoil or Thru-Valve booms, or other systems that cannot accommodate thick sprays. Spray only when the wind velocity is low (follow state regulations). Avoid application during air inversions. If a spray thickening agent is used, follow all use recommendations and precautions on the product label.

[†]Reference within this label to a particular piece of equipment produced by or available from other parties is provided without consideration for use by the reader at its discretion and subject to the reader's independent circumstances, evaluation, and expertise. Such reference by SePRO Corporation is not intended as an endorsement of such equipment, shall not constitute a warranty (express or implied) of such equipment, and is not intended to imply that other equipment is not available and equally suitable. Any discussion of methods of use of such equipment does not imply that the reader should use the equipment other than is advised in directions available from the equipment's manufacturer. The reader is responsible for exercising its own judgment and expertise, or consulting with sources other than SePRO Corporation, in selecting and determining how to use its equipment.

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications:

1. The distance of the outer most operating nozzles on the boom must not exceed 3/4 the length of the rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they should be observed.

The applicator should be familiar with and take into account the information covered in the following *Aerial Drift Reduction Advisory*. [This information is advisory in nature and does not supersede mandatory label requirements.]

Aerial Drift Reduction Advisory

Information on Droplet Size: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see *Wind*, *Temperature and Humidity*, and *Temperature Inversions*).

Controlling Droplet Size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length: For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height: Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment: When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions: Applications should not occur during a local, low level temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Ground Equipment: To aid in reducing spray drift, Renovate 3 should be used in thickened (high viscosity) spray mixtures using a labeled drift control additive, high viscosity invert system, or equivalent as directed by the manufacturer. With ground equipment, spray drift can be reduced by keeping the spray boom as low as possible; by applying 20 gallons or more of spray per acre; by keeping the operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when wind velocity is low (follow state regulations). In hand-gun applications, select the minimum spray pressure that will provide adequate plant coverage (without forming a mist). Do not apply with nozzles that produce a fine-droplet spray.

High Volume Leaf-Stem Treatment: To minimize spray drift, do not use pressure exceeding 50 psi at the spray nozzle and keep sprays no higher than brush tops. A labeled thickening agent may be used to reduce drift.

Plants Controlled

Woody Plant Species

alder	choke cherry
arrowwood	cottonwood
ash	crataegus (hawthorn)
aspen	locust
bear clover (beamat)	maleleua (seedlings)
beech	maples
birch	mulberry
blackberry	oaks
blackgum	poison ivy
Brazilian pepper	poison oak
cascara	poplar
ceanothus	salt-bush (<i>Baccharis</i> spp.)
cherry	sweetgum
Chinese tallow	waxmyrtle
chinquapin	willow

Annual and Perennial Broadleaf Weeds	
burdock	smart weed
Canada thistle	tansy ragwort
curly dock	tropical sodaapple
elephant ear	vetch
plantain	wild lettuce
Aquatic Weeds	
alligatorweed	Pennywort
American lotus	phragmites
American frogbit	pickerelweed
aquatic sodaapple	purple loosestrife
Eurasian watermilfoil	waterhyacinth
milfoil species	waterlily
nuphar (spatterdock)	watershield
parrotfeather*	water primrose

*Retreatment may be needed to achieve desired level of control.

APPLICATION METHODS

FLOATING AND EMERGED WEEDS

For control of waterhyacinth, alligatorweed (see specific directions below), and other susceptible emerged and floating herbaceous weeds and woody plants, apply 1 1/2 to 6 lb ae of triclopyr (2 to 8 quarts of Renovate 3) per acre as a foliar application using surface or aerial equipment. Use higher rates in the rate range when plants are mature, when the weed mass is dense, or for difficult to control species. Repeat as necessary to control regrowth and plants missed in the previous operation, but do not exceed a total of 6 lb ae of triclopyr (8 quarts of Renovate 3) per acre per annual growing season.

Use a non-ionic surfactant in the spray mixture to improve control. Follow all directions and use precautions on the aquatic surfactant label.

Apply when plants are actively growing.

Surface Application

Use a spray boom, handgun or other similar suitable equipment mounted on a boat or vehicle. Thorough wetting of foliage is essential for maximum effectiveness. Use 20 to 200 gallons per acre of spray mixture. Special precautions such as the use of low spray pressure, large droplet producing nozzles or addition of a labeled thickening agent may minimize spray drift in areas near sensitive crops.

Aerial Application (Helicopter Only)

Apply with a helicopter using a Microfoil or Thru-Valve boom, or a drift control additive in the spray solution. Apply in a minimum of 10 gallons of total spray mix per acre. Do not apply when weather conditions favor drift to sensitive areas. See label section on aerial application directions and precautions.

Waterhyacinth (*Eichhornia crassipes*)

Apply Renovate 3 at 1 1/2 to 6 lb ae of triclopyr (2 to 8 quarts of Renovate 3) per acre to control waterhyacinth. Apply when plants are actively growing. Use the higher rate in the rate range when the weed mass is dense. It is important to thoroughly wet all foliage with the spray mixture. Use a non-ionic surfactant in the spray mixture. A repeat treatment may be needed to control regrowth or plants missed in the previous treatment.

Alligatorweed (*Alternanthera philoxeroides*)

Apply Renovate 3 at 2 to 6 lb ae of triclopyr (3 to 8 quarts of Renovate 3) per acre to control alligatorweed. It is important to thoroughly wet all foliage with the spray mixture. For best results, add an approved non-ionic aquatic surfactant to the spray mixture. Alligatorweed growing outside the margins of a body of water can be controlled with this treatment. However, alligatorweed growing in water will only be partially controlled. Top growth above the water will be controlled, but the plant will likely regrow from tissue below the water surface.

Precautions for Potable Water Intakes – Lakes, Reservoirs, Ponds:

For applications of Renovate 3 to control floating and emerged weeds in lakes, reservoirs or ponds that contain a functioning potable water intake for human consumption, see chart below to determine the minimum setback distances of the application from the functioning potable water intakes.

Area Treated (acres)	Renovate 3 Application Rate			
	2 qt/acre	4 qt/acre	6 qt/acre	8 qt/acre
Setback Distance (ft)				
<4	0	200	400	500
>4 - 8	0	200	700	900
>8 - 16	0	200	700	1,000
>16	0	200	900	1,300

Note: Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes. These setback restrictions do not apply to terrestrial applications made adjacent to potable water intakes.

To apply Renovate 3 around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

- **Recreational Use of Water in Treatment Area:** There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.
- **Livestock Use of Water from Treatment Area:** There are no restrictions on livestock consumption of water from the treatment area.

SUBMERGED WEEDS

For control of Eurasian watermilfoil (*Myriophyllum spicatum*) and other susceptible submerged weeds in ponds, lakes, reservoirs, and in non-irrigation canals or ditches that have little or no continuous outflow, apply Renovate 3 as either a surface or subsurface application. Rates should be selected according to the rate chart below to provide a triclopyr concentration of 0.75 to 2.5 ppm ae in treated water. Use higher rates in the rate range in areas of greater water exchange. These areas may require a repeat application. However, total application of Renovate 3 must not exceed an application rate of 2.5 ppm of triclopyr for the treatment area per annual growing season.

Apply in spring or early summer when Eurasian watermilfoil or other submersed weeds are actively growing.

Areas near susceptible crops or other desirable broadleaf plants may be treated by subsurface injection applied by boat to avoid spray drift.

Subsurface Application

Apply desired amount of Renovate 3 per acre directly into the water through boat-mounted distribution systems. When treating target plants that are 6 feet below the surface of the water, trailing hoses should be used along with an aquatic approved sinking agent (except California).

Surface Application

Apply the desired amount of Renovate 3 as either a concentrate or a spray mixture in water. However, use a minimum spray volume of 5 gallons per acre. Do not apply when weather conditions favor drift to sensitive areas.

Average water depth (feet) x 0.905 x target concentration (ppm) = gallons of Renovate 3 per surface acre treated.

Example: to achieve a 2 ppm concentration of triclopyr in water averaging 4 feet deep

$4 \times 0.905 \times 2 \text{ ppm} = 7.2 \text{ gallons of Renovate 3 per surface acre treated.}$

Water Depth (ft)	Concentration of Triclopyr Acid in Water (ppm ae)				
	0.75 ppm	1.0 ppm	1.5 ppm	2.0 ppm	2.5 ppm
Gallons of Renovate 3 per Surface Acre at Specified Depth					
1	0.7	0.9	1.4	1.8	2.3
2	1.4	1.8	2.7	3.6	4.6
3	2.1	2.7	4.1	5.4	6.8
4	2.7	3.6	5.4	7.2	9.1
5	3.4	4.5	6.8	9.0	11.3
6	4.1	5.4	8.1	10.9	13.6
7	4.8	6.3	9.5	12.7	15.8
8	5.5	7.2	10.9	14.5	18.1
9	6.1	8.1	12.2	16.3	20.4
10	6.8	9.0	13.6	18.1	22.6
15	10.2	13.6	20.4	27.2	33.9
20	13.6	18.1	27.2	36.2	45.3

Precautions for Potable Water Intakes – Lakes, Reservoirs, Ponds:
For applications of Renovate 3 to control submerged weeds in lakes, reservoirs or ponds that contain a functioning potable water intake for human consumption, see the chart below to determine the minimum setback distances of the application from the functioning potable water intakes.

Area Treated (acres)	Concentration of Triclopyr Acid in Water (ppm ae)				
	0.75 ppm	1.0 ppm	1.5 ppm	2.0 ppm	2.5 ppm
Required Setback Distance (ft) from Potable Water Intake					
<4	300	400	600	800	1,000
>4 - 8	420	560	840	1,120	1,400
>8 - 16	600	800	1,200	1,600	2,000
>16 - 32	780	1,040	1,560	2,080	2,600
>32 acres, calculate a setback using the formula for the appropriate rate	Setback (ft) = $(800 \times \ln(\text{acres}) - 160)/3.33$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160)/2.50$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160)/1.67$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160)/1.25$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160)$

Example Calculation 1: to apply 2.5 ppm Renovate 3 to 50 acres:

$$\begin{aligned} \text{Setback in feet} &= (800 \times \ln(50 \text{ acres}) - 160) \\ &= (800 \times 3.912) - 160 \\ &= 2,970 \text{ feet} \end{aligned}$$

Example Calculation 2: to apply 0.75 ppm Renovate 3 to 50 acres:

$$\begin{aligned} \text{Setback in feet} &= (800 \times \ln(50 \text{ acres}) - 160) \\ &\quad 3.33 \\ &= (800 \times 3.912) - 160 \\ &\quad 3.33 \\ &= 892 \text{ feet} \end{aligned}$$

Note: Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes. These setback restrictions do not apply to terrestrial applications made adjacent to potable water intakes.

To apply Renovate 3 around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

- Recreational Use of Water in Treatment Area:** There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.
- Livestock Use of Water from Treatment Area:** There are no restrictions on livestock consumption of water from the treatment area.

WETLAND SITES

Wetlands include flood plains, deltas, marshes, swamps, bogs, and transitional areas between upland and lowland sites. Wetlands may occur within forests, wildlife habitat restoration and management areas and similar sites as well as areas adjacent to or surrounding domestic water supply reservoirs, lakes and ponds.

For control of woody plants and broadleaf weeds in these sites, follow use directions and application methods on this label for terrestrial sites associated with wetland areas.

Use Precautions: Minimize overspray to open water when treating target vegetation in and around non-flowing, quiescent or transient water. When making applications to control unwanted plants on banks or shorelines of flowing water, minimize overspray to open water. **Note:** Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat such areas.

Purple Loosestrife (*Lythrum salicaria*)

Purple loosestrife can be controlled with foliar applications of Renovate 3. For broadcast applications, use a minimum of 4 1/2 to 6 lb ae of triclopyr (6 to 8 quarts of Renovate 3) per acre. Apply Renovate 3 when purple loosestrife is at the bud to mid-flowering stage of growth. Follow-up applications for control of regrowth should be made the following year in order to achieve increased control of this weed species. For all applications, a non-ionic surfactant labeled for aquatics should be added to the spray mixture. Follow all directions and use precautions on the label of the surfactant. Thorough wetting of the foliage and stems is necessary to achieve satisfactory control. A minimum spray volume of 50 gallons per acre is recommended for ground broadcast applications.

If using a backpack sprayer, a spray mixture containing 1% to 1.5% Renovate 3 or 5 to 7.6 fl oz of Renovate 3 per 4 gallons of water should be used. All purple loosestrife plants should be thoroughly wetted.

Phragmites (*Phragmites australis*)

Phragmites can be selectively controlled with foliar applications of Renovate 3. For broadcast applications, a minimum of 2 1/4 lb ae of triclopyr (3 quarts of Renovate 3) per acre should be used. For optimum control, apply Renovate 3 when phragmites is in the early stage of growth, ½ to 3 feet in height, prior to seed head development. Follow-up applications for control of regrowth may be made the following year in order to achieve increased control of this weed species. For all applications, a non-ionic surfactant labeled for aquatics should be added to the spray mixture. Follow all directions and use precautions on the label of the surfactant. Thorough wetting of the foliage and stems is necessary to achieve satisfactory control. A minimum spray volume of 50 gallons per acre is recommended for ground broadcast applications.

If a backpack sprayer is used, a spray mixture containing 1% to 1.5% of Renovate 3 or 5 to 7.6 fl oz of Renovate 3 per 4 gallons of water should be used. All phragmites foliage should be thoroughly wetted.

Aerial application by helicopter may be needed when treating restoration sites that are inaccessible, remote, difficult to traverse, isolated, or otherwise unsuited to ground application, or in circumstances where invasive exotic weeds dominate native plant populations over extensive areas and efforts to restore native plant diversity are being conducted. By air, apply in a minimum spray volume of 30 gallons per acre using Thru-Valve or Microfoil boom only.

- Recreational Use of Water in Treatment Area:** There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.
- Livestock Use of Water from Treatment Area:** There are no restrictions on livestock consumption of water from the treatment area.

TERRESTRIAL SITES ASSOCIATED WITH WETLAND AREAS

- Apply no more than 2 lb ae of triclopyr (2/3 gallon of Renovate 3) per acre per growing season on range and pasture sites, including rights-of-way, fence rows or any area where grazing or harvesting is allowed.
- On forestry sites, Renovate 3 may be used at rates up to 6 lb ae of triclopyr (2 gallons of Renovate 3) per acre per year.

Use Renovate 3 at rates of 3/4 to 6 lb ae of triclopyr (1/4 to 2 gallons of Renovate 3) per acre to control broadleaf weeds and woody plants. In all cases use the amount specified in enough water to give uniform and complete coverage of the plants to be controlled. Use only water suitable for spraying. Use a labeled non-ionic surfactant for all foliar applications. When using surfactants, follow the use directions and precautions listed on the surfactant manufacturer's label. Use the higher recommended concentrations of surfactant in the spray mixture when applying lower spray volumes per acre. The order of addition to the spray tank is water, spray thickening agent (if used), additional herbicide (if used), and Renovate 3. A labeled aquatic surfactant should be added to the spray tank last or as recommended on the product label. If combined with emulsifiable concentrate herbicides, moderate continuous adequate agitation is required.

Before using any recommended tank mixtures, read the directions and all use precautions on both labels.

For best results, apply when woody plants and weeds are actively growing. When hard to control species such as ash, blackgum, choke cherry, maples, or oaks are prevalent and during applications made in late summer when the plants are mature and during drought conditions, use the higher rates of Renovate 3.

When using Renovate 3 in combination with a 2,4-D herbicide approved for aquatic use, such as DMA 4 IVM, generally the higher rates should be used for satisfactory brush control.

Use the higher dosage rates when brush approaches an average of 15 feet in height or when the brush covers more than 60% of the area to be treated. If lower rates are used on hard to control species, re-sprouting may occur the year following treatment.

High Volume Foliage Treatment

For control of woody plants, use Renovate 3 at the rate of 3 to 6 lb ae of triclopyr (1 to 2 gallons of Renovate 3) per 100 gallons of spray solution, or Renovate 3 at 3/4 to 3 lb ae of triclopyr (1 to 4 quarts of Renovate 3) may be tank mixed with 1/4 to 1/2 gallons of 2,4-D 3.8 lb amine, like DMA 4 IVM, diluted to make 100 gallons of spray solution. Apply at a volume of 100 to 400 gallons of total spray per acre depending upon size and density of woody plants. Coverage should be thorough to wet all leaves, stems, and root collars. (See *General Use Precautions and Restrictions*.) Do not exceed the maximum allowable use rate of 6 lb ae of triclopyr (2 gallons of Renovate 3) per acre per growing season.

Low Volume Foliage Treatment

To control susceptible woody plants, apply up to 15 lb ae of triclopyr (5 gallons of Renovate 3) in 10 to 100 gallons of finished spray. The spray concentration of Renovate 3 and total spray volume per acre may be adjusted according to the size and density of target woody plants and kind of spray equipment used. With low volume sprays, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars (see *General Use Precautions and Restrictions*). For best results, a labeled aquatic surfactant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush.

Cut Surface Treatments (Woody Plants)

Individual plant treatments such as basal bark and cut surface applications may be used on any use site listed on this label at a maximum use rate of 2.67 gallons of Renovate 3 (8 lb ae of triclopyr) per acre. These types of applications are made directly to ungrazed parts of plants and, therefore, are not restricted by the grazing maximum rate of 2/3 of a gallon of Renovate 3 (2 lb ae of triclopyr) per acre.

To control unwanted trees and other listed woody plants, apply Renovate 3, either undiluted or diluted in a 1 to 1 ratio with water as directed below.

With Tree Injector Method

Apply by injecting 1/2 milliliter of undiluted Renovate 3 or 1 milliliter of the diluted solution through the bark at intervals of 3 to 4 inches between centers of the injector wound. The injections should completely surround the tree at any convenient height. Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is injected directly into plants.

With Hack and Squirt Method

Make cuts at a convenient height around the tree trunk with a hatchet or similar equipment so that the cuts overlap slightly and make a continuous circle around the trunk. Spray 1/2 milliliter of undiluted Renovate 3 or 1 milliliter of the diluted solution into each cut.

With Frill or Girdle Method

Make a single girdle through the bark completely around the tree at a convenient height. Wet the cut surface with undiluted or diluted solution.

Both of the above methods may be used successfully at any season except during periods of heavy sap flow of certain species - for example, maples.

Stump Treatment

Spray or paint the cut surfaces of freshly cut stumps and stubs with undiluted Renovate 3. The cambium area next to the bark is the most vital area to wet.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal. Open dumping is prohibited.

Pesticide Storage: Store above 28°F or agitate before use.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Nonrefillable containers 5 gallons or less:

Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Nonrefillable containers 5 gallons or larger:

Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable containers 5 gallons or larger:

Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose.

Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

TERMS AND CONDITIONS OF USE

If terms of the following *Warranty Disclaimer*, *Inherent Risks of Use*, and *Limitation of Remedies* are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, use by the buyer or any other user constitutes acceptance of the terms under *Warranty Disclaimer*, *Inherent Risks of Use* and *Limitations of Remedies*.

WARRANTY DISCLAIMER

SePRO Corporation warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. SEPRO CORPORATION MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

INHERENT RISKS OF USE

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperature, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of SePRO Corporation or the seller. All such risks shall be assumed by buyer.

LIMITATION OF REMEDIES

The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories) shall be limited to, at SePRO Corporation's election, one of the following:

- (1) Refund of purchase price paid by buyer or user for product bought, or
- (2) Replacement of amount of product used.

SePRO Corporation shall not be liable for losses or damages resulting from handling or use of this product unless SePRO Corporation is promptly notified of such loss or damage in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

The terms of the *Warranty Disclaimer*, *Inherent Risks of Use*, and this *Limitation of Remedies* cannot be varied by any written or verbal statements or agreements. No employee or sales agent of SePRO Corporation or the seller is authorized to vary or exceed the terms of the *Warranty Disclaimer* or this *Limitation of Remedies* in any manner.

EPA Stamped Notification: 06/13/2008

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SePRO Corporation
11550 North Meridian Street, Suite 600
Carmel, IN 46032, U.S.A.



Conforms to HazCom 2012/United States

SDS

Renovate® 3

SAFETY DATA SHEET



Renovate® 3

Herbicide

Section 1. Identification

GHS product identifier : Renovate® 3 Herbicide

Recommended use of the chemical and restrictions on use Identified uses : Herbicide

Supplier's details : SePRO Corporation
11550 North Meridian Street
Suite 600
Carmel, IN 46032 U.S.A.
Tel: 317-580-8282
Toll free: 1-800-419-7779
Fax: 317-580-8290
Monday - Friday, 8am to 5pm E.S.T.
www.sepro.com

Emergency telephone number (with hours of operation) : INFOTRAC - 24-hour service 1-800-535-5053

The following recommendations for exposure controls and personal protection are intended for the manufacture, formulation and packaging of this product. For applications and/or use, consult the product label. The label directions supersede the text of this Safety Data Sheet for application and/or use.

Section 2. Hazards identification

Hazard classification This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Flammable liquids - Category 3
Eye irritation - Category 2A
Specific target organ toxicity - single exposure - Category 3

Label elements
Hazard pictograms



Signal word:

WARNING!



SDS

Renovate® 3

Hazards

Flammable liquid and vapor.
Causes serious eye irritation.
May cause respiratory irritation.

Precautionary statements

Prevention

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ eye protection/ face protection.

Response

IF ON SKIN (or hair):
IF INHALED:

Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.

IF IN EYES:

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/ attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage

Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place.
Keep cool. Store locked up.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No data available

Section 3. Composition/information on ingredients

This product is a mixture.

Component	CASRN	Concentration
Triclopyr Triethylamine Salt	57213-69	44.4%
Triethylamine	121-44-8	3.0%
Alkylphenol alkoxylate	69029-39-6	1.0%
Balance	Not Available	47.2%

Section 4. First aid measures

Description of first aid measures

General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation:

Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc.). Call a poison control center or doctor for treatment advice.



SDS

Renovate® 3

Skin contact:

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact:

Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.

Ingestion:

Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician:

No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

Section 5. Fire-fighting measures

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Straight or direct water streams may not be effective to extinguish fire. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Unsuitable extinguishing media:

no data available

Special hazards arising from the substance or mixture

Hazardous combustion products:

Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards:

This material will not burn until the water has evaporated. Residue can burn. May produce flash fire. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

Advice for firefighters

Fire Fighting Procedures:

Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Eliminate ignition sources. To extinguish



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combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this SDS.

Special protective equipment for firefighters:

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions:

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up:

Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact SePRO Corporation for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

Section 7. Handling and storage

Precautions for safe handling:

Keep out of reach of children. Keep away from heat, sparks and flame. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Electrically ground and bond all equipment. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Do not swallow. Wash thoroughly after handling. Use with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion -proof equipment may be necessary, depending upon the type of operation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.

Conditions for safe storage:

Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies. Minimize sources of ignition, such as static build-up, heat, spark or flame.

Section 8. Exposure controls/personal protection

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Triclopyr Triethylamine Salt	Dow IHG	TWA	2 mg/m3
	Dow IHG	TWA	SKIN, DSEN, BEI
Triethylamine	ACGIH	TWA	0.5 ppm
	ACGIH	STEL	1 ppm
	ACGIH	TWA	Absorbed via skin
	ACGIH	STEL	Absorbed via skin
Ethanol	OSHA Z-1	TWA	100 mg/m3 25 ppm
	ACGIH	TWA	1,000 ppm
	ACGIH	STEL	1,000 ppm
Alkylphenol alkoxylate	OSHA Z-1	TWA	1,900 mg/m3 1,000 ppm
	Dow IHG	TWA	2 mg/m3

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls:

Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Section 9. Physical and chemical properties

Appearance

Physical State	Liquid
Color	Pink
Odor	Ammoniacal
Odor Threshold	No test data available
pH	9.5 10% pH Electrode
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point	Closed cup > 43 °C (>109 °F) Setaflash Closed Cup ASTM D3828
Evaporation Rate (Butyl Acetate =1)	No test data available
Flammability (solid, gas)	Not data available
Lower explosion limit	No test data available
Upper lower explosion limit	No test data available
Vapor pressure	Not applicable
Relative Vapor Density (air = 1)	Not applicable
Relative Density (water = 1)	1.1385 at 20 °C (68 °F) Digital Density Meter (Oscillating Coil)
Water solubility	Soluble
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Dynamic Viscosity	12.5 mPa.s at 25 °C (77 °F)
Kinematic Viscosity	No test data available
Explosive properties	No Thermal
Oxidizing properties	No
Liquid Density	1.1385 g/cm³ at 20 °C (68 °F) Digital density meter
Molecular weight	No data available
Surface tension	38.5 mN/m at 20 °C (68 °F) EC Method A5

NOTE: The physical data presented above are typical values and should not be construed as a specification.

Section 10. Stability and reactivity

Reactivity: No data available

Chemical stability: Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Active ingredient decomposes at elevated temperatures.

Incompatible materials: Avoid contact with: Oxidizers

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Nitrogen oxides.

Section 11. Toxicological information

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity**Acute oral toxicity**

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.
As product: LD50, Rat, female, 4100 mg/kg

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.
As product: LD50, Rabbit, male and female, > 5,000 mg/kg

Acute inhalation toxicity

No adverse effects are anticipated from single exposure to mist. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).
As product: LC50, Rat, male and female, 4 Hour, Mist, > 5.4 mg/l
Maximum attainable concentration.
No deaths occurred at this concentration.

Skin corrosion/irritation

Brief contact is essentially nonirritating to skin.

**Serious eye damage/
eye irritation**

May cause moderate eye irritation.
May cause moderate corneal injury.

Sensitization

Did not demonstrate the potential for contact allergy in mice.
For respiratory sensitization: No relevant data found.

**Specific Target Organ
Systemic Toxicity
(Single Exposure)**

May cause respiratory irritation.

**Specific Target Organ
Systemic Toxicity
(Repeated Exposure)**

For the active ingredient(s): In animals, effects have been reported on the following organs:
Kidney.

For the minor component(s): In animals, effects have been reported on the following organs:
Kidney.
Liver.

Carcinogenicity

Ethanol when not consumed in an alcoholic beverage is not classifiable as a human carcinogen. For similar active ingredient(s). Triclopyr. Did not cause cancer in laboratory animals.

Teratogenicity

For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

For the minor component(s): Has caused birth defects in lab animals at high doses. EDTA and its sodium salts have been reported to cause birth defects in laboratory animals only at exaggerated doses that were toxic to the mother. These effects are likely associated with zinc deficiency due to chelation.

Reproductive toxicity

For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

Section 12. Ecological information

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 > 100 mg/L in the most sensitive species tested).

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 Hour, 400 mg/L

LC50, *Lepomis macrochirus* (Bluegill sunfish), semi-static test, 96 Hour, > 100 mg/L

Acute toxicity to aquatic Invertebrates

EC50, eastern oyster (*Crassostrea virginica*), static test, 48 Hour, 56 - 87 mg/L
LC50, *Daphnia magna* (Water flea), static test, 48 Hour, > 1,000 mg/L

Acute toxicity to algae/aquatic plants

ErC50, *Pseudokirchneriella subcapitata* (green algae), 72hr Growth rate inhibition, 107 mg/L

ErC50, blue-green alga *Anabaena flos-aquae*, 72 Hour, Growth inhibition, > 100 mg/L

EC50, *Lemna gibba*, 7 d, Growth inhibition, > 100 mg/L

Persistence and degradability

Triclopyr Triethylamine Salt

Biodegradability:

For similar active ingredient(s). Triclopyr. Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

For similar active ingredient(s). Triclopyr. Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Triethylamine

Biodegradability:

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

10-day Window: Pass

96%

21 d

OECD Test Guideline 301 A or Equivalent

10-day Window: Not applicable

25-34%

28 d

OECD Test Guideline 302C or Equivalent

Theoretical Oxygen Demand:

3.49 mg/mg

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitizer: OH radicals

Atmospheric half-life: 0.116 d

Method: Estimated.

Ethylenediamine tetraacetic acid

Biodegradability:	Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability). 10-day Window: Not applicable
Biodegradation:	37%
Exposure time:	14 d
Method:	OECD Test Guideline 3028 or Equivalent 10-day Window: Fail
Biodegradation:	0%
Exposure time:	30 d
Method:	OECD Test Guideline 3010 or Equivalent
Theoretical Oxygen Demand:	1.37 mg/mg
Photodegradation	Test Type: Half-life (indirect photolysis) Sensitizer: OH radicals Atmospheric half-life: 2.12 Hour Method: Estimated.

Ethanol

Biodegradability:	Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. 10-day Window: Pass
Biodegradation:	> 70%
Exposure time:	5 d
Method:	OECD Test Guideline 3010 or Equivalent
Theoretical Oxygen Demand:	2.08 mg/mg
Photodegradation	Test Type: Half-life (indirect photolysis) Sensitizer: OH radicals Atmospheric half-life: 2.99 d Method: Estimated.

Alkylphenol alkoxylate

Biodegradability:	Biodegradation under aerobic laboratory conditions is below detectable limits (80020 or 80028/ThOD < 2.5%).
Theoretical Oxygen Demand:	2.35 mg/mg
Chemical Oxygen Demand:	1.78 mg/mg

Balance

Biodegradability:	No relevant data found.
Bioaccumulative potential	

Bioaccumulation: No data available for this product.

Mobility in soil

Triclopyr Triethylamine Salt	For similar active ingredient(s). Potential for mobility in soil is very high (Koc between 0 and 50).
-------------------------------------	--



Triethylamine

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Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 11 - 146 Estimated.

Ethylenediamine tetra
acetic acid

Potential for mobility in soil is high (Koc between 50 and 150).
Partition coefficient(Koc): 98

Ethanol

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 1.0 Estimated.

Alkylphenol alkoxylate

No data available.

Balance

No relevant data found.

Section 13. Disposal considerations

Disposal methods:

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

Section 14. Transport information

DOT

Proper shipping name	Combustible liquid, n.o.s. (Triethylamine, Ethanol)
UN Number	NA 1993
Class	CBL
Packing Group	III

Classification for SEA transport (IMO-IMDG):

Proper shipping name	FLAMMABLE LIQUID, N.O.S. (Triethylamine, Ethanol)
UN number	UN 1993
Class	3
Packing group	III
Marine pollutant	No
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Flammable liquid, n.o.s.(Triethylamine, Ethanol)
UN number	UN 1993
Class	3
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service



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representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

Section 15. Regulatory information

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986

Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections

311 and 312

Fire Hazard
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986

Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	CASRN
Triethylamine	121-44-8
Triclopyr Triethylamine Salt	57213-69-1

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	CASRN
Triethylamine	121-44-8
Ethylenediamine tetraacetic acid	60-00-4
Ethanol	64-17-5



Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)

This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number: 62719-37-67690

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER

Corrosive

Causes irreversible eye damage

Harmful if swallowed or absorbed through skin

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Section 16. Other information

**Hazard Rating System
NFPA**

Health: 2 Fire: 2 Reactivity: 0

Legend

Absorbed via skin	Absorbed via skin
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
DOW IHG	Dow Industrial Hygiene Guideline
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants
SKIN, SDEN, BEI	Absorbed via Skin, Skin Sensitizer, Biological Exposure Indice
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average

History

Date of issue mm/dd/yyyy: 08/11/2015

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

NAVIGATE®

A SELECTIVE HERBICIDE FOR CONTROLLING CERTAIN UNWANTED AQUATIC PLANTS

ACTIVE INGREDIENTS:

Butoxyethyl ester, 2,4-Dichlorophenoxyacetic acid,	27.6%
INERT INGREDIENTS:	72.4%
TOTAL	100.0%

*Isomer specific by AOAC Method, Equivalent to 2,4-Dichlorophenoxyacetic Acid 19%

EPA Reg. No. 228-378-8959

EPA Est. No. 228-IL-1

KEEP OUT OF REACH OF CHILDREN CAUTION

For Chemical Emergency, Spill, Leak, Fire, Exposure or Accident call Chemtrec Day or Night 1-800-424-9300

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if swallowed, absorbed through skin, or inhaled. Causes eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing dust. When handling this product, wear chemical resistant gloves. Wash thoroughly with soap and water after handling. When mixing, loading, or applying this product or repairing or cleaning equipment used with this product, wear eye protection (face shield or safety glasses), chemical resistant gloves, long-sleeved shirt, long pants, socks and shoes. It is recommended that safety glasses include front, brow and temple protection. Wash hands, face and arms with soap and water as soon as possible after mixing, loading, or applying this product. Wash hands, face and hands with soap and water before eating, smoking or drinking. Wash hands and arms before using toilet. After work, remove all clothing and shower using soap and water. Do not reuse clothing worn during the previous day's mixing and loading or application of this product without cleaning first. Clothing must be kept and washed separately from other household laundry. Remove saturated clothing as soon as possible and shower.

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. If person is unconscious, do not give anything by mouth and do not induce vomiting.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF INHALED: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

IF IN EYES: Flush eyes with plenty of water. Call a physician if irritation persists.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Drift or runoff may adversely affect fish and non-target plants. Do not apply to water except as specified on this label. Do not contaminate water when disposing of equipment washwaters. Unless an approved assay indicates the 2,4-D concentration is 100 ppb (0.1 ppm) or less, or, only growing crops and non-crop areas labeled for direct treatment with 2,4-D will be affected, do not use water from treated areas for irrigating plants or mixing sprays for agricultural or ornamental plants. Unless an approved assay indicates the 2,4-D concentration is 70 ppb (0.07 ppm) or less, do not use water from treated areas for potable water (drinking water).

Clean spreader equipment thoroughly before using it for any other purposes. Vapors from this product may injure susceptible plants.

Most cases of ground water contamination involving phenoxy herbicides such as 2,4-D have been associated with mixing/loading and disposal sites. Caution should be exercised when handling 2,4-D pesticides at such sites to prevent contamination of ground water supplies. Use of closed systems for mixing or transferring this pesticide will reduce the probability of spills. Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent ground water contamination.

STORAGE AND DISPOSAL

STORAGE

Always use original container to store pesticides in a secure warehouse or building. Do not store near seeds, fertilizers, insecticides or fungicides. Do not stack more than two pallets high. Do not contaminate water, food or feed by storage or disposal. It is recommended that a SARA Title III emergency response plan be created for storage facilities. Do not transport in passenger compartment of any vehicle.

PESTICIDE DISPOSAL

Pesticide wastes are toxic. If container is damaged or if pesticide has leaked, clean up spilled material. Improper disposal of excess pesticide is a violation of Federal law and may contaminate ground water. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL

Do not reuse empty bag. Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If bag is burned, stay out of smoke.

MANUFACTURED FOR:

ab applied biochemists

Milwaukee, WI 53022
1-800-558-5106

www.appliedbiochemists.com

SEE ADDITIONAL PRECAUTIONS
AND DIRECTIONS ON BACK

NAVIGATE is a trademark of Applied Biochemists

NET WT. 50 LBS. (22.68 KG)

13529

DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.
READ THIS ENTIRE LABEL BEFORE USING THIS PRODUCT

GENERAL PRECAUTIONS AND RESTRICTIONS

Do not use in or near a greenhouse.

OXYGEN RATIO

Fish breathe oxygen in the water and a water-oxygen ratio must be maintained. Decaying weeds use up oxygen, but during the period when NAVIGATE® should be used, the weed mass is fairly sparse and the weed decomposition rate is slow enough so that the water-oxygen ratio is not disturbed by treating the entire area at one time.

If treatments must be applied later in the season when the weed mass is dense and repeat treatments are needed spread granules in lanes, leaving buffer strips which can then be treated when vegetation in treated lanes has disintegrated. During the growing season, weeds decompose in a 2 to 3 week period following treatment.

Buffer lanes should be 50 to 100 feet wide. Treated lanes should be as wide as the buffer strips. (See illustration below)



WATER pH

Best results are generally obtained if the water to be treated has a pH less than 8. A pH of 8 or higher may reduce weed control. If regrowth occurs within a period of 6 to 8 weeks, a second application may be needed.

PERMIT TO USE CHEMICALS IN WATER

In many states, permits are required to control weeds by chemical means in public water. If permits are required, they may be obtained from the Chief, Fish Division, State Department of Conservation or the State Department of Public Health.

GENERAL INFORMATION

NAVIGATE® is formulated on special heat treated attaclay granules that resist rapid decomposition in water, sink quickly to lake or pond bottoms and release the weed killing chemical in the critical root zone area. This product is designed to selectively control the weeds listed on the label. While certain other weeds may be suppressed, control may be incomplete. Reduced control may occur in lakes where water replacement comes from bottom springs.

WHEN TO APPLY

For best results, spread NAVIGATE® in the spring and early summer, during the time weeds start to grow. If desired, this timing can be checked by sampling the lake bottom in areas heavily infested with weeds the year before. If treatments are delayed until weeds form a dense mat or reach the surface, two treatments may be necessary. Make the second treatment when weeds show signs of recovery. Treatments made after September may be less effective depending upon water temperatures and weed growth. Occasionally, a second application will be necessary if heavy regrowth occurs or weeds reinfest from untreated areas.

HOW TO APPLY

FOR LARGE AREAS: Use a fertilizer spreader or mechanical seeder such as the Gerber or Gandy or other equipment capable of uniformly applying this product. Before spreading any chemical, calibrate your method of application to be sure of spreading the proper amount. When using boats and power equipment, you must determine the proper combination of (1) boat speed (2) rate of delivery from the spreader, and (3) width of swath covered by the granules.

FOR SMALL AREAS: (Around Docks or Isolated Patches of Weeds): Use a portable spreader such as the Cyclone seeder or other equipment capable of uniformly applying this product. Estimate or measure out the area you want to treat. Weight out the amount of material needed and spread this uniformly over the area. More uniform coverage is obtained by dividing the required amount in two and covering the area twice, applying the second half at right angles to the first.

Use the following formula to calibrate your spreader's delivery in pounds of NAVIGATE PER MINUTE:

$$\frac{\text{Miles per hour} \times \text{spreader width} \times \text{pounds per acre}}{495} = \text{pounds per minute}$$

Example: To apply 100 pounds of NAVIGATE per acre using a spreader that covers a 20 foot swath from a boat traveling at 4 miles per hour, set the spreader to deliver 16 pounds of NAVIGATE granules per minute.

$$\frac{4 \text{ mph} \times 20 \text{ feet} \times 100 \text{ Lbs./A}}{495} = 16 \text{ Lbs/Min.}$$

AMOUNTS TO USE

Rates of application vary with resistance of weed species to the chemical, density of weed mass at time of treatment, stage of growth, water depth, and rate of water flow through the treated area. Use the higher rate for dense weeds, when water is more than 8 feet deep and where there is a large volume turnover.

	NAVIGATE POUNDS PER ACRE	NAVIGATE POUNDS PER 2000 SQ. FT.
SUSCEPTIBLE WEEDS		
Water Milfoil (Myriophyllum spp.)	100 TO 200	5
Water stargrass (Heteranthera dubia)		
SLIGHTLY TO MODERATELY RESISTANT WEEDS		
Bladderwort (Utricularia spp.)		
White water Lily (Nymphaea spp.)		
Yellow water lily Or spatterdock*	150 to 200	7-1/2 to 10
Water shield (Brasenia spp.)		
Water chestnut (Trapa natans)		
Coontail* (Ceratophyllum Demersum)		
*Repeat treatments may be needed		

LIMITED WARRANTY AND DISCLAIMER

The manufacturer warrants that this material conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use and Buyer assumes all risk of any use contrary to such directions. SELLER MAKES NO OTHER WARRANTY EXPRESSED OR IMPLIED AS TO FITNESS OR MERCHANTABILITY, AND NO AGENT OF SELLER IS AUTHORIZED TO DO SO EXCEPT IN WRITING WITH SPECIFIC REFERENCE TO THIS WARRANTY. In no event shall the Seller's liability for any breach of warranty exceed the purchase price of the material as to which a claim is made.



applied biochemists®

a business of Arch Chemicals, Inc.

MATERIAL
SAFETY
DATA
SHEET

FOR ANY EMERGENCY, 24 HOURS / 7 DAYS, CALL:

1-800-654-6911 (OUTSIDE
USA: 1-423-780-2970)

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®:

1-800-424-9300 (OUTSIDE
USA: 1-703-527-3887)

FOR ALL MSDS QUESTIONS & REQUESTS, CALL:

1-800-511-MSDS (OUTSIDE
USA: 1-423-780-2347)

PRODUCT NAME: AB NAVIGATE

1. PRODUCT AND COMPANY IDENTIFICATION

<u>Supplier</u>	REVISION DATE:	01/31/2012
Applied Biochemists (WI)	SUPERCEDES:	02/15/2007
W175 N11163 Stonewood Drive , Suite 234 Germantown, WI, 53022 United States	MSDS Number:	000000012610
Telephone: +12622554449 Telefax: +12622554268 Web: www.appliedbiochemists.com	SYNONYMS:	
	CHEMICAL FAMILY:	None
	DESCRIPTION / USE	None established
	FORMULA:	None established

Manufacturer

Advantis Technologies
1400 Bluegrass Lakes Parkway
Alpharetta, GA 30004
United States of America

2. HAZARDS IDENTIFICATION

OSHA Hazard Classification:	Moderate eye irritant, Mild skin irritant
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Routes of Entry:
Chemical Interactions:
Medical Conditions Aggravated:

Skin Eyes Ingestion
No known interactions
No data available



Human Threshold Response Data

Odor Threshold Not established for product.

Irritation Threshold Not established for product.

Hazardous Materials Identification System / National Fire Protection Association Classifications

<u>Hazard Ratings :</u>	<u>Health</u>	<u>Flammability</u>	<u>Physical / Instability</u>	<u>PPI / Special hazard.</u>
HMIS	2	0	0	
NFPA	2	0	0	

Immediate (Acute) Health Effects

Inhalation Toxicity:	Not expected to be irritating. Not expected to be toxic by inhalation.
Skin Toxicity:	May cause mild skin irritation. Not expected to be toxic from dermal contact.
Eye Toxicity:	Contact may cause moderate irritation consisting of transient redness, swelling, and mucous membrane discharge to the conjunctiva. No corneal involvement or visual impairment is expected.
Ingestion Toxicity:	Ingestion may cause irritation of the gastrointestinal tract and gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting or diarrhea. Slightly toxic if swallowed.
Acute Target Organ Toxicity:	Contact with eyes or skin causes irritation.

Prolonged (Chronic) Health Effects

Carcinogenicity:	This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. However, this product contains crystalline silica and cristobalite. Both of these substances are classified by IARC (International Agency for research on Cancer) as group 1 carcinogens (carcinogenic to humans). The carcinogenicity concern arises from inhaling particles of inhalable size. The crystalline silica and cristobalite are carried in a granular clay carrier which has a particle size greater than 10 microns, which is not respirable. Therefore, this product is not an inhalation hazard and exposure would not be expected to pose a carcinogenic hazard.
Reproductive and Developmental Toxicity:	No reproductive or developmental risk to humans is expected from exposure to this product.
Inhalation:	There are no known or reported effects from chronic exposure.
Skin Contact:	There are no known or reported effects from chronic exposure except for effects (if any) similar to those experienced from acute exposure.



Ingestion:	There are no known or reported effects from chronic ingestion except for effects similar to those experienced from single exposure.
Sensitization:	This material is not known or reported to be a skin or respiratory sensitizer.
Chronic Target Organ Toxicity:	May cause kidney and liver damage based on animal data.
Supplemental Health Hazard Information :	No additional health information available.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>CAS OR CHEMICAL NAME</u>	<u>CAS #</u>	<u>% RANGE</u>
2-butoxyethyl-2,4-dichlorophenoxyacetate	1929-73-3	
Bentonite	1302-78-9	
crystalline silica, tridymite	15468-32-3	
CRISTOBALITE (SIO ₂)	14464-46-1	
QUARTZ (SIO ₂)	14808-60-7	

4. FIRST AID MEASURES

General Advice:	Call a poison control center or doctor for treatment advice. For 24-hour emergency medical assistance, call Arch Chemical Emergency Action Network at 1-800-654-6911. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
Inhalation:	IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.



Skin Contact:	IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Eye Contact:	IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Ingestion:	IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flammability Summary (OSHA):	The product is not flammable., Not combustible., The substance or mixture is not classified as pyrophoric., Not explosive
Flammable Properties	
Flash Point:	Not applicable
Fire / Explosion Hazards:	Will not burn
Extinguishing Media:	Use dry chemical, water fog, carbon dioxide (CO2), or foam.
Fire Fighting Instructions:	In case of fire, use normal fire-fighting equipment and the personal protective equipment recommended in Section 8 to include a NIOSH approved self-contained breathing apparatus. Use water to cool containers.
Hazardous Combustion Products:	During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection for Emergency Situations:	Use the personal protective equipment recommended in Section 8 and a NIOSH approved self-contained breathing apparatus.
Spill Mitigation Procedures	
Air Release:	Keep people away from and upwind of spill/leak.
Water Release:	If the product contaminates rivers and lakes or drains inform respective authorities.
Land Release:	Sweep up and shovel into suitable containers for disposal. Avoid dust generation. After removal, flush contaminated area thoroughly with water. Avoid runoff into storm sewers and ditches which lead to waterways.
Additional Spill Information :	Possible need to alert the neighbourhood. Evacuate personnel to safe areas. Use personal protective equipment as required.



7. HANDLING AND STORAGE

- Handling: Do not take internally. Avoid contact with skin, eyes and clothing.
Upon contact with skin or eyes, wash off with water. Avoid inhalation of dust and fumes.
- Storage: Store in a cool, dry and well ventilated place. Isolate from incompatible materials.
- Incompatible Materials for Storage: Refer to Section 10, "Incompatible Materials."

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- Ventilation: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to keep airborne exposures below the TLV, PEL or other recommended exposure limit.

Protective Equipment for Routine Use of Product

- Respiratory Protection : Wear a NIOSH approved respirator if levels above the exposure limits are possible., Wear a NIOSH approved N95 respirator.
- Skin Protection : Wear impervious gloves to avoid skin contact.
- Eye Protection: Use chemical goggles.
- Protective Clothing Type: impervious clothing
- General Protective Measures: Emergency eyewash should be provided in the immediate work area.

Exposure Limit Data

<u>CHEMICAL NAME</u>	<u>CAS #</u>	<u>Name of Limit</u>	<u>Exposure</u>
crystalline silica, tridymite	15468-32-3	OSHA Z3	
crystalline silica, tridymite	15468-32-3	OSHA Z1	



CRISTOBALITE (SiO₂)

14464-46-1

OSHA Z3

250 million particles per cubic foot TWA respirable Use $\frac{1}{2}$ the value calculated from the count or mass formulae for quartz., The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable., division by %SiO₂+5

CRISTOBALITE (SiO₂)

14464-46-1

OSHA Z3

10 mg/m³ TWA respirable Use $\frac{1}{2}$ the value calculated from the count or mass formulae for quartz., Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics: Aerodynamic diameter (unit density sphere): 2; Percent passing selector: 90 Aerodynamic diameter (unit density sphere): 2,5; Percent passing selector: 75 Aerodynamic diameter (unit density sphere): 3,5; Percent passing selector: 50 Aerodynamic diameter (unit density sphere): 5,0; Percent passing selector: 25 Aerodynamic diameter (unit density sphere): 10; Percent passing selector: 0 The measurements under this note refer to the use of an AEC (now NRC) instrument. The respirable fraction of coal dust is determined with an MRE; the figure corresponding to that of 2.4 mg/m³ in the table for coal dust is 4.5 mg/m³., division by %SiO₂+2



CRISTOBALITE (SiO ₂)	14464-46-1	OSHA Z3	30 mg/m ³ TWA Total dust Use ½ the value calculated from the count or mass formulae for quartz., division by %SiO ₂ +2
CRISTOBALITE (SiO ₂)	14464-46-1	ACGIH	0.025 mg/m ³ TWA respirable dust fraction Respirable fraction; see Appendix C, paragraph C.
CRISTOBALITE (SiO ₂)	14464-46-1	ACGIH	0.025 mg/m ³ TWA Respirable fraction
CRISTOBALITE (SiO ₂)	14464-46-1	OSHA Z3	
CRISTOBALITE (SiO ₂)	14464-46-1	OSHA Z1	
QUARTZ (SiO ₂)	14808-60-7	OSHA Z3	8-hour time weighted average
QUARTZ (SiO ₂)	14808-60-7	OSHA Z3	8-hour time weighted average
QUARTZ (SiO ₂)	14808-60-7	OSHA Z3	8-hour time weighted average
QUARTZ (SiO ₂)	14808-60-7	ACGIH	0.025 mg/m ³ TWA respirable dust fraction Respirable fraction; see Appendix C, paragraph C.
QUARTZ (SiO ₂)	14808-60-7	ACGIH	0.025 mg/m ³ TWA Respirable fraction
QUARTZ (SiO ₂)	14808-60-7	OSHA Z1	
QUARTZ (SiO ₂)	14808-60-7	NIOSH-IDLH	25 mg/m ³
QUARTZ (SiO ₂)	14808-60-7	NIOSH-IDLH	50 mg/m ³

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	solid
Form	No data.
Color:	No data.
Odor:	No data.
Molecular Weight:	None established
Specific Gravity :	no data available
pH :	not applicable
Boiling Point:	not applicable
Freezing Point:	no data available



Melting Point:

no data available
no data available
no data available
no data available
not applicable
no data available
insoluble
no data available
no data available
None established
no data available
no data available
Not applicable

Density:

Bulk Density:

Vapor Pressure:

Vapor Density:

Viscosity:

Solubility in Water:

Partition coefficient n-octanol/water:

Evaporation Rate:

Oxidizing:

Volatiles, % by vol.:

VOC Content

HAP Content

10. STABILITY AND REACTIVITY

Stability and Reactivity Summary:

Stable under normal conditions.

Conditions to Avoid:

Heat.

Chemical Incompatibility:

Strong oxidizing agents, Acids and bases

Hazardous Decomposition Products:

Carbon oxides, Sulphur oxides, Hydrogen chloride

Decomposition Temperature:

No data

11. TOXICOLOGICAL INFORMATION

Component Animal Toxicology

Oral LD₅₀ value:

2-butoxyethyl-2,4-dichlorophenoxyacetate LD₅₀ = 831 mg/kg rat

Component Animal Toxicology

Dermal LD₅₀ value:

2-butoxyethyl-2,4-dichlorophenoxyacetate LD₅₀ > 2,000 mg/kg rabbit

Component Animal Toxicology

Inhalation LC₅₀ value:

2-butoxyethyl-2,4-dichlorophenoxyacetate no data available

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Product Animal Toxicity

<u>Oral LD50 value:</u>	LD50 Believed to be approximately 3,000 mg/kg rat
<u>Dermal LD50 value:</u>	LD50 Believed to be > 2,000 mg/kg rabbit
<u>Inhalation LC50 value:</u>	no data available
Skin Irritation:	May cause mild skin irritation.
Eye Irritation:	This material is expected to be moderately irritating.
Skin Sensitization:	This material is not known or reported to be a skin or respiratory sensitizer.
Acute Toxicity:	Contact with eyes or skin causes irritation.
Subchronic / Chronic Toxicity:	Not known or reported to cause subchronic or chronic toxicity.
Reproductive and Developmental Toxicity:	No reproductive or developmental risk to humans is expected from exposure to this product.
Mutagenicity:	Not known or reported to be mutagenic.
Carcinogenicity:	This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. However, this product contains crystalline silica and cristobalite. Both of these substances are classified by IARC (International Agency for research on Cancer) as group 1 carcinogens (carcinogenic to humans). The carcinogenicity concern arises from inhaling particles of inhalable size. The crystalline silica and cristobalite are carried in a granular clay carrier which has a particle size greater than 10 microns, which is not respirable. Therefore, this product is not an inhalation hazard and exposure would not be expected to pose a carcinogenic hazard., This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. This product contains a component that has been classified by the U.S. EPA as a "Group D" Carcinogen.
2-butoxyethyl-2,4-dichlorophenoxyacetate	This product is classified by the U.S. EPA as a "Group D" Carcinogen.
CRISTOBALITE (SIO ₂)	The International Agency for Research on Cancer (IARC) has classified this product or a component of this product as a Group 1 substance, Carcinogenic to Humans.
QUARTZ (SIO ₂)	The International Agency for Research on Cancer (IARC) has classified this product or a component of this product as a Group 1 substance, Carcinogenic to Humans.



12. ECOLOGICAL INFORMATION

Overview: Moderately toxic to fish and other aquatic organisms., Highly / very toxic to plants.

Ecological Toxicity Values - Product:

- LC50 Believed to be approximately 1.6 mg/l (calculated)

Ecological Toxicity Values for: 2-butoxyethyl-2,4-dichlorophenoxyacetate

Oncorhynchus mykiss (rainbow trout)	- static test 96 h LC50 = 0.452 mg/l
Lepomis macrochirus (Bluegill sunfish)	- static test 96 h LC50 = 0.62 mg/l
Pimephales promelas (fathead minnow)	- static test 96 h LC50 = 2.5 mg/l
Daphnia magna (Water flea)	- static test 48 h EC50= 1.7 mg/l
Crassostrea virginica (Eastern oyster)	- flow-through test 96 h EC50= 3.75 mg/l

13. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THE MATERIAL. THE USER OF THE MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

Waste Disposal Summary :

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

Disposal Methods :

As a nonhazardous solid waste it should be disposed of in accordance with local, state and federal regulations.



14. TRANSPORT INFORMATION

Land (US DOT): Not Regulated NOT REGULATED AS A DOT HAZARDOUS MATERIAL
Water (IMDG): NOT REGULATED AS A HAZARDOUS MATERIAL, Marine Pollutant:
No

Air (IATA): Flash Point: Not applicable
NOT REGULATED AS A HAZARDOUS MATERIAL,
Emergency Response Guide Number: Not applicable

15. REGULATORY INFORMATION

UNITED STATES:

Toxic Substances Control Act (TSCA): This is an EPA registered pesticide.
EPA Pesticide Registration Number: None established

FIFRA Listing of Pesticide Chemicals (40 CFR 180): Not registered in the US under FIFRA.

Superfund Amendments and Reauthorization Act (SARA) Title III:

Hazard Categories Sections 311 / 312 (40 CFR 370.2):

Health	Immediate (Acute) Health Hazard
Physical	None

Emergency Planning & Community Right to Know (40 CFR 355, App. A):

Extremely Hazardous Substance Section 302 - Threshold Planning Quantity:
ZUS_SAR302 TPQ (threshold planning quantity) None established

Reportable Quantity (49 CFR 172.101, Appendix):

ZUS_CERCLA	Reportable quantity	None established
ZUS_SAR302	Reportable quantity	None established

Supplier Notification Requirements (40 CFR 372.45), 313 Reportable Components

ZUS_SAR313	De minimis concentration	None established
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Clean Air Act Toxic ARP Section 112r:
CAA 112R None established



Clean Air Act Socmi:
HON SOC None established

Clean Air Act VOC Section 111:
CAA 111 None established

Clean Air Act Haz. Air Pollutants Section 112:
ZUS_CAAHAP None established

ZUS_CAAHRP None established

CAA AP None established

State Right-to-Know Regulations Status of Ingredients

Pennsylvania:

CAS #	COMPONENT NAME
ZUSPA_RTK	None established

New Jersey:

CAS #	COMPONENT NAME
ZUSNJ_RTK	None established

Massachusetts:

CAS #	COMPONENT NAME
ZUSMA_RTK	None established

California Proposition 65:

CAS #	COMPONENT NAME
ZUSCA_P65	None established

WHMIS Hazard Classification:

None established

16. OTHER INFORMATION

MSDS REVISION STATUS :

SECTIONS REVISED: First formulated version in SAP.

AB NAVIGATE

REVISION DATE : 01/31/2012

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**MATERIAL
SAFETY
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SHEET**

Major References : Available upon request.

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT..

228-378

3-24-2003

RIVERDALE®

1/5

AQUA-KLEEN®

A Selective Herbicide

For controlling Certain Unwanted Aquatic Plants

ACTIVE INGREDIENT:

Butoxyethyl Ester of 2,4-Dichlorophenoxyacetic Acid* 27.6%

INERT INGREDIENTS: 72.4%

TOTAL 100.0%

*Isomer Specific AOAC Method, Equivalent to:

2,4-Dichlorophenoxyacetic Acid 19.0%

Riverdale is a Registered Trademark of Riverdale - A Nufarm Company

Aqua-Kleen is a Registered Trademark Licensed to Riverdale - A Nufarm Company

KEEP OUT OF REACH OF CHILDREN

CAUTION

EPA REG. NO. 228-378

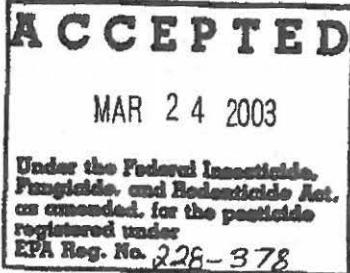
NET WT. 50 LBS

EPA EST. NO. 228-IL-1

MANUFACTURED BY

NUFARM AMERICAS, IND.

BURR RIDGE, ILLINOIS 60527-0866



PRECAUTIONARY STATEMENTS**HAZARDS TO HUMANS AND DOMESTIC ANIMALS****CAUTION**

Harmful if swallowed, absorbed through skin, or inhaled. Causes eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing dust. When handling this product, wear chemical resistant gloves. Wash thoroughly with soap and water after handling. When mixing, loading, or applying this product or repairing or cleaning equipment used with this product, wear eye protection (face shield or safety glasses), chemical-resistant gloves, long-sleeved shirt, long pants, socks and shoes. It is recommended that safety glasses include front, brow and temple protection. Wash hands, face and arms with soap and water as soon as possible after mixing, loading, or applying this product. Wash hands, face and arms with soap and water before eating, smoking or drinking. Wash hands and arms before using toilet. After work, remove all clothing and shower using soap and water. Do not reuse clothing worn during the previous day's mixing and loading or application of this product without cleaning first. Clothing must be kept and washed separately from other household laundry. Remove saturated clothing as soon as possible and shower.

FIRST AID STATEMENT

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

- IF SWALLOWED:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
- IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.
- IF INHALED:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
- IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Drift or runoff may adversely affect fish and nontarget plants. Do not apply to water except as specified on this label. Do not contaminate water when disposing of equipment washwaters. Unless an approved assay indicates the 2,4-D concentration is 100 ppb (0.1 ppm) or less, or, only growing crops and noncrop areas labeled for direct treatment with 2,4-D will be affected, do not use water from treated areas for irrigating plants or mixing sprays for agricultural or ornamental plants.

Unless an approved assay indicates the 2,4-D concentration is 70 ppb (0.07 ppm) or less, do not use water from treated areas for potable water (drinking water).

Clean spreader equipment thoroughly before using it for any other purposes. Vapors from this product may injure susceptible plants.

Most cases of groundwater contamination involving phenoxy herbicides such as 2,4-D have been associated with mixing/loading and disposal sites. Caution should be exercised when handling 2,4-D pesticides at such sites to prevent contamination of groundwater supplies. Use of closed systems for mixing or transferring this pesticide will reduce the probability of spills. Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent groundwater contamination.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. READ ENTIRE LABEL BEFORE USING THIS PRODUCT. USE STRICTLY IN ACCORDANCE WITH LABEL PRECAUTIONARY STATEMENTS AND DIRECTIONS.

GENERAL PRECAUTIONS AND RESTRICTIONS

Do not use in or near a greenhouse.

OXYGEN RATIO

Fish breathe oxygen in the water and a water-oxygen ratio must be maintained. Decaying weeds use up oxygen, but during the period when this product should be used, the weed mass is fairly sparse and the weed decomposition rate is slow enough so that the water oxygen ratio is not disturbed by treating the entire area at one time.

If treatments must be applied later in the season when the weed mass is dense and repeat treatments are needed, spread granules in lanes, leaving buffer strips which can then be treated when vegetation in treated lanes has disintegrated. During the growing season, weeds decompose in a 2 to 3 week period following treatment.

Buffer lanes should be 50 to 100 feet wide. Treated lanes should be as wide as the buffer strips (See illustration below).

WATER pH

Best results are generally obtained if the water to be treated has a pH less than 8. A pH of 8 or higher may reduce weed control. If regrowth occurs within a period of 6 to 8 weeks, a second application may be needed.

PERMIT TO USE CHEMICALS IN WATER

In many states, permits are required to control weeds by chemical means in public water. If permits are required, they may be obtained from the Chief, Fish Division, State Department of Conservation or the State Department of Public Health.

GENERAL INFORMATION

This product is formulated on special heat treated attaclay granules that resist rapid decomposition in water, sink quickly to lake or pond bottoms and release the weed killing chemical into the critical root zone area.

This product is designed to selectively control the weeds listed on the label. While certain other weeds may be suppressed, control may be incomplete. Reduced control may occur in lakes where water replacement comes from bottom springs.

WHEN TO APPLY

For best results, spread this product in the Spring and early Summer, during the time weeds start to grow. If desired, this timing can be checked by sampling the lake bottom in areas heavily infested with weeds the year before.

If treatments are delayed until weeds form a dense mat or reach the surface, two treatments may be necessary. Make the second treatment when weeds show signs of recovery. Treatments made after September may be less effective depending upon water temperatures and weed growth. Occasionally, a second application will be necessary if heavy regrowth occurs or weeds reinfest from untreated areas.

HOW TO APPLY

FOR LARGE AREAS: Use a fertilizer spreader or mechanical seeder such as the Gerber or Gandy or other equipment capable of uniformly applying this product. Before spreading any chemical,

calibrate your method of application to be sure of spreading the proper amount. When using boats and power equipment, you must determine the proper combination of (1) boat speed (2) rate of delivery from the spreader, and (3) width of swath covered by the granules.

FOR SMALL AREAS (Around Docks or Isolated Patches of Weeds): Use a portable spreader such as the Cyclone seeder or other equipment capable of uniformly applying this product. Estimate or measure out the area you want to treat. Weigh out the amount of material needed and spread this uniformly over the area. More uniform coverage is obtained by dividing the required amount in two and covering the area twice, applying the second half at right angles to the first.

Use the following formula to calibrate your spreader's delivery in pounds of this product per minute.

$$\frac{\text{Miles per hour} \times \text{spreader width} \times \text{pounds per acre}}{495}$$

Example: To apply 100 pounds of this product per acre using a spreader that covers a 20 foot swath from a boat traveling at 4 miles per hour, set the spreader to deliver 16 pounds of this product per minute.

$$\frac{4 \text{ mph} \times 20 \text{ feet} \times 100 \text{ lbs./A}}{495}$$

AMOUNTS TO USE

Rates of application vary with resistance of weed species to the chemical, density of weed mass at time of treatment, stage of growth, water depth, and rate of water flow through the treated area. Use the higher rate for dense weeds, when water is more than 8 feet deep and where there is a large volume turnover.

	POUNDS PER ACRE	POUNDS PER 2000 SQ.FT.
SUSCEPTIBLE WEEDS	100 to 200	5
Water mitfoil (<i>Myriophyllum spp.</i>) Water stargrass (<i>Heteranthera dubia</i>)		
SLIGHTLY TO MODERATELY RESISTANT WEEDS	150 to 200	7½ to 10
Bladderwort (<i>Utriculana spp.</i>) White water lily (<i>Nymphaea spp.</i>) Yellow water lily or (<i>Nuphar spp.</i>) spatterdock* Water shield (<i>Brasenia spp.</i>) Water chestnut (<i>Trapa natans</i>) Coontail* (<i>Ceratophyllum demersum</i>)		

*Repeat treatments may be needed.

STORAGE AND DISPOSAL

STORAGE: Always use original container to store pesticides in a secured warehouse or storage building. Do not store near seeds, fertilizers, insecticides or fungicides. Do not stack more than two pallets high. Do not contaminate water, food or feed by storage or disposal. It is recommended that a SARA Title III emergency response plan be created for storage facilities. Do not transport in the passenger compartment of any vehicle.

PESTICIDE DISPOSAL: Pesticide wastes are toxic. If container is damaged or if pesticide has leaked, clean up all spilled material. Improper disposal of excess pesticide, spray mixtures or rinsate is a violation of Federal law and may contaminate groundwater. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay away from smoke.

WARRANTY AND LIMITATION OF DAMAGES

RIVERDALE CHEMICAL COMPANY warrants that this material conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use and Buyer assumes all risk of any use contrary to such directions. SELLER MAKES NO OTHER WARRANTY EXPRESSED OR IMPLIED AS TO FITNESS OR MERCHANTABILITY, AND NO AGENT OF SELLER IS AUTHORIZED TO DO SO EXCEPT IN WRITING WITH SPECIFIC REFERENCE TO THIS WARRANTY. In no event shall Seller's liability for any breach of warranty exceed the purchase price of the material as to which a claim is made. (RV 120202)



cerexagri

Aqua-Kleen (R) Aquatic Herbicide

Material Safety Data Sheet

Cerexagri, Inc.

1 PRODUCT AND COMPANY IDENTIFICATION

Agrichemicals Group

Cerexagri, Inc.
630 Freedom Business Center, Suite 402
King of Prussia, PA 19406

EMERGENCY PHONE NUMBERS:

Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 767-5089 (24Hrs)

Information Telephone Numbers

R&D Technical Service

Customer Service

Phone Number

610-878-6100

1-800-438-6071

Available Hrs

8:00am to 5:00pm EST

8:00am - 5:00 pm EST

Product Name Aqua-Kleen (R) Aquatic Herbicide

Product Synonym(s)

Chemical Family 2,4-Dichlorophenoxyacetic acid, butoxyethyl ester

Chemical Formula NA

Chemical Name Acetic acid, (2,4-dichlorophenoxy)-, 2-butoxyethyl ester

EPA Reg Num 228-378-4581

Product Use Aquatic herbicide for controlling unwanted aquatic plants

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS RegistryNumber	Typical Wt. %	OSHA
2-Butoxyethyl 2,4-dichlorophenoxy acetate	1929-73-3	27.6	Y
Quartz	14808-60-7	<15	Y

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

3 HAZARDS IDENTIFICATION

Emergency Overview

Tan granules, solid, phenolic odor.

CAUTION!

KEEP OUT OF REACH OF CHILDREN.

HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.

CAUSES EYE IRRITATION.

Avoid contact with eyes, skin and clothing. Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin and clothing. Avoid breathing dust. Wash thoroughly after handling.

CANCER HAZARD. CONTAINS CRYSTALLINE SILICA WHICH CAN CAUSE CANCER.

Repeated and prolonged inhalation of respirable particles can cause lung cancer and delayed lung damage (silicosis).

Potential Health Effects

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on its composition, it is anticipated to be slightly to moderately toxic if swallowed and slightly toxic if inhaled. Direct contact may be irritating to the eyes and skin. Inhalation may be irritating to the respiratory tract. Repeated and prolonged inhalation of crystalline silica may cause a disabling lung disease (commonly known as silicosis). Clinical signs and symptoms of silicosis include cough, shortness of breath, wheezing and impairment of lung function. Impairment of lung function may be progressive. In the usual case of silicosis, there is a slow deterioration of capacity for physical effort, decreased chest expansion, and an increased susceptibility to tuberculosis and other respiratory infections. Crystalline silica inhaled in the form of quartz is classified as carcinogenic to humans (Group 1) by the International



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Agency for Research on Cancer (IARC) and respirable forms of crystalline silica are listed as substances known to be a human carcinogen by the National Toxicology Program.

Short term, extremely heavy exposures to crystalline quartz dust (particularly small-sized particles) can result in acute silicosis. This disease is rapidly progressive with diffuse pulmonary involvement, which may develop within months of initial exposure. Individuals with acute silicosis may suffer an abrupt onset of violent coughing, labored breathing, and weight loss; death has been known to occur within one to two years.

4 FIRST AID MEASURES

IF IN EYES,

- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for treatment advice.

IF ON SKIN, Wash with plenty of soap and water. Get medical attention if irritation persists.

IN CASE OF CONTACT, flush the area with plenty of water. Remove material from clothing. Wash clothing before reuse.

IF SWALLOWED,

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

IF INHALED,

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

5 FIRE FIGHTING MEASURES

Fire and Explosive Properties

Auto-Ignition Temperature	NA	
Flash Point	NA	Flash Point Method
Flammable Limits- Upper	NA	
Lower	NA	

Extinguishing Media

dry chemical, carbon dioxide, foam, water spray

Fire Fighting Instructions

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

Fire and Explosion Hazards

Avoid breathing fumes from fire exposed material. Irritating or toxic vapors

6 ACCIDENTAL RELEASE MEASURES



Aqua-Kleen (R) Aquatic Herbicide

Material Safety Data Sheet

Cerexagri, Inc.

6 ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Contain spill. Sweep or scoop up and remove to suitable container. Flush with water. Prevent spilled product from entering sewers or natural water. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7 HANDLING AND STORAGE

Handling

Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin and clothing. Avoid breathing dust.

Storage

Store away from food and feed. Do not store in a manner where cross-contamination with pesticides, fertilizers, food or feed could occur. Store in a cool, dry place.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Eye / Face Protection

Use good industrial practice to avoid eye contact.

Skin Protection

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Gloves should be worn when handling this material. Rinse contaminated skin promptly. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

Respiratory Protection

Avoid breathing dust. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Airborne Exposure Guidelines for Ingredients

Exposure Limit		Value
Quartz		
ACGIH TWA	Respirable particle	0.05 mg/m ³
2-Butoxyethyl 2,4-dichlorophenoxy acetate		
ACGIH TWA	-For 2,4-D	10 mg/m ³
OSHA TWA PEL	-For 2,4-D	10 mg/m ³

-Only those components with exposure limits are printed in this section.

-Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.

-ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.

-WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.



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9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Tan granules, solid, phenolic odor.
pH	NA
Specific Gravity	NA
Vapor Pressure	2.4 X 10-6 mm Hg(for ester)
Vapor Density	NA
Melting Point	NA
Freezing Point	NA
Boiling Point	156-162C@1 mmHg (ester)
Solubility In Water	Insoluble
Molecular Weight	321.2 (ester)

10 STABILITY AND REACTIVITY

Stability

This material is chemically stable under normal and anticipated storage and handling conditions.

Hazardous Polymerization

Does not occur.

Incompatibility

Strong oxidizing agents: bases, acids.

Hazardous Decomposition Products

Upon thermal decomposition may produce hydrogen chloride, oxides of sulfur

11 TOXICOLOGICAL INFORMATION

Toxicological Information

Data on this material and/or its components are summarized below.

Single exposure (acute) studies indicate:

Inhalation - Slightly Toxic to Rats (4-hr LC50 4.6 mg/l) 2-Butoxyethyl 2,4-dichlorophenoxy acetate
Birth defects have been observed in the offspring of rats exposed orally during pregnancy.

2,4-Dichlorophenoxyacetic acid

Single exposure (acute) studies indicate that this material is slightly to moderately toxic if swallowed (rat LD50 320-4,050 mg/kg), no more than slightly toxic if absorbed through skin (rabbit LD50 >2,000 mg/kg) and slightly irritating to rabbit eyes and skin. 2,4-Dichlorophenoxyacetic acid

Kidney effects were observed in rats and mice following repeated oral exposure. This material is classified as a Category D carcinogen (unclassifiable as to carcinogenicity) by the U.S. Environmental Protection Agency and chlorophenoxy herbicides are classified as "possibly carcinogenic to humans" (Group 2B) by the International Agency for Research on Cancer (IARC). The IARC listing is based on epidemiological studies suggesting and association between the development of certain types of cancer (soft-tissue sarcoma and non-Hodgkin's lymphoma) and exposure to chlorophenoxy herbicides. Two long-term oral studies in rats produced no evidence of tumors, although kidney effects were observed. No birth defects were observed in the offspring of rabbits exposed orally during pregnancy. Birth defects were observed in the offspring of rats exposed orally during pregnancy, but only at dosages which produced adverse effects on the mothers. Genetic changes were observed in tests using human cells, but not in tests using bacteria or animals. Both positive and negative results were observed in tests using animal cells.



Aqua-Kleen (R) Aquatic Herbicide

Material Safety Data Sheet

Cerexagri, Inc.

11 TOXICOLOGICAL INFORMATION

The acid data are considered to be more representative for the granular formulation because the ester is essentially insoluble in water, it releases gradually from the granules and it is hydrolyzed rapidly to the acid. Thus, exposure of aquatic organisms is predominantly to the acid.

Quartz

Chronic inhalation of crystalline silica may cause a progressive pneumoconiosis (a disabling lung disease) called silicosis. Data from animal studies on crystalline forms of silica confirm the capacity of free crystalline silica to induce a fibrinogenic response in lungs. Studies on a variety of laboratory animals (rats, guinea pigs, rabbits, and monkeys) using inhalation as well as intratracheal routes of exposure indicate the ability of crystalline silica to produce silicosis similar to that seen in man. In addition, experiments in animals have confirmed human experience that the presence of crystalline silica in the lung increased susceptibility to tuberculosis and other lung infections. Crystalline silica inhaled in the form of quartz is classified as carcinogenic to humans (Group 1) by the International Agency for Research on Cancer (IARC), and respirable forms of crystalline silica are listed as substances known to be a human carcinogen by the National Toxicology Program. Epidemiology studies cited by IARC give indications of increased risk for lung cancer from inhaled crystalline silica (quartz) resulting from occupational exposure. Studies involving heavy industrial exposure to silica in granite and foundry workers, brick factories and sandblasting produced increased levels of protein and enzymes in urine, which is indicative of kidney damage.

12 ECOLOGICAL INFORMATION

Ecotoxicological Information

Data on this material and/or its components are summarized below.

2,4-Dichlorophenoxyacetic acid

This material is slightly toxic to Daphnia (48-hr EC50 36.4 mg/l). It is practically non-toxic to trout (96-hr LC50 358 mg/l) and bluegill (96-hr LC50 263 mg/l).

2-Butoxyethyl 2,4-dichlorophenoxy acetate

This material is moderately toxic to bleak (96-hr LC50 3.2-3.7 mg/l), Daphnia magna (48-hr EC50 7.2 mg/l) and coho salmon (96-hr LC50 1.5 mg/l). It is highly toxic to bluegill (96-hr LC50 0.61 mg/l), Chinook salmon (96-hr LC50 0.315 mg/l) and pink salmon (96-hr LC50 0.8 mg/l). It is moderately to highly toxic to rainbow trout (96-hr LC50 0.518-2.0 mg/l) and fathead minnow (96-hr LC50 0.95-2.5 mg/l). The oral LC50 for bobwhite quail, Japanese quail, ring-necked pheasant and mallard duck is >5,000 ppm.

Aqua-Kleen

The acid data are considered to be more representative for the granular formulation because the ester is essentially insoluble in water, it releases gradually from the granules and it is hydrolyzed rapidly to the acid. Thus, exposure of aquatic organisms is predominantly to the acid.

Chemical Fate Information

Data on this material and/or its components are summarized below.

Aqua-Kleen

In water, hydrolysis of the ester to the acid occurred with hours of release from granules (nondetectable later than 1 day after application). The typical half-life of the resultant acid ranged from a few days to a few weeks.



Aqua-Kleen (R) Aquatic Herbicide

Material Safety Data Sheet

Cerexagri, Inc.

13 DISPOSAL CONSIDERATIONS

Waste Disposal

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Dispose of solid waste at properly permitted landfills observing all local, state and federal regulations. Contaminated liquids should be concentrated and incinerated at a properly permitted disposal site again observing all local, state and federal regulations.

14 TRANSPORT INFORMATION

DOT Name	NOT REGULATED
DOT Technical Name	Not regulated
DOT Hazard Class	NA
UN Number	NA
DOT Packing Group	PG NA
RQ	NA

15 REGULATORY INFORMATION

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)

Immediate (Acute) Health Y	Fire	N
Delayed (Chronic) Health Y	Reactive	N
	Sudden Release of Pressure	N

Ingredient Related Regulatory Information:

SARA Reportable Quantities	CERCLA RQ	SARA TPQ
Quartz	NE	
2-Butoxyethyl 2,4-dichlorophenoxy acetate	100 LBS	NE

SARA Title III, Section 313

This product does contain chemical(s) which are defined as toxic chemicals under and subject to the reporting requirements of, Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. See Section 2

2-Butoxyethyl 2,4-dichlorophenoxy acetate

SARA Title III, Section 302

This product does contain chemical(s), as indicated below, currently on the Extremely Hazardous Substance List, Section 302, SARA Title III. See Section 2 for further details regarding concentrations and registry numbers.

2-Butoxyethyl 2,4-dichlorophenoxy acetate

California Prop 65 - Carcinogen

This product does contain the following chemical(s), as indicated below, currently on the California list of Known Carcinogens.

Quartz

Massachusetts Right to Know

This product does contain the following chemicals(s), as indicated below, currently on the Massachusetts Right to Know Substance List.

2-Butoxyethyl 2,4-dichlorophenoxy acetate

Quartz

New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.



Aqua-Kleen (R) Aquatic Herbicide

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New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.

2-Butoxyethyl 2,4-dichlorophenoxy acetate
Quartz

Pennsylvania Environmental Hazard

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Environmental Hazard List.

2-Butoxyethyl 2,4-dichlorophenoxy acetate

Pennsylvania Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

2-Butoxyethyl 2,4-dichlorophenoxy acetate
Quartz

16 OTHER INFORMATION

Revision Information

Revision Date 13 JAN 2005 Revision Number 10
Supercedes Revision Dated 15-OCT-2004

Revision Summary

Add trademark and reference to sections 1 & 16

Key

NE= Not Established NA= Not Applicable (R) = Registered Trademark

Miscellaneous

Aqua-Kleen (R) is a registered trademark of NuFarm, Inc.

Cerexagri, Inc. believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use are beyond the control of Cerexagri, Inc., Cerexagri, Inc. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

AquaSweep®

For the control of unwanted trees and brush, as well as annual and perennial broadleaf weeds on rangeland, pastures, fencerows, non-irrigation ditchbanks, roadsides, other non-crop areas, rights-of-way, ornamental turf, golf courses and sod farms.

For the control of emergent, floating and submerged aquatic weeds in the following aquatic sites: ponds, lakes, reservoirs, marshes, bayous, non-irrigation canals and ditches, seasonal irrigation canals and ditches which have little or no continuous outflow and impounded rivers and streams that are quiescent or slow moving.

ACTIVE INGREDIENTS:

2,4-Dichlorophenoxyacetic Acid, Dimethylamine salt*	34.2%
Triclopyr: 3,5,6-trichloro-2-pyridinylxyacetic acid** as the triethylamine salt	15.2%
OTHER INGREDIENTS:	50.6%

TOTAL: 100.0%

Isomer Specific Method, Equivalent to:

*2,4-Dichlorophenoxyacetic Acid	28.4%, 2.78 lbs./gal.
**Triclopyr acid	10.9%, 1.07 lbs./gal.

Notice: Read the entire label. Use only according to label directions.

Before buying or using this product, read "Warranty" elsewhere on this label.

KEEP OUT OF REACH OF CHILDREN **DANGER / PELIGRO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand this label, find someone to explain it to you in detail.)

SEE INSIDE BOOKLET FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS

EPA Reg. No 228-316

For Chemical Spill, Leak, Fire,
or Exposure, Call CHEMTRAC
(800) 424-9300

For Medical Emergencies Only,
Call (877) 325-1840

Manufactured for
Nufarm Americas Inc.
11901 S. Austin Avenue
Alsip, IL 60803



PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
DANGER / PELIGRO

Corrosive. Causes irreversible eye damage. Harmful if absorbed through skin. Harmful if swallowed. Do not get in eyes, on skin, or on clothing.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

Some materials that are chemical-resistant to this product are made of any waterproof material. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart.

Pilots must wear:

- long-sleeved shirt and long pants, and
- shoes and socks

All mixers, loaders, flaggers, and other applicators and handlers must wear:

- protective eyewear (goggles or face shield or shielded safety glasses),
- long sleeved shirt and long pants,
- shoes plus socks, and
- chemical-resistant gloves made of any waterproof material

See engineering controls for additional requirements.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statement:

Pilots must use an enclosed cockpit that meets the requirements listed in the WPS for agricultural pesticides. [40 CFR 170.240(d)(6)].

USER SAFETY RECOMMENDATIONS

Users Should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. If pesticide gets on skin, wash immediately with soap and water.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

FIRST AID

IF IN EYES	<ul style="list-style-type: none">• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes.• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.• Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15 to 20 minutes.• Call a poison control center or doctor for treatment advice.
IF SWALLOWED	<ul style="list-style-type: none">• Call a poison control center or doctor immediately for treatment advice.• Have person sip a glass of water if able to swallow.• Do not induce vomiting unless told to do so by the poison control center or doctor.• Do not give anything by mouth to an unconscious person.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.

NOTE TO PHYSICIAN

Probable mucosal damage may contraindicate use of gastric lavage.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic invertebrates. For terrestrial uses, do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash waters or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

Triclopyr has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable particularly where the water table is shallow, may result in groundwater contamination.

Mixing and Loading: Most cases of groundwater contamination involving phenoxy herbicides such as 2,4-D have been associated with mixing/loading and disposal sites. Caution should be exercised when handling 2,4-D pesticides at such sites to prevent contamination of groundwater supplies. Use of closed systems for mixing or transferring this pesticide will reduce the probability of spills. Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent groundwater contamination.

PHYSICAL OR CHEMICAL HAZARDS

Do not cut or weld container.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read all Directions for Use carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 48 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: coveralls, chemical-resistant gloves made of any waterproof material, shoes plus socks and protective eyewear.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides. (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses. **Restricted Entry Interval:** Do not allow people (other than applicator) or pets on treatment area during application. Do not enter into treated areas until sprays have dried or dust has settled.

PRODUCT INFORMATION

This product is for use on fence rows, non-irrigation ditchbanks, roadsides, other non-crop areas, industrial sites, rights-of-way, rangeland, pastures, ornamental turf, and sod farms.

USE RESTRICTIONS AND PRECAUTIONS

Be sure that use of this product conforms to all applicable regulations.

Do not apply this product directly to, or otherwise permit it to come into direct contact with, cotton, grapes, tobacco, vegetable crops, flowers, fruit or ornamental trees, or other desirable broadleaf plants and do not permit spray mists containing it to drift onto them. Very small amounts of spray drift may injure susceptible plants, including ornamental trees or shrubs.

Do not use for manufacturing or formulating.

Do not apply to exposed roots of shallow rooted trees or shrubs.

Do not apply on ditches used to transport irrigation water. Do not apply where runoff or irrigation water may flow onto susceptible crops as injury may result.

Avoid Injurious Spray Drift. Applications should be made only when hazards from spray drift are at a minimum. Very small quantities of spray, which may not be visible, may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants near enough to be injured.

With ground broadcast equipment, drift can be reduced by keeping the spray boom as low as possible; by applying no less than 20 gallons of spray per acre; by using no more than 20 pounds spraying pressure with flat fan or flooding flat fan nozzle tips; and by spraying when wind velocity is low.

In handgun applications drift can be reduced by using low pressure Teejet flat fan, Raindrop or other drift controlling nozzles. Standard flat fan nozzles may also be used at no more than 20 psi. At this pressure the spray pattern may be narrower.

Foliar sprays should be applied during warm weather when brush and weeds are actively growing. Application under drought conditions may provide less than desirable results.

Note: Do not use spray equipment for other applications to land planted, or to be planted to susceptible crops or desirable plants, unless it has been determined that all phytotoxic herbicide residue has been removed by thorough cleaning of the equipment.

SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

Droplet Size

When applying sprays that contain 2,4-D as the sole active ingredient, or when applying sprays that contain 2,4-D mixed with active ingredients that require a Coarse or coarser spray, apply only as a Coarse or coarser spray (ASAE standard 572) or a volume mean diameter of 385 microns or greater for spinning atomizer nozzles.

When applying sprays that contain 2,4-D mixed with other active ingredients that require a Medium or more fine spray, apply only as a Medium or coarser spray (ASAE standard 572) or a volume mean diameter of 300 microns or greater for spinning atomizer nozzles.

Wind Speed

Do not apply at wind speeds greater than 15 mph. Only apply this product if the wind direction favors on-target deposition and there are not sensitive areas (including, but not limited to, residential areas, bodies of water, known habitat for nontarget species, nontarget crops) within 250 feet downwind. If applying a Medium spray, leave one swath unsprayed at the downwind edge of the treated field.

Temperature Inversions

If applying at wind speeds less than 3 mph, the applicator must determine if: a) conditions of temperature inversion exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions.

Susceptible Plants

Do not apply under circumstances where spray drift may occur to food, forage, or other plantings that might be damaged or crops thereof rendered unfit for sale, use or consumption. Susceptible crops include, but are not limited to, cotton, okra, flowers, grapes (in growing stage), fruit trees (foliage), soybeans (vegetative stage), ornamentals, sunflowers, tomatoes, beans, and other vegetables, or tobacco. Small amounts of spray drift that might not be visible may injure susceptible broadleaf plants.

Other State and Local Requirements

Applicators must follow all state and local pesticide drift requirements regarding application of 2,4-D herbicides. Where states have more stringent regulations, they must be observed.

Equipment

All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers or surrogates.

For aerial application:

The boom length must not exceed 75% of the wingspan or 90% of the rotor blade diameter.

Release spray at the lowest height consistent with efficacy and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety. This requirement does not apply to forestry or rights-of-way applications. When applications are made with a crosswind, the swath will be displaced downwind. The applicator must compensate for this by adjusting the path of the aircraft upwind.

For ground boom application:

Do not apply with a nozzle height greater than 4 feet above the crop canopy.

APPLICATION INSTRUCTIONS FOR PASTURE AND RANGELAND

For susceptible annual and biannual broadleaf weeds: Do not apply more than 2-3/4 pints of this product (1.0 lbs of 2,4-D ae) per acre per application.

Easy-To-Control Species: 3 pints/acre broadcast application or 1 to 1.5% solutions for high-volume foliar applications.

Alder	<i>Ceanothus</i> spp.	Maples (except	Sumac
Ash	Cherry (except black)	bigleaf and vine*)	Sycamore
Beech	Cottonwood	Multiflora Rose	Tamarack
Birch	Dogwood	Poison Ivy	Wax Myrtle (top growth)
Blackberry	Elderberry	Poison Oak	White Oak
Black Locust	Hawthorn	Sassafras (top growth)	Wild Grape
Boneset	Honeysuckle	Scotch broom	Willow
Cascara			

*basal or dormant stem application only

For moderately susceptible biennial and perennial broadleaf weeds, difficult to control weeds and woody plants: Do not apply more than 5-1/2 pints of this product (2.0 lbs of 2,4-D ae) per acre per application.

Harder-To-Control Species: High-volume applications, 1.5% solution, conventional basal or dormant stem applications are recommended.

Buckbrush (<i>Symporicarpos</i> spp.) (suppression)	Hazel	Salmonberry (suppression)
Common Persimmon (suppression)	Honeylocust (suppression)	Sweetgum
Elm (except winged elm)	Pine (suppression)	Trumpetcreeper (suppression)
	Russian Olive	Virginia Creeper (suppression)

FOR FENCEROWS AND RIGHTS-OF-WAY

Maximum of 5-1/2 pints of this product (2.0 lbs of 2,4-D ae) per application for treatment of annual and perennial weeds.
Maximum of 1 gallon, 3-1/2 pints of this product (4.0 lbs of 2,4-D ae) per application for treatment of woody plants.

FOR PASTURES, RANGELANDS, FENCEROWS AND RIGHT-OF-WAYS

Limited to 1 application per growing season.

14-day pre-harvest interval (PHI) for grass hay.

3-day pre-slaughter interval.

Do not cut forage for hay within 7 days after application.

Do not allow lactating dairy animals to graze on grass forage until the next growing season.

FOR ROADSIDES

For annual and perennial plants:

Limit to 2 applications per year.

Maximum of 5-1/2 pints of this product (2.0 lbs of 2,4-D ae) per acre per application.

Minimum of 30 days between applications.

For woody plants:

Limit to 1 application per year.

Maximum of 1 gallon, 3-1/2 pints of this product (4.0 lbs of 2,4-D ae) per acre per year.

WEEDS CONTROLLED AND APPLICATION RATES			
WEEDS CONTROLLED		RATE/ACRE	RATE/1,000 SQUARE FEET
black medic	henbit	2-1/2 pints	1 fluid ounce or 2 tablespoons
carpet weed	hop clover		
catnip	knawel		
chamise	lambsquarters		
chickweeds	lespedeza		
chicory	little starwort		
cinquefoil	mallow		
clovers	matchweed		
cocklebur	plantain		
coffeeweed	purslane		
cornflower	speedwell		
creeping beggarweed	smartweed		
dandelion	sowthistle		
dayflower	spiderwort		
docks	spotted catsear		
dwarf beggarweed	Spurweed		
field bindweed	vetch		
goldenrod	yarrow		
burdock	poison ivy	3 to 3-1/2 pints	1.3 fluid ounces or 2-1/2 tablespoons
buttercup,	poison oak		
mustard	wild carrot		
cornspeedwell	parsley-piert	3 pints (2 applications, 4 to 6 weeks apart)	1.3 fluid ounces or 2-1/2 tablespoons (2 applications, 4 to 6 weeks apart)
ground ivy	prostrate spurge		
oxalis (stricta and corniculata)	wild violet		

PREPARING THE SPRAY

Add about one-half the desired amount of clean water to spray tank. Add this product and complete addition of water with agitation running. Mix thoroughly and continue moderate agitation while spraying.

Size of Sprayer (Gallons)	AMOUNT OF THIS PRODUCT REQUIRED FOR SPRAY MIXTURE		
	1% Solution	1.5% Solution	4% Solution
1	1-1/3 fluid ounces	2 fluid ounces	5-1/3 fluid ounces
3	4 fluid ounces	6 fluid ounces	1 pint
5	6-2/3 fluid ounces	10 fluid ounces	1-2/3 pints
20	2 quarts	3 quarts	2 gallons
100	1 gallon	1.5 gallons	4 gallons

APPLICATION INSTRUCTIONS

TURF

BROADCAST TREATMENT OF ORNAMENTAL TURF, GOLF COURSES AND SOD FARMS

Apply 1 to 2 quarts of this product in enough water to make 20 to 200 gallons total spray per acre to control broadleaf weeds growing in perennial bluegrass, tall fescue, or perennial ryegrass. **Do not** use on other grass species, such as bentgrass or St. Augustinegrass, unless injury can be tolerated. Apply from early spring through fall when weeds are actively growing. Broadleaf weed species germinate at different times. Only emerged weeds present at time of application are controlled. Additional applications should be made four weeks apart to minimize grass injury. Newly seeded turf should be mowed two or three times before being treated. Do not water for 24 hours after application. Do not reseed for 3 weeks after application.

SPOT TREATMENT OF ORNAMENTAL TURF, GOLF COURSES AND SOD FARMS USING PORTABLE SPRAYERS

Mix 1 to 2 fluid ounces of this product in enough water to make 3 gallons of spray (1 to 2 quarts per 100 gallons of spray) and apply at any time broadleaf weeds are susceptible by wetting foliage of undesirable plants to point of runoff.

Ornamental Turf and Sod Farm Restrictions

Limited to 2 applications per year with a 21-day minimum interval.

The maximum application rate for ornamental turf is 4-1/4 pints of this product (1.5 lbs of 2,4-D ae) per acre per application.

The maximum application rate for sod farm turf is 5-1/2 pints of this product (2 lbs of 2,4-D ae) per acre per application.

APPLICATION INSTRUCTIONS

FOR THE CONTROL OF EMERGENT, FLOATING AND SUBMERGED AQUATIC WEEDS IN THE FOLLOWING AQUATIC SITES: PONDS, LAKES, RESERVOIRS, MARSHES, BAYOUS, NON-IRRIGATION CANALS AND DITCHES, SEASONAL IRRIGATION CANALS AND DITCHES WHICH HAVE LITTLE OR NO CONTINUOUS OUTFLOW AND IMPOUNDED RIVERS AND STREAMS THAT ARE QUIESCENT OR SLOW MOVING.

SPRAY DRIFT MANAGEMENT

Avoiding spray drift at the application site is the responsibility of the applicator. A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

Do not apply under circumstances where spray drift may occur to food, forage or other plantings that might be damages or crops thereof rendered unfit for sale, use or consumption. Susceptible crops include, but are not limited to, cotton, okra, flowers, grapes (in growing stage), fruit trees (foliage), soybeans (vegetative stage), ornamentals, sunflowers, tomatoes, beans, and other vegetables or tobacco. Small amounts of spray drift that might not be visible may injure susceptible broadleaf plants.

If applying at wind speeds less than 3 mph, the applicator must determine if a) conditions of temperature inversion exists or 2) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversion or stable atmospheric conditions.

Applicators must follow all state and local pesticide drift requirements regarding application of 2,4-D and triclopyr herbicides. Where states have more stringent regulations, they must be observed.

USE RESTRICTIONS FOR AQUATIC AND WETLAND SITES

Notice to Applicators: Before application, coordination and approval of local and state authorities may be required, either by letter or agreement or issuance of special permits for aquatic applications.

Use Requirements for Aquatic Areas:

When this product is applied to aquatic areas, follow PPE and reentry instructions in the "Non-Agricultural Use Requirements" section of this label.

Do not apply to salt water bays or estuaries.

Do not apply where runoff water may flow onto agricultural land as injury to crops may result.

Do not apply to unimpounded rivers and streams.

Do not apply to ditches or canals currently being used to transport irrigation water or that will be used for irrigation within 120 days following treatment or until triclopyr residue levels are determined to be 1.0 ppb triclopyr or less and 100 ppb 2,4-D or less.

RECREATIONAL USE OF WATER IN TREATMENT AREAS

There are no restrictions on the use of treated water for fishing. Do not swim in water treated with this product for (3) hours after treatment.

LIVESTOCK USE OF WATER FROM TREATMENT AREAS

There are no restrictions on consumption of treated water for potable use by livestock, pets or other animals.

CONTROL OF WEEDS AND BRUSH ON BANKS OF NON-IRRIGATION CANALS AND DITCHES

Application Rate

Apply 44 to 88 ounces of this product per acre to control annual weeds.

Apply 88 ounces of this product per acre for control of biennial and perennial weeds and susceptible woody plants.

Specific Use Directions

Apply using low pressure spray (10 to 40 psi) in a spray volume of 20 to 100 gallons per acre using power operated spray equipment.

Apply when wind speed is low, 5 mph or less.

Apply working upstream to avoid accidental concentration of spray into water. Cross-stream spraying to opposite banks is not permitted and avoid boom spraying over water surface. When spraying shoreline weeds, allow no more than 2 foot overspray onto water surface with an average of less than 1 foot of overspray to prevent significant water contamination.

Apply when weeds are small and growing actively before the bud stage. Apply when biennial and perennial species are in the seedling to rosette stage and before stalks appear. For hard to control weeds, a repeat application after 30 days at the same rate may be needed.

For woody species and patches of perennial weeds, mix 1 gallon of this product per 64 to 150 gallons of total spray. Wet foliage by applying about 3 to 4 gallons of spray per 1000 sq ft (10.5 x 10.5 steps).

Restrictions and Limitations

Do not apply more than 2 treatments per season or reapply within 30 days.

Use 2 or more gallons of spray solution per acre.

Do not apply more than 92 oz/acre (2.0 lb of 2,4-D acid equivalent) per application or more than 184 oz/acre (4.0 lb of 2,4-D acid equivalent) per use season.

Do not use on small canals with a flow rate less than 10 cubic feet per second (CFS) where water will be used for drinking purposes. CFS may be estimated by using the formula below. The approximate velocity needed for the calculation can be determined by observing the length of time that it takes a floating object to travel a defined distance. Divide the distance (ft.) by the time (sec.) to estimate velocity (ft. per sec.). Repeat 3 times and use the average to calculate CFS. Average Width (ft.) x Average Depth (ft.) x Average Velocity (ft. per sec.) = CFS

For ditchbank weeds, do not spray cross-stream to opposite bank. Do not allow boom spray to be directed onto water.

For shoreline weeds, boom spraying onto water surface must be held to a minimum and allow no more than 2 foot overspray onto water with an average of less than 1 foot overspray to prevent introduction of greater than negligible amounts of chemical into the water.

CONTROL OF EMERGENT AND FLOATING AQUATIC WEEDS:

Including Water Hyacinth (*Eichomia crassipe*) and Alligatorweed (*Alternanthera philoxeroides*)

SPECIFIC USE DIRECTIONS FOR EMERGENT AND FLOATING AQUATIC WEEDS

Application Sites

Ponds, Lakes, Reservoirs, Marshes, Bayous, Drainage Ditches, non-irrigation Canals, impounded Rivers and Streams that are Quiescent or Slow Moving, including Programs of the Tennessee Valley Authority.

Application Rate

Apply 88 to 175 oz of this product per acre.

Application Timing

Spray weed mass only. Apply when water hyacinth plants are actively growing. A second application may be made 21 days after the initial application to kill regrowth and plants missed in previous operation. Use 175 oz/acre rate when plants are mature or when weed mass is dense.

Surface Application

Use power operated sprayers with boom or spray gun mounted on boat, tractor or truck. Thorough wetting of foliage is essential for maximum control. Use 100 to 400 gallons of spray mixture per acre. Special precautions such as use of low pressure, large nozzles and spray thickening agents should be taken to avoid spray drift to susceptible crops. Follow label directions for use of any drift control agent.

Aerial Application

Use drift control spray equipment or thickening agent mixed in the spray mixture. Apply 175 oz of this product per acre using standard boom systems using a minimum spray volume of 5 gallons per acre. For Microfoil (r) - drift control spray systems, apply this product in a total spray volume of 12 to 20 gallons per acre. Refer to the "Spray Drift Management" section.

Restrictions and Limitations for Surface Applications to Emergent Aquatic Weeds

Fish breathe dissolved oxygen in the water and decaying weeds also use oxygen. When treating continuous, dense weed masses, it may be appropriate to treat only part of the infestation at a time. For example, apply the product in lanes separated by untreated strips that can be treated after vegetation in treated lanes has disintegrated. During the growing season, weeds decompose in a 2 to 3 week period following treatment. Waters having limited and less dense weed infestations may not require partial treatments. Other local factors such as water exchange and sediment load can also influence the dissolved oxygen level. Coordination and approval of local and state authorities may be required, either by letter of agreement or issuance of special permits for aquatic applications.

Do not exceed 184 oz/acre (4.0 lb of acid equivalent) per surface acre per use season. Limited to 2 applications per season.

Do not make a broadcast application within 21 days of previous broadcast application. Spot treatments are permitted.

CONTROL OF SUBMERGED AQUATIC WEEDS: Including Water Milfoil (*Myriophyllum spicatum*)

SPECIFIC USE DIRECTIONS FOR EMERGENT AND FLOATING AQUATIC WEEDS

Application Sites

Ponds, Lakes, Reservoirs, Marshes, Bayous, Drainage Ditches, non-irrigation Canals, impounded Rivers and Streams that are Quiescent or Slow Moving, Including Programs of the Tennessee Valley Authority.

Application Rate

Apply up to 3.88 gallons (10.8 lb of acid equivalent) per acre foot.

This product contains 2.78 lbs of 2,4-D acid equivalent and 1.07 lbs of triclopyr acid equivalent per gallon of product.

Application Timing

Apply in spring or early summer when aquatic weeds appear. Check for weed growth in areas heavily infested the previous year. A second application may be needed when weeds show signs of recovery, but no later than mid-August in most areas.

Surface Application

Use power operated boat mounted boom sprayer. If rate is less than 5 gallons per acre, dilute to a minimum spray volume of 5 gallons per surface acre.

Subsurface Application

Apply this product undiluted directly to the water through a boat mounted distribution system. Shoreline areas should be treated by subsurface injection application by boat to avoid aerial drift.

Apply to attain a concentration of 2 to 4 ppm 2,4-D and 0.75 to 1.5 ppm triclopyr (see table below).

Amount of 2,4-D and Triclopyr to Apply for a Target Subsurface Concentration					
2,4-D ae ppm	2	2.5	3	3.5*	4*
Triclopyr ae ppm	0.75	1.0	1.2	1.3*	1.5*
Avg Depth (ft)					This product gallons per surface acre at specified depth
1	1.9	2.4	2.9	3.4	3.9
2	3.9	4.9	5.8	6.8	7.8
3	5.8	7.3	8.7	10.2	11.7
4	7.8	9.7	11.7	13.6	15.5
5	9.7	12.1	14.6	17.0	19.4

* For difficult conditions, for example, spot treatment of pioneer colonies of Eurasian Water Milfoil and certain difficult to control aquatic species.

Aerial Application

Use drift control spray equipment or thickening agents mixed with sprays to reduce drift. Apply through standard boom systems in a minimum spray volume of 5 gallons per surface acre. For Microfoil (r) drift control spray systems, apply this product in a total spray volume of 12 to 20 gallons per acre. Refer to the "Spray Drift Management" section.

Restrictions and Limitations for Aquatic Sites with Submersed Weeds

Do not exceed 10.8 lbs. 2,4-D acid equivalent and 6.9 lbs triclopyr acid equivalent per acre foot.

Fish breathe oxygen in the water and a water-oxygen ratio must be maintained. Decaying weeds use up oxygen, but during the period when applications should be made, the weed mass is fairly sparse and the weed decomposition rate is slow enough that the water-oxygen ratio is not disturbed by treating the entire area at one time. If treatments must be applied later in the season when the weed mass is dense and repeat treatments are needed, apply product in lanes, leaving buffer strips which can then be treated when vegetation in treated lanes has disintegrated. During the growing season, weeds decompose in a 2 to 3 week period following treatment.

Do not apply within 21 days of previous application. Limited to 2 applications per season.

When treating slow moving bodies of water, applications must be made while traveling upstream to prevent concentration of 2,4-D and triclopyr downstream from the application.

WATER USE Drinking water (potable water)

POTABLE WATER INTAKE SETBACKS FOR CONTROL OF SUBMERGED WEEDS – LAKES, RESERVOIRS, OR PONDS

Minimum setback distances from functioning potable water intakes for human consumption for the application of this product must be observed when controlling submerged weeds in lakes, reservoirs or ponds.

Drinking water setback distances do not apply to terrestrial applications made adjacent to water bodies with potable water intakes.

Existing potable water intakes that are no longer in use, such as those replaced by a connection to a municipal water system or a potable water well, are not considered to be functioning potable water intakes.

Consult with appropriate state or local water authorities before applying this product to public waters. State or local agencies may require permits. The potable water use restrictions on this label are to ensure that consumption of water by the public is allowed only when the concentration of triclopyr in water is less than 400 ppb and the concentration of 2,4-D in water is less than the MCL (Maximum Contaminant Level) of 70 ppb. Applicators should consider the unique characteristics of the treated waters to assure that the triclopyr and 2,4-D concentrations in potable water do not exceed 400 ppb and 70 ppb, respectively, at the time of consumption.

For submersed weed applications, the drinking water setback distances from functioning potable water intakes are provided in the following table.

Drinking water setback distance for submersed weed applications				
application concentration and minimum setback distance (ft) from functioning potable water table intake				
2,4-D ae ppm	≤ 0.5	0.6 to 1	1.1 to 2	2.1 to 4
Triclopyr ae ppm	≤ 0.2	0.2 to 0.4	0.5 to 0.7	0.8 to 1.5
Minimum Setback Distance (ft)	600	1200	1800	2400

If no setback distance from the above Drinking Water Setback Distance Table is to be used for the application, applicators or the authorizing organization must provide a drinking water notification and an advisory to shut off all potable water intakes prior to a 2,4-D application. Notification to the party responsible for a public water supply or to individual private water users must be done in a manner to assure that the party is aware of the water use restrictions when this product is applied to potable water.

The following is an example of a notification via posting, but other methods of notification which convey the above restrictions may be used and may be required in some cases under State or local law or as a condition of a permit.

Example: Posting notification should be located every 250 feet including the shoreline of the treated area and up to 250 feet of shoreline past the application site to include immediate public access points. Posting should include the day and time of application.

Posting may be removed if analysis of a water sample collected at the intake shows that the concentration of triclopyr in water is 400 ppb or less and the 2,4-D is 70 ppb or less, or after 21 days following application, whichever occurs first. Use the *Sampling for Drinking Water Analysis After 2,4-D Application for Submersed Weed Applications Table* below to determine the minimum numbers of days to wait between application and water sampling for a given application target concentration.

Text of notification: Wait 21 days before diverting functioning surface water intakes from the treated aquatic site to use as drinking water, unless water at functioning drinking water intakes is tested and is demonstrated by assay to contain triclopyr concentrations of 400 ppb or less and concentrations of 2,4-D of 70 ppb or less. Use the *Sampling for Drinking Water Analysis After 2,4-D Application for Submersed Weed Applications Table* above to determine the minimum numbers of days to wait between application and water sampling for a given application target concentration.

Application Date: _____. Time: _____.

Following each application of this product, treated water must not be used for drinking water unless one of the following restrictions has been observed:

- i. A setback distance described in the Drinking Water Setback Distance Table was used for the application, or
- ii. A waiting period of 21 days from the time of application has elapsed, or,

iii. An approved assay indicates that the concentration of triclopyr is 400 ppb or less and the concentration of 2,4-D is 70 ppb or less at the water intake. Sampling for drinking water analysis should occur no sooner than stated in Sampling for Drinking Water Analysis After 2,4-D Application for Submersed Weed Applications Table above. Analysis of samples must be completed by a laboratory that is certified under the Safe Drinking Water Act to perform drinking water analysis using a currently approved version of analytical Method Number 515, 555, other methods for 2,4-D as may be listed in Title 40 CFR, Part 141.24, or Method Number 4015 (immunoassay of 2,4-D) from U.S. EPA Test Methods for Evaluating Solid Waste SW-846.

Except as stated above, there are no restrictions on using water from treated areas for fishing or watering livestock.

Coordination and approval of local and state authorities may be required, either by letter of agreement or issuance of special permits for aquatic applications.

Minimum days after application before initial water sampling at the functioning potable water intake			
2,4-D ae ppm	≤ 0.5	0.6 to 2	2.1 to 4
Triclopyr ae ppm	≤ 0.2	0.3 to 0.7	0.8 to 1.5
Minimum Days	5	10	14

Note: These are general guidelines; the amount of time required for residues to reach concentrations acceptable for drinking or irrigation will depend on the total acres treated relative to water body size, application rates, water exchange rates, weed density, and various other factors.

WATER USE Irrigation Purposes

Irrigation:

Do not use water treated with the product for irrigating greenhouse or nursery plants unless the triclopyr and 2,4-D residues are confirmed to be less than 1 ppb by laboratory analysis.

Do not use water treated with this product for irrigating hydroponic crops.

Do not apply under circumstances where spray drift may occur to food, forage or other plantings that might be damaged or crops thereof rendered unfit for sale, use or consumption. Susceptible crops include, but are not limited to, cotton, okra, flowers, grapes (in growing stage), fruit trees (foliage), soybeans (vegetative stage), ornamentals, sunflowers, tomatoes, beans, and other vegetables or tobacco. Small amounts of spray drift that might not be visible may injure susceptible broadleaf plants.

Do not use treated water for irrigation for 120 days following application or until residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb triclopyr or less and 100 ppb 2,4-D or less.

There is no restriction on use of water from the treatment area to irrigate established grasses. Do not apply this product through any type of irrigation system.

Seasonal Irrigation Waters:

This product may be applied during the off-season to surface waters that are used for irrigation on a seasonal basis, provided that there is a minimum of 120 days between applying this product and the first use of treated water for irrigation purposes, or until residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb triclopyr or less and 100 ppb 2,4-D or less.

Irrigation Canals/Ditches:

Do not apply this product to irrigation canals/ditches unless the 120 day restriction on irrigation water usage can be observed or residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb triclopyr or less and 100 ppb 2,4-D or less.

Use of this product in certain portions of California, Oregon, and Washington is subject to the January 22, 2004 Order for injunctive relief in Washington Toxics Coalition et al vs. EPA, C01-0132C, (W.D. WA). For further information, please refer to EPA Web site: <http://www.epa.gov/espp>

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

PESTICIDE STORAGE: Store above 28°F or agitate before use.

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate, is a violation of Federal law and may contaminate groundwater. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL:

[Nonrefillable Containers 5 Gallons or Less:] Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Nonrefillable Containers Larger than 5 Gallons: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable Container Larger than 5 Gallons: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

Or

Refillable Container: Refill this container with pesticide only. Do not reuse this container for any other purpose. Close all openings and replace all caps. Contact Nufarm's Customer Service Department at 1-800-345-3330 to arrange for return of the empty refillable container.

WARRANTY DISCLAIMER

The directions for use of this product must be followed carefully. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, (1) THE GOODS DELIVERED TO YOU ARE FURNISHED "AS IS" BY MANUFACTURER OR SELLER AND (2) MANUFACTURER AND SELLER MAKE NO WARRANTIES, GUARANTEES, OR REPRESENTATIONS OF ANY KIND TO BUYER OR USER, EITHER EXPRESS OR IMPLIED, OR BY USAGE OF TRADE, STATUTORY OR OTHERWISE, WITH REGARD TO THE PRODUCT SOLD, INCLUDING, BUT NOT LIMITED TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, USE, OR ELIGIBILITY OF THE PRODUCT FOR ANY PARTICULAR TRADE USAGE. UNINTENDED CONSEQUENCES, INCLUDING BUT NOT LIMITED TO INEFFECTIVENESS, MAY RESULT BECAUSE OF SUCH FACTORS AS THE PRESENCE OR ABSENCE OF OTHER MATERIALS USED IN COMBINATION WITH THE GOODS, OR THE MANNER OF USE OR APPLICATION, INCLUDING WEATHER, ALL OF WHICH ARE BEYOND THE CONTROL OF MANUFACTURER OR SELLER AND ASSUMED BY BUYER OR USER. THIS WRITING CONTAINS ALL OF THE REPRESENTATIONS AND AGREEMENTS BETWEEN BUYER, MANUFACTURER AND SELLER, AND NO PERSON OR AGENT OF MANUFACTURER OR SELLER HAS ANY AUTHORITY TO MAKE ANY REPRESENTATION OR WARRANTY OR AGREEMENT RELATING IN ANY WAY TO THESE GOODS.

LIMITATION OF LIABILITY

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, IN NO EVENT SHALL MANUFACTURER OR SELLER BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR DAMAGES IN THEIR NATURE OF PENALTIES RELATING TO THE GOODS SOLD, INCLUDING USE, APPLICATION, HANDLING, AND DISPOSAL. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, MANUFACTURER OR SELLER SHALL NOT BE LIABLE TO BUYER OR USER BY WAY OF INDEMNIFICATION TO BUYER OR TO CUSTOMERS OF BUYER, IF ANY, OR FOR ANY DAMAGES OR SUMS OF MONEY, CLAIMS OR DEMANDS WHATSOEVER, RESULTING FROM OR BY REASON OF, OR RISING OUT OF THE MISUSE, OR FAILURE TO FOLLOW LABEL WARNINGS OR INSTRUCTIONS FOR USE, OF THE GOODS SOLD BY MANUFACTURER OR SELLER TO BUYER. ALL SUCH RISKS SHALL BE ASSUMED BY THE BUYER, USER, OR ITS CUSTOMERS. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S OR USER'S EXCLUSIVE REMEDY, AND MANUFACTURER'S OR SELLER'S TOTAL LIABILITY SHALL BE FOR DAMAGES NOT EXCEEDING THE COST OF THE PRODUCT.

If you do not agree with or do not accept any of directions for use, the warranty disclaimers, or limitations on liability, do not use the product, and return it unopened to the Seller, and the purchase price will be refunded.

(RV111711)

Aquasweep is a registered trademark of Nufarm Americas Inc.

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product Name: **Aquasweep®**
EPA Reg. No.: 228-316
Product Type: Herbicide
Company Name: Nufarm Americas Inc.
11901 S. Austin Avenue
Alsip, IL 60803
1-800-345-3330

Telephone Numbers: For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
Call CHEMTREC Day or Night: 1-800-424-9300
For Medical Emergencies Only, Call 1-877-325-1840

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not the same as the FIFRA label. Certain sections of this SDS are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION**PHYSICAL HAZARDS:**

Not hazardous

HEALTH HAZARDS:

Acute toxicity, oral	Category 4
Eye damage	Category 1
Skin Sensitization	Category 1

ENVIRONMENTAL HAZARDS:

Hazardous to aquatic environment, acute	Category 2
Hazardous to aquatic environment, chronic	Category 2

SIGNAL WORD:

DANGER

HAZARD STATEMENTS:

Harmful if swallowed. Causes serious eye damage. May cause an allergic skin reaction. Toxic to aquatic life with long lasting effects.

**PRECAUTIONARY STATEMENTS**

Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves and eye protection. Avoid breathing mist, vapors or spray. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment.

IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice. Wash contaminated clothing before reuse.

Collect spillage.

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Dispose of contents in accordance with local, state, and federal regulations

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Dimethylamine Salt of 2,4-Dichlorophenoxyacetic Acid	2008-39-1	33.2 – 35.2
Triclopyr, triethylamine salt	57213-69-1	14.4 – 16.0
Other ingredients	Trade Secret	Trade Secret

Synonyms: Mixture of 2,4-D and Triclopyr

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Get immediate medical attention.

If Swallowed: Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person. If symptoms develop, get medical advice.

If Inhaled: Move person to fresh air. If breathing is difficult, administer oxygen. If symptoms develop, get medical advice.

If on Skin or Clothing: Take off contaminated clothing. Rinse skin with plenty of water for several minutes. If irritation or rash occurs, get medical advice.

Most important symptoms/effects, acute and delayed: Causes severe eye irritation with possible eye damage. May be harmful if swallowed. May cause allergic skin reaction (sensitization).

Indication of immediate medical attention and special treatment needed, if necessary: Get immediate medical attention for eye contact.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Firefighters should wear NIOSH approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: If water is used to fight fire or cool containers, dike to prevent runoff contamination of municipal sewers and waterways.

Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as hydrogen chloride and oxides of carbon and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

Methods for Cleanup and Disposal: Pump any free liquid into an appropriate closed container. Collect washings for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

HANDLING:

Do not get in eyes, on skin, or on clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. If pesticide gets on skin, wash immediately with soap and

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water. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE:

Store above 28°F or agitate before use. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:

Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

Personal Protective Equipment:

Eye/Face Protection: To avoid contact with eyes, wear goggles, face shield or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.

Skin Protection: To avoid contact with skin, wear long-sleeved shirt and long pants, shoes plus socks, and chemical-resistant gloves made of any waterproof material. Pilots must wear long pants, long-sleeved shirt, shoes and socks. An emergency shower or water supply should be readily accessible to the work area.

Respiratory Protection: Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
DMA Salt of 2,4-D	10*	NE	10* (inhalable, skin)	NE	mg/m ³
Triclopyr TEA	NE	NE	NE	NE	

*Based on adopted limit for 2,4-D

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Golden brown liquid

Odor:

Amine odor

Odor threshold:

No data available

pH:

7.14 (1% w/w dispersion in DIW)

Melting point/freezing point:

No data available

Initial boiling point and boiling range

No data available

Flash point:

Not applicable due to aqueous solution

Evaporation rate:

No data available

Flammability (solid, gas):

No data available

Upper/lower flammability or explosive limits:

No data available

Vapor pressure:

No data available

Vapor density:

No data available

Relative density:

1.160 g/cm³ @ 20° C

Solubility(ies):

No data available

Partition coefficient: n-octanol/water:

No data available

Autoignition temperature:

No data available

Decomposition temperature:

No data available

Viscosity:

17.35 cPs @ 20° C, 7.69 cPs @ 38° C

Note: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

10. STABILITY AND REACTIVITY

Reactivity: Not reactive

Chemical Stability: This material is stable under normal handling and storage conditions.

Possibility of Hazardous Reactions: Will not occur.

Conditions to Avoid: Excessive heat. Do not store near heat or flame.

Incompatible Materials: Strong oxidizing agents: bases and acids.

Hazardous Decomposition Products: Under fire conditions may produce gases such as hydrogen chloride and oxides of carbon and nitrogen.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Eye contact, Skin Contact, Inhalation

Symptoms of Exposure:

Eye: Causes severe eye irritation and possible irreversible eye damage.

Skin: Mildly irritating based on toxicity studies. Overexposure by skin absorption may cause symptoms similar to those for ingestion. May cause allergic skin reaction (sensitization).

Inhalation: Low inhalation toxicity based on toxicity studies. May be irritating to the respiratory tract. Overexposure by inhalation may cause symptoms similar to those from ingestion.

Ingestion: Harmful if swallowed. May cause nausea, vomiting, abdominal pain, decreased blood pressure, muscle weakness, muscle spasms.

Delayed, immediate and chronic effects of exposure: None Reported.

Toxicological Data:

Data from laboratory studies on this product are summarized below:

Oral, Rat LD₅₀: 1,660 mg/kg

Dermal, Rat or Rabbit LD₅₀: >2,000 mg/kg

Inhalation, Rat 4-hr LC₅₀: >2.02 mg/l

Eye Irritation: Rabbit: Severely irritating/corrosive

Skin Irritation: Rabbit: Slightly irritating

Skin Sensitization: Guinea Pig: Not considered a sensitizer

Subchronic (Target Organ) Effects: Repeated overexposure to phenoxy herbicides may cause effects to liver, kidneys, blood chemistry, and gross motor function. Rare cases of peripheral nerve damage have been reported, but extensive animal studies have failed to substantiate these observations, even at high doses for prolonged periods. Excessive exposure to Triclopyr may affect heart, kidneys and liver.

Carcinogenicity / Chronic Health Effects: Prolonged overexposure to phenoxy herbicides can cause liver, kidney and muscle damage. The International Agency for Research on Cancer (IARC) lists exposure to chlorophenoxy herbicides as a class 2B carcinogen, the category for limited evidence for carcinogenicity in humans. However, more current 2,4-D lifetime feeding studies in rats and mice did not show carcinogenic potential. The U.S. EPA has given 2,4-D a Class D classification (not classifiable as to human carcinogenicity). Triclopyr did not cause cancer in laboratory studies.

Reproductive Toxicity: No impairment of reproductive function attributable to 2,4-D has been noted in laboratory animal studies. For triclopyr in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Developmental Toxicity: Studies in laboratory animals with 2,4-D have shown decreased fetal body weights and delayed development in the offspring at doses toxic to mother animals. Triclopyr did not cause birth defects in laboratory animals.

Genotoxicity: There have been some positive and some negative studies, but the weight of evidence is that 2,4-D is not mutagenic. For triclopyr, *in-vitro* and animal mutagenicity studies were negative.

Assessment Carcinogenicity:

This product contains substances that are considered to be probable or suspected human carcinogens as follows:

Component	Regulatory Agency Listing As Carcinogen			
	ACGIH	IARC	NTP	OSHA
Chlorophenoxy Herbicides (2,4-D DMA)	No	2B	No	No

12. ECOLOGICAL INFORMATION**Ecotoxicity:**

Data on 2,4-D, Dimethylamine Salt:

96-hour LC ₅₀ Bluegill:	524 mg/l	Bobwhite Quail Oral LD ₅₀ :	500 mg/kg
96-hour LC ₅₀ Rainbow Trout:	250 mg/l	Mallard Duck 8-day Dietary LC ₅₀ :	>5,620 ppm
48-hour EC ₅₀ Daphnia:	184 mg/l		

Data on Triclopyr TEA (64.7%):

96-hour LC ₅₀ Bluegill:	893 ppm	Bobwhite Quail 8-day Dietary LC ₅₀ :	>10,000 ppm
96-hour LC ₅₀ Rainbow Trout:	613 ppm	Mallard Duck Oral LD ₅₀ :	2,055 mg/kg
48 hour EC ₅₀ Daphnia:	947 ppm	Mallard Duck 8-day Dietary LC ₅₀ :	>10,000 ppm

Environmental Fate:

In laboratory and field studies, 2,4-D DMA salt rapidly dissociated to parent acid in the environment. The typical half-life of the resultant 2,4-D acid ranged from a few days to a few weeks. In laboratory and field studies, Triclopyr TEA rapidly dissociates to parent acid in the environment. Triclopyr is moderately persistent and mobile. In soil, the predominant degradation pathway is microbial and the average half-life is 30 days. Half-lives tend to be shorter in warm, moist soils with a high organic content. The predominant degradation pathway for triclopyr in water is photodegradation and the average half-life is one day.

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method:**

Pesticides wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate, is a violation of Federal law and may contaminate groundwater. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Handling and Disposal:

Do not cut or weld container.

Nonrefillable Containers 5 Gallons or Less: Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

Nonrefillable containers larger than 5 gallons: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable containers larger than 5 gallons: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. Agitate

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Aquasweep®

vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

OR

Refillable Container: Refill this container with pesticide only. Do not reuse this container for any other purpose. Close all openings and replace all caps. Contact Nufarm's Customer Service Department at 1-800-345-3330 to arrange for return of the empty refillable container.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this SDS.

DOT:

≤ 30 gallons per completed package

Non Regulated

> 30 gallons per completed package

UN 3082, Environmentally hazardous substances, liquid, n.o.s. (2,4-D Acid), 9, III, RQ

IMDG:

Non Regulated

IATA:

Non Regulated

15. REGULATORY INFORMATION

EPA FIFRA INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

DANGER. Corrosive. Causes irreversible eye damage. Harmful if absorbed through skin. Harmful if swallowed. Do not get in eyes, on skin, or on clothing.

U.S. FEDERAL REGULATIONS

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370.66):

Acute Health

Section 313 Toxic Chemical(s):

Triclopyr, Triethylammonium Salt (CAS No. 57213-69-1), 14.4 – 16.0% by weight in product

Reportable Quantity (RQ) under U.S. CERCLA:

None specified

RCRA Waste Code:

Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

State Information:

Other state regulations may apply. Check individual state requirements.

California Proposition 65: Not Listed.

16. OTHER INFORMATION**National Fire Protection Association (NFPA) Hazard Rating:****Rating for this product: Health: 3 Flammability: 1 Reactivity: 0****Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe**

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

Date of Issue: March 29, 2015**Supersedes:**

October 1, 2014

Aquasweep is a registered trademark of Nufarm Americas Inc.



IN-PLACE®

DEPOSITION AID AND DRIFT MANAGEMENT AGENT



PRINCIPAL FUNCTIONING AGENTS:

Modified Vegetable Oil, Aliphatic Mineral Oil,
Amine Salts of Organic Acids, Aromatic Acid.....% By Wt.

100%

CA Reg. No. 2935-50169

WA Reg. No. 2935-01003
EPA Est. No. 2935-TX-2

KEEP OUT OF REACH OF CHILDREN



WARNING

May cause an allergic skin reaction.

PRECAUTIONARY STATEMENTS

Avoid breathing mist or spray. Contaminated work clothing must not be allowed out of the workplace. Wear rubber or chemical-resistant gloves. Wash thoroughly with water after handling.

FIRST AID	
If on skin:	Wash with plenty of water. If skin irritation or rash occurs: Get medical attention. Wash contaminated clothing before reuse.
Have the product container with you when calling a poison control center or doctor, or going for treatment. You may also contact EMERGENCY TELEPHONE NUMBERS:	
(800) 424-9300 CHEMTREC (transportation and spills)	
(800) 222-1222 POISON CONTROL CENTER (human health)	
(888) 426-4435 ASPCA (animal health)	

Do not use this container or equipment contaminated with this product as a container for water to be used for domestic purposes, feed or food stuff.

NOTE: When using chemical mixture that has not been used before with IN-PLACE® always try a small sample mix before making a full batch. Different adjuvants in the chemicals and salt in some water can cause flocking or excess thickening. If this occurs, then add ammonia or R-11® up to a 1% concentration to achieve desired consistency.

Follow mixing procedures, dose rates and cautions on all chemical labels.

GENERAL INFORMATION

IN-PLACE is specially formulated for use with conventional spray mixtures in agriculture, forestry, roadside, industrial, non-crop, turf, golf course and ornamentals. IN-PLACE is a deposition and retention agent that reduces the number of driftable fines (<100 microns), and increases the spray droplet Volume Median Diameter (VMD). This effect results in a more uniform spray droplet size which increases coverage and deposition on the target surface.

NOTE: IN-PLACE does not replace the need for additional adjuvants/surfactants in the spray mix. IN-PLACE may loosen dried spray materials in the tank allowing them to deposit in the strainer or nozzle bodies.

DIRECTIONS FOR USE

Mix the IN-PLACE and EMULSIFIABLE CONCENTRATE or AQUEOUS SOLUTION together; 1 part IN-PLACE to 4 parts chemical. Add to the total volume of water. (If some water is required for mixing with the emulsifiable concentrate or aqueous solution, DO NOT USE MORE THAN 1 quart of water on a per acre basis for the premix.)

Mix the WETTABLE POWDER, SOLUBLE POWDER, LIQUID FLOWABLE or SOLUBLE BAG in the total volume of WATER. Add the IN-PLACE last; 2 ounces IN-PLACE to 1 pound or 1 quart of chemical.

Combinations of Emulsifiable Concentrates and/or Aqueous Solutions with Wettable Powders, Soluble Powders, Liquid Flowables, and/or Soluble Bags: Put any powder or liquid flowable formulations into 1/3 to 1/2 of the spray mix. Agitate until a suspension is achieved. Premix the IN-PLACE and the Emulsifiable Concentrate and/or Aqueous Solution together. Add the premix last to the total volume of water and suspended powders. Always try a small sample mix before making a full batch.

When mixing multiple-loads at one time, RE-BLEND BEFORE EACH LOAD IS DRAWN OFF.

Small Mixes in Closed Systems: Put required amount of IN-PLACE in the can opener portion. Add the emulsifiable concentrate or aqueous solution to IN-PLACE and flush the premix into closed mixing tank.

Large or Multiple Loads in Closed Systems: Keep the initial water to a maximum of 1 quart on a per acre basis in the closed mixing tank. Add all of the emulsifiable concentrates or aqueous solutions to the closed mixing tank, followed by the required IN-PLACE. BLEND VERY LIGHTLY and add to the total volume of water. If a thick or lumpy load occurs from over-agitation or the wrong rate of IN-PLACE, add HOUSEHOLD AMMONIA or a 1% concentration of R-11® nonionic surfactant through the agitation system to break the condition and continue with normal spray activities.

FOR PESTICIDES THAT PERMIT THE USE OF AN ADJUVANT/SURFACTANT AT A HIGHER RATE, FOLLOW INSTRUCTIONS ON THAT PESTICIDE LABEL. HOWEVER, DO NOT ADD ADDITIONAL ADJUVANT/SURFACTANT AT A RATE WHICH EXCEEDS 5% OF THE FINISHED SPRAY VOLUME.

Use caution at the higher application rates. When applying to a sensitive crop, first treat a small area to determine if there may be adverse effects on the crop.

FOR AQUATIC USE: IN-PLACE can be used with labeled aquatic products. Do not exceed 1 quart of IN-PLACE per surface acre of water.

Not for Aquatic Use in Washington.

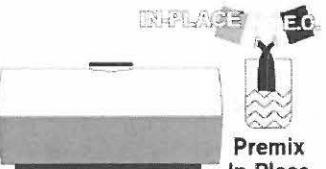
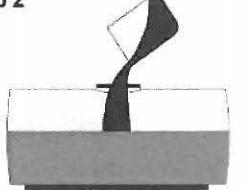
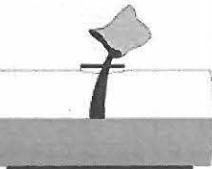
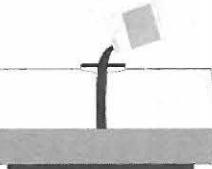
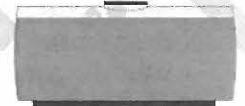
USE RESTRICTIONS

Not for Aquatic Use in Washington

MIXING PROCEDURES AND RATES

EC (Emulsifiable Concentrates) AS (Aqueous Solutions)	Premix with IN-PLACE then add to the spray mix.	4 ounces of IN-PLACE per 1 pint of EC or AS.
WP (Wettable Powders) DF (Dry Flowables) WS (Water Soluble Bags)	Thoroughly mix dry materials in 1/3 to 1/2 of the spray mix. Ensure complete suspension then add IN-PLACE to the spray tank last.	2 ounces of IN-PLACE per 1 pound of dry formulation.
LF (Liquid Flowables)	Thoroughly mix the liquid flowable in 1/3 to 1/2 of the spray mix. Ensure complete suspension then add IN-PLACE to the spray tank last.	1 ounce of IN-PLACE per 1 pint of Liquid Flowables.
Tank Mix Combinations Example (EC + DF + LF)	Thoroughly mix all DF/WP and/or liquid flowables in 1/3 to 1/2 of the spray mix. Mix until a complete suspension is achieved. Bring spray solution up to total volume and add the correct amount of IN-PLACE which has been premixed with the EC/AS.	4 ounces of IN-PLACE per 1 pint of EC/AS.

MIXING MADE EASY

E.C. & A.S. Formulations	Step 1  Fill Tank 1/2 full of water. Step 2  Add premix to spray tank. Step 3  Fill tank, agitate and spray.
Powders (DF, WDG, WSP, etc.)	Step 1 Allow for thorough mixing.  Fill Tank 1/2 full of water. Step 2  Add powders or flowables to spray tank. Step 3  Fill spray tank with water and agitate. Fill tank, agitate and spray.
Liquid Flowables (L.F.)	Step 1 Allow for thorough mixing.  Fill Tank 1/3 full of water. Step 2  Add liquid flowables to spray tank. Step 3  Fill spray tank with water and agitate. Fill tank, agitate and spray.
Combinations	Step 1 Allow for thorough mixing.  Fill Tank 1/2 full. Add powders and flowables. Step 2  Fill spray tank with water and agitate. Step 3  Add premix last. Agitate and spray.

SPECIAL MIXING AND RATES SECTION

Dimilin®	Add IN-PLACE to the spray solution last.	1 ounce of IN-PLACE per 1 ounce of Dimilin.
Golden Micronized Sulfur®	Add IN-PLACE to the spray solution last.	1.5 ounces of IN-PLACE per 30 pound bag of Golden Micronized Sulfur
Liquid Fertilizers	Add IN-PLACE to the spray mix last.	1 ounce of IN-PLACE per 1 pint of liquid fertilizer.
Propanil (EC)	Premix with IN-PLACE then add to the spray solution.	2 ounces of IN-PLACE per 1 pint of Propanil (EC).
Pyrethroids	Premix with IN-PLACE then add to the spray solution	1 ounce of IN-PLACE per 1 ounce of pyrethroid.
Soluble Fertilizers	Add IN-PLACE to the spray mix last.	2 ounces of IN-PLACE per 1 pound of soluble fertilizer.
Sulfonylurea Chemistry	<p>Add 1-2 quarts of R-11* per 100 gallons of mix solution, then add all the Sulfonylurea formulation to the mix solution. Mix thoroughly to ensure complete suspension of the Sulfonylurea. Add the IN-PLACE last.</p> <p>Exceptions:</p> <ul style="list-style-type: none"> a) Axiom® Add 1-2 quarts of R-11* per 100 gallons of mix solution. b) Oust® Add 1-2 quarts of R-11* per 100 gallons of mix solution. <p>*R-11 in the mix solution does not replace the need for other surfactants.</p>	<p>2 ounces of IN-PLACE per 1 acre.</p> <p>1 ounce of IN-PLACE per 1 acre.</p> <p>1 ounce of IN-PLACE per 1 ounce of Oust.</p>

1 Gallon = 4 Quarts = 8 Pints = 128 Fluid Ounces = 3.785 Liters
 2 Tablespoons = 1 Fluid Ounce
 1 U.S. Pound = 16 Ounces = 454 Grams

FOUR-TWO-ONE			
Formulation	EC	Powders	Flowables
Amount	pt.	lb.	pt.
IN-PLACE oz.	4	2	1
IN-PLACE RATES MADE EASY			

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

STORAGE: Store in original container only and keep tightly sealed. Store in closed storage areas.

PRODUCT DISPOSAL: Dispose of contents in accordance with all government regulations.

Improper disposal of excess pesticide, spray mixtures or rinsate is a violation of federal law.

Wastes resulting from the use of this product may be disposed of onsite or at an approved waste disposal facility.

CONTAINER HANDLING: Dispose of container in accordance with all government regulations.

Triple rinse (or equivalent), then offer for recycling, if available, or reconditioning, if appropriate.

Alternatively, puncture and dispose of the container in a sanitary landfill, or by other procedures approved by state and local authorities. Recycling cleaned containers is the best option of container disposal. The ACRC (Agricultural Container Recycling Council) operates a national recycling program. To contact your state or local ACRC recycler, visit the ACRC web page at www.acrecycle.org.

Conditions of Sale and Limitation of Warranty and Liability:

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using the product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

ALL STATEMENTS MADE HEREIN ARE SUBJECT TO APPLICABLE LAW, AND TO THE EXTENT THERE IS ANY INCONSISTENCY OR CONTENTION, APPLICABLE LAW SHALL GOVERN.

The Directions for Use of the product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of many different factors including, without limitation, manner of use or application, weather, combination with other products, or crop conditions. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold Manufacturer and Seller harmless from any claims relating to such factors.

Seller warrants that this product conforms to the chemical description on the label. EXCEPT FOR THIS WARRANTY, THE PRODUCT IS FURNISHED "AS-IS", AND NEITHER SELLER NOR MANUFACTURER MAKES ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE SELECTION, PURCHASE OR USE OF THIS PRODUCT; SELLER AND MANUFACTURER SPECIFICALLY DISCLAIM ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE BEYOND WHAT IS STATED ON THE LABEL. Buyer and User accept all risks arising from any use of this product, including without limitation, uses contrary to label instructions, or under conditions not reasonably foreseeable to (or beyond the control of) Seller or Manufacturer.

Neither Manufacturer nor Seller shall be liable for any incidental, consequential or special damages resulting from the use or handling of this product. THE EXCLUSIVE REMEDY OF THE BUYER OR USER, AND THE EXCLUSIVE LIABILITY OF MANUFACTURER AND SELLER, FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THIS PRODUCT, OR, AT THE ELECTION OF MANUFACTURER OR SELLER, THE REPLACEMENT OF THE PRODUCT.

These Conditions of Sale and Limitation of Warranty and Liability shall be interpreted, unless otherwise required by the law of the state of purchase, in accordance with the laws of the State of California, excluding its conflicts of laws rules, and may not be amended by any oral or written agreement.

WILBUR-ELLIS® logo, IDEAS TO GROW WITH®, GOLDEN MICRONIZED SULFUR®, IN-PLACE® and R-11® are registered trademarks of Wilbur-Ellis Company. ADJUVANTS TRI-DROPLET™ logo is a trademark of Wilbur-Ellis Company.

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F-042915

In Case of Emergency,
Call CHEMTREC: (800) 424-9300

WILBUR-ELLIS COMPANY
P.O. BOX 16458
FRESNO, CALIFORNIA 93755
(559) 442-1220

CONTENTS: 1 U.S. GALLON (3.785 Liters)

MATERIAL SAFETY DATA SHEET

IN-PLACE

I. NAME

PRODUCT/TRADE NAME: IN-PLACE
EPA REGISTRATION #: NONE
CHEMICAL NAME/COMMON NAME:
Petroleum distillate/Petroleum distillate
Modified Vegetable Oil/Modified Vegetable Oil

II. HAZARDOUS INGREDIENTS

	CAS#	OSHA PEL	ACGIH TLV
Petroleum Distillate	64742-47-8	500 ppm	100 ppm.
Modified Vegetable Oil	67784-80-9	NE	NE

III. PHYSICAL DATA

SPECIFIC GRAVITY (H₂O = 1): 0.88
MELTING POINT: NA
VAPOR DENSITY (AIR = 1): NE
% VOLATILES BY VOL.: NE
ODOR: Mineral
APPEARANCE: White Liquid
FLASH POINT/METHOD: >200° F
VAPOR PRESSURE (mmHg): <10 @ 25 Deg. C
SOLUBILITY IN H₂O: Emulsifiable

IV. FIRE & EXPLOSION HAZARD

EXTINGUISHING MEDIA: Water Fog Foam Alcohol Foam
 CO₂ Dry Chemical Other
FIRE FIGHTING PRECAUTIONS & HAZARDS:
Fight fire upwind. Wear positive pressure self-contained breathing apparatus and full protective equipment. Do not breathe vapors and spray mist. Avoid fallout and runoff. Dike to prevent entering drains, sewers, or water courses. Evacuate people downwind from fire.

V. CARCINOGEN STATUS

OSHA NTP IARC No Listing Type

VI. REACTIVITY

Stable HAZARDOUS POLYMERIZATION
 Unstable May Occur Will Not Occur

AVOID: Oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: CO_x, SO_x

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF SPILL: Wear appropriate respiratory and personal protective equipment. Absorb with inert material and place in approved disposal containers.

DECONTAMINATION: Treat spill area with detergent and water. Absorb with inert material and place in disposal containers. Repeat as necessary until area is clean.

ENVIRONMENTAL HAZARDS: Dike to prevent entering drains, sewers or water courses.

DISPOSAL: Dispose of in accordance with Federal, State and local regulations.

VIII. HEALTH PRECAUTION DATA

INGESTION: Do not ingest. Wash thoroughly with soap and water prior to eating, drinking or smoking.

INHALATION: PEL/TLV 100 ppm. Vapors may cause narcotic reaction in high concentrations. Wear proper respiratory protection for equipment for exposures above the PEL/TLV.

SKIN ABSORPTION: May cause mild skin irritation with excessive exposure. Wear proper personal protection equipment to reduce exposure.

EYE EXPOSURE: Keep out of eyes. Wear proper eye protection to prevent splash exposure. If exposed, flush eyes for a minimum of 15 minutes with water.

EFFECTS OF OVEREXPOSURE: Severe overexposure will depress the central nervous system and produce a narcotic effect, headache and nausea. Ingestion may cause vomiting and diarrhea. Chronic exposure may effect kidney and liver. Preexisting conditions involving the above symptoms may be aggravated by exposure to this product.

FIRST AID: In all cases, get prompt medical attention. Do not induce vomiting. If ingested, give several glasses of water. For skin exposure, remove contaminated

clothing and wash with soap and water. For eye exposure, irrigate for a minimum of 15 minutes with water. If swallowed, physician may give magnesia, chalk or whiting in water. If inhaled, remove victim to fresh air, and administer CPR if necessary.

IX. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: None required for intended use. Use NIOSH/MSHA - approved respirator for organic vapors for exposures up to 10 times the PEL/TLV. Self-contained breathing apparatus should be used for confined space entry and exposures above 10 times the PEL/TLV.

PERSONAL PROTECTIVE EQUIPMENT: Nitrile or neoprene gloves, chemical goggles and long-sleeved coveralls.

VENTILATION: General ventilation should be sufficient for intended use. Local ventilation is recommended for manufacture and formulation operations.

X. SPECIAL PRECAUTIONS

Keep out of the reach of children. Read and follow all label instructions. Do not store near open flame, sparks or other ignition sources.

XI. REGULATORY DATA

SARA HAZARD CLASS: Acute Chronic Flammable

Pressure Reactive None

SARA 313: Yes No Chemical:

SARA 302: Yes No Chemical:

TPQ:

CERCLA: Yes No Chemical:

RQ:

RCRA: Yes No

NFPA HAZARD RATING: NFPA HAZARD RATING SCALE:

Health: [1]	0 = Minimal	3 = Serious
Fire: [1]	1 = Slight	4 = Severe
Reactivity: [0]	2 = Moderate	
Special: []		

HMIS CODES: HMIS HAZARD RATING SCALE:

Health: [1]	0 = Minimal	3 = Serious
Fire: [1]	1 = Slight	4 = Severe
Reactivity: [0]	2 = Moderate	

DATE PREPARED: November 1, 2000

REVISED DATE: February 7, 2013

Notice: This information was developed from information on the constituent materials. No warranty is expressed or implied regarding the completeness or continuing accuracy of the information contained herein, and Wilbur-Ellis disclaims all liability for reliance thereon. The user should satisfy himself that he has all current data relevant to his particular use.

*Technical Material NE - Not Established NA - Not Applicable

24 Hour Emergency Phone Number
CHEMTRAC: (800) 424-9300



WILBUR-ELLIS®
PO BOX 1286 • FRESNO CA 93715

CAUTION
KEEP OUT OF REACH OF CHILDREN
READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Agridex®

NON-IONIC SURFACTANT

Active Constituents: 715 g/L PARAFFIN BASE PETROLEUM OIL
 139 g/L POLYOL FATTY ACID ESTERS AND
 POLYETHOXYLATED POLYOL FATTY ACID
 ESTER EMULSIFIER

For addition to various pesticides as recommended on their labels

GENERAL INSTRUCTIONS

Mixing

Mix the required quantity of Folicur, Bayfidan or other pesticide with water in the spray tank, then add the required amount of Agridex and stir or agitate thoroughly.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

DO NOT contaminate streams, rivers or waterways with the chemical or used containers.

STORAGE AND DISPOSAL

Keep out of reach of children. Store in the closed, original container in a cool, well ventilated area. Do not store for prolonged periods in direct sunlight. Triple or preferably pressure rinse container before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

SAFETY DIRECTIONS

Will irritate the eyes. May irritate the skin. Avoid contact with eyes and skin. When opening the container and preparing spray, wear elbow-length PVC gloves and face-shield or goggles. If product gets in eyes, wash it out immediately with water. Wash hands after use. After each day's use wash gloves and face shield or goggles and contaminated clothing. When using with another chemical, consult the safety directions of the companion product.

FIRST AID

If poisoning occurs contact a doctor or Poisons Information Centre Phone Australia 13 11 26.

MATERIAL SAFETY DATA SHEET

Additional information is listed in the Material Safety Data Sheet, which can be obtained from www.bayercropscience.com.au.

EXCLUSION OF LIABILITY

This product must be used strictly as directed, and in accordance with all instructions appearing on the label and in other reference material. So far as it is lawfully able to do so, Bayer CropScience Pty Ltd accepts no liability or responsibility for loss or damage arising from failure to follow such directions and instructions.

Agridex®, Bayfidan® and Folicur® are Trademarks of Bayer

APVMA Approval Number: 41165/54719

FOR 24 HOUR SPECIALIST ADVICE
 IN EMERGENCY ONLY
 PHONE 1800 033 111

DIRECTIONS FOR USE

Agridex is a blend of a surfactant and a superior type of agricultural spray oil which enhances the activity of Folicur® 430 SC Fungicide, Bayfidan® 250 EC Fungicide and some other pesticides.

Before using Agridex, read the other pesticide label.

For use with	Crop	Rate of Agridex
Folicur 430	Peanuts	1 L/ha
Bayfidan 250	Brassica vegetables	200 mL/ha

Other pesticides - see manufacturer's label

**NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS
 AUTHORISED UNDER APPROPRIATE LEGISLATION**



Bayer CropScience

Bayer CropScience
Safety Data Sheet
Agridex® Non-Ionic Surfactant



Version 1 / AUS
102000015565

Revision Date: 02.04.2013
Print Date: 02.04.2013

SECTION 1: IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product name	Agridex® Non-Ionic Surfactant
Other names	none
Product code (UVP)	06028127
Chemical Group	Paraffin
Recommended use	Esters
Chemical Formulation	Adjuvant
Company	Emulsifiable concentrate (EC)
Telephone	Bayer Cropscience Pty Ltd
Technical Information Service	-ABN 87 000 226 022
Facsimile	391-393 Tooronga Road, East Hawthorn
Website	Victoria 3123, Australia
Emergency telephone no.	(03) 9248 6888
	1800 804 479
	(03) 9248 6800
	www.bayercropscience.com.au
	1800 033 111 Orica SH&E Shared Services

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

HAZARDOUS SUBSTANCE	NON-DANGEROUS GOODS
Hazardous classification	Hazardous (National Occupational Health and Safety Commission - NOHSC)
R-phrase(s)	R45 - May cause cancer.
S-phrase(s)	See sections 4, 5, 6, 7, 8, 10, 12, 13.
ADG Classification	Not "dangerous goods" for transport by road or rail according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. - See Section 14.
SUSMP classification (Poison Schedule)	Schedule 5 (Standard for the Uniform Scheduling of Medicines and Poisons)

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature
Paraffin base petroleum oil 715 g/l

Chemical Name	CAS-No.	Concentration [%]
Distillates (petroleum), hydrotreated light paraffinic	64742-55-8	83.00
Other ingredients (non-hazardous) to 100%		

SECTION 4. FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13

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11 26), and follow the advice given. Show this Safety Data Sheet to the doctor.

Inhalation

When symptoms persist or in all cases of doubt seek medical advice. Oxygen or artificial respiration if needed. Call a physician or poison control center immediately.

Skin contact

Take off contaminated clothing and shoes immediately. Immediately wash with plenty of soap and water for at least 15 minutes. If symptoms persist, call a physician.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation or redness persists, see an ophthalmologist.

Ingestion

Call a physician or poison control center immediately. Do NOT induce vomiting.

Notes to physician

Symptoms

The product causes irritation of eyes, skin and mucous membranes., Aspiration may cause pulmonary oedema and pneumonitis.

Treatment

Treat symptomatically.

SECTION 5. FIRE FIGHTING MEASURES

Suitable extinguishing media

Carbon dioxide (CO₂)

Foam

Dry chemical

Water spray

Hazards from combustion products

In the event of fire the following may be released:

Carbon dioxide (CO₂)

Sulphur dioxide (SO₂)

Dangerous gases are evolved in the event of a fire.

Precautions for fire-fighting

Wear self-contained breathing apparatus and protective suit.

Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure being built up due to heat.

Whenever possible, contain fire-fighting water by diking area with sand or earth.

Do not allow run-off from fire fighting to enter drains or water courses.

Hazchem Code not applicable

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Avoid contact with spilled product or contaminated surfaces.

When dealing with a spillage do not eat, drink or smoke.

Remove all sources of ignition.

Use personal protective equipment.

Environmental precautions

Do not allow to get into surface water, drains and ground water.

If the product contaminates rivers and lakes or drains inform respective authorities.

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Methods for cleaning up

- Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
- Keep in suitable, closed containers for disposal.
- Clean contaminated floors and objects thoroughly, observing environmental regulations.

Reference to other sections

- Information regarding safe handling, see section 7.
- Information regarding personal protective equipment, see section 8.
- Information regarding waste disposal, see section 13.

SECTION 7. HANDLING AND STORAGE

Handling

Hygiene measures

- Avoid contact with skin, eyes and clothing.
- Handle in accordance with good industrial hygiene and safety practice.

Storage

Requirements for storage areas and containers

- Keep out of the reach of children.
- Keep containers tightly closed in a dry, cool and well-ventilated place.
- Keep away from direct sunlight.
- Protect against moisture.

Advice on common storage

- Keep away from food, drink and animal feedingstuffs.

Flammability

C2 Combustible Liquids Flash Point > 150 °C

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Biological limit values
none

Components with workplace control parameters

Not established.

Personal protective equipment - End user

Respiratory protection	AS/NZS 1715/1716 approved respirator
Hand protection	Elbow-length PVC or nitrile gloves
Eye protection	Goggles
Skin and body protection	Wear suitable protective clothing.

Engineering Controls

Advice on safe handling
Use only in area provided with appropriate exhaust ventilation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form Liquid, clear

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Colour	light yellow
Odour	no data available
Safety data	
pH	5 - 9 at 5 % (23 °C) Measuring at room temperature 23 °C ± 3 °C
Flash point	183 °C
Ignition temperature	no data available
Upper explosion limit	no data available
Lower explosion limit	no data available
Vapour pressure	no data available
Relative vapour density	no data available
Density	ca. 0.86 g/cm³ at 20 °C
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal conditions.
Conditions to avoid	Extremes of temperature and direct sunlight.
Materials to avoid	Strong acids Oxidizing agents
Hazardous Decomposition Products	Thermal decomposition can lead to release of: Carbon dioxide (CO ₂) Sulphur oxides Aldehydes
Hazardous reactions	No hazardous reactions when stored and handled according to prescribed instructions.

SECTION 11. TOXICOLOGICAL INFORMATION

Potential Health Effects	
Inhalation	May cause irritation of the mucous membranes.
Skin	Prolonged skin contact may cause skin irritation and/or dermatitis.
Eye	May cause eye irritation.
Ingestion	Aspiration of the swallowed or vomited product can cause severe pulmonary complications.

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Acute oral toxicity	LD50 (rat) > 2,000 mg/kg Test conducted with a similar formulation.
Acute inhalation toxicity	no data available
Acute dermal toxicity	LD50 (rat) > 2,000 mg/kg Test conducted with a similar formulation.
Skin irritation	No skin irritation (rabbit) Test conducted with a similar formulation.
Eye irritation	No eye irritation (rabbit) Test conducted with a similar formulation.
Sensitisation	Non-sensitizing. Information given is based on data obtained from similar substances.
Assessment Mutagenicity	Hydrotreated light paraffinic petroleum distillate (< 3% DMSO extract) was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
Assessment Carcinogenicity	Hydrotreated light paraffinic petroleum distillate (< 3% DMSO extract) is not considered carcinogenic.

SECTION 12. ECOLOGICAL INFORMATION

Additional ecological information	
Ecological data are not available.	
Biodegradability	no data available
Stability in soil	no data available
Bioaccumulation	Because of the product's consistency and low solubility in water, bioavailability is not likely.
Additional Environmental Information	no data available

SECTION 13. DISPOSAL CONSIDERATIONS

Metal drums and plastic containers:
Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

SECTION 14. TRANSPORT INFORMATION

According to national and international transport regulations not classified as dangerous goods.

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SECTION 15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Code Act 1994

Australian Pesticides and Veterinary Medicines Authority approval number: 41165

See also Section 2.

SECTION 16. OTHER INFORMATION

Trademark information Agridex® is a registered trademark of the Bayer Group.

This SDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

END OF SDS

Appendix D

2013 Environmental Assessment and Finding of No Significant Impact, Control of Saltcedar and Russian Olive, Fort Peck Reservoir, Montana

*Supplemental Environmental Assessment
Control of Saltcedar and Russian Olive
March 2016*



US Army Corps of Engineers
Omaha District

ENVIRONMENTAL ASSESSMENT & FINDING OF NO SIGNIFICANT IMPACT

CONTROL OF SALTCEDAR AND RUSSIAN OLIVE FORT PECK RESERVOIR, MONTANA December 2013



Tamarix spp. at Fort Peck Reservoir. Photo Credit: Patricia Gilbert, USACE.

Prepared by:

U.S. Army Corps of Engineers, Omaha District
Environmental Resources and Missouri River Recovery Program Plan Formulation Section
Planning Branch, CENWO-PM-AC
1616 Capitol Avenue
Omaha, Nebraska 68102-490

FINDING OF NO SIGNIFICANT IMPACT

CONTROL OF SALTCEDAR AND RUSSIAN OLIVE

FORT PECK RESERVOIR, MONTANA

December 2013

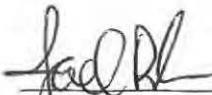
In accordance with the National Environmental Policy Act (NEPA) and implementing regulations, an Environmental Assessment (EA) has been prepared for the proposed herbicidal control of saltcedar (*Tamarix spp.*) and Russian olive (*Elaeagnus angustifolia*) at the Fort Peck Reservoir in McCone, Valley, Garfield, Phillips, Petroleum and Fergus Counties, Montana. The Fort Peck Reservoir is eligible for control of these invasive species in accordance with the National Invasive Species Act of 1996 and the Corps' Invasive Species Policy Memorandum dated June 2, 2009.

Three alternatives were analyzed, to which only two alternatives were considered for the control of these invasive species at the Fort Peck Reservoir. The two alternatives brought forward for further consideration are the No Action Alternative and the Action Alternative of control through the aerial application of the herbicides *imazapyr* and *glyphosate* for large infestations and the application of the herbicides *triclopyr*, *imazapyr* and *glyphosate* through foliar, cut-stump and basal bark methods to treat individual stands and areas of small infestations. The No Action Alternative is carried through analysis in order to establish a baseline of present conditions and the future of the proposed project area without action. The Action Alternative is the preferred alternative as it would proactively reduce invasive saltcedar and Russian olive within the proposed project area. The third alternative, control of saltcedar and Russian olive through water level manipulation in the Fort Peck Reservoir, was analyzed but eliminated from further consideration as it could conflict with the eight authorized purposes, is not economically feasible, nor an effective management tool for upland populations.

The EA and comments received from the resource agencies were used to determine whether the proposed action would require the preparation of an Environmental Impact Statement. All environmental, social, and economic factors relevant to the proposal were considered in this EA. No significant adverse impacts to these resources are expected to occur; in fact, the proposed project could contribute to improving the quality of habitat to provide increased benefits to native resident and migratory fish and wildlife species. The proposed action will be in compliance with applicable environmental statutes.

It is my finding, based on the EA that the proposed federal activity will not have any significant adverse impacts on the environment and will not constitute a major federal action significantly affecting the quality of the human environment. Therefore, an Environmental Impact Statement will not be prepared.

Date: 12/24/13



Joel R. Cross
Colonel, Corps of Engineers
District Commander

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ENVIRONMENTAL ASSESSMENT
CONTROL OF SALT CEDAR AND RUSSIAN OLIVE
FORT PECK RESERVOIR, MONTANA
December 2013

1. INTRODUCTION

Saltcedar (*Tamarix spp.*), belonging to the family Tamaricaceae, which is comprised of four genera and more than 100 species, is a deciduous woody shrub that originates from Eurasia, Africa, India and Japan. No species from the family Tamaricaceae is native to North America, and only one genus, *Tamarix*, of the four genera occurs in North America. This invasive plant species was thought to be first introduced to North America in the early 1800s along the east coast where it was sold as an ornamental shrub and also as a windbreak species. By the mid-1800s saltcedar was being sold in nurseries in California. From the 1920s to 1960s an estimated 10,000 acres had exploded to over 1.2 million total acres within the United States (Zouhar, 2003). In 2011, Montana Fish, Wildlife and Parks (MFWP) added saltcedar to its Aquatic Nuisance Species Priority List as a Priority Class 4 (MFWP, 2011). A Priority Class 4 means that this species is present and has the potential to spread throughout Montana but there are current management strategies available for control.

Saltcedar is now established throughout much of the United States, primarily along riparian corridors. Established monotypic stands outcompete native vegetation and decrease biodiversity which in turn provides limited habitat and food value for wildlife. Saltcedar is also known to alter the ecology and hydrology of native riparian systems (USDA, 2010). The dense root system can slow water flow which increases sediment deposition and creates stagnant water conditions (MFWP, n.d.).

Russian olive (*Elaeagnus angustifolia*) is another noxious species of concern that will be addressed in this Environmental Assessment (EA). This species also shares the same riparian habitat preferences as saltcedar. It is native to western Asia, parts of tropical Asia and southeastern Europe and was introduced to the western and central United States in the late 1800s as an ornamental and a windbreak species. Russian olive can quickly colonize an area due to a high tolerance of varying climatic conditions and rapid seed proliferation and dispersion (Collins, 2002).

1.1 Background

In 2004, the Fukang, China strain of the saltcedar leaf beetle (*Diorhabda elongata*) was released as a biological control agent in attempts to test the ability of the *D. elongata* as an efficient measure of control for saltcedar. Field trials were conducted at the Charles M. Russell National Wildlife Refuge (CMRNWR) in the Nelson Creek area, McCone County, Montana where approximately 215,000 adult beetles were released. To date, results have been disappointing with low beetle population growth rates and only minor feeding damage observed (Kazmer, 2006). Because of the low success rate of using this beetle as a biological control agent, methods of chemical application are being considered to treat large infestations of established saltcedar within the Fort Peck Reservoir area.

1.2 Project Authority

The proposed project is in accordance with the U.S. Army Corps of Engineers (Corps) Invasive Species Policy Memorandum dated June 2, 2009 (see Appendix A) which establishes a consistent, nationwide policy that is applied to all Civil Works projects and programs. The Corps recognized the need to create such a policy to compliment the National Invasive Species Act of 1996 (NISA) (16 U.S.C. § 4701 [PL 104-332]) which arose from the Non-indigenous Aquatic Nuisance Species Prevention and Control Act of 1990 (16 U.S.C. 4701, as amended through PL 106-580, December 29, 2000), to create measures to prevent or reduce invasive and non-native species as a component of all Corps Operations and Maintenance (O&M) Civil Works projects. In addition, this policy supports the Corps Environmental Operating Principles (EOP) and is applied to the execution of all Civil Works programs, to include Operations, Civil Works, Planning, Regulatory Actions, the U.S. Army Engineer Research and Development Center (ERDC) and the Invasive Species Leadership Team (ISLT).

This project is also supported by Executive Order (EO) 13112 which seeks to prevent the introduction of invasive species and authorizes control of said species to minimize economic, ecological and human health impacts.

1.3 Project Location

The Fort Peck Dam is located at river mile (RM) 1,771.5 in the Missouri River Basin. When the reservoir is at its maximum operating pool of 2,250 feet mean sea level (msl), the water surface of the lake is approximately 249,000 acres with approximately 1,520 miles of shoreline. When the reservoir is at its normal conservation pool of 2,234 feet msl the water surface of the lake is approximately 246,000 acres. The location of the proposed project would take place along the shoreline and in adjacent upland areas of the Fort Peck Reservoir area in McCone, Valley, Garfield, Phillips, Petroleum and Fergus Counties, Montana (refer to Figure 1). Two sites have been identified for treatment in the fall of 2014 (Seven Blackfoot Creek in Garfield County) and the fall of 2015 (Snow Creek in Greenfield County). Additional future sites within the Fort Peck Reservoir area may be selected at the Corps discretion. The proposed work would not take place on the surface waters of the reservoir and no chemical application would occur on the shoreline within 5 feet of the wetted perimeter surrounding the entire Fort Peck Reservoir. Figure 1 depicts the Corps boundary line and future herbicide application may occur within this area.

2. PURPOSE AND NEED

The purpose of the proposed project is to control the spread of saltcedar and Russian olive within the Fort Peck Reservoir by utilizing a variety of methods. The need for the proposed project stems from the requirement to meet the National Invasive Species Act of 1996 as well as to comply with the Corps' agency policy on control of noxious weeds. An additional need is to protect area recreation, fish and wildlife and the habitat upon which the species of the Fort Peck Reservoir and adjacent areas depend on.

Fort Peck Reservoir, Montana

Counties of McCone, Valley, Garfield, Phillips, Petroleum and Fergus

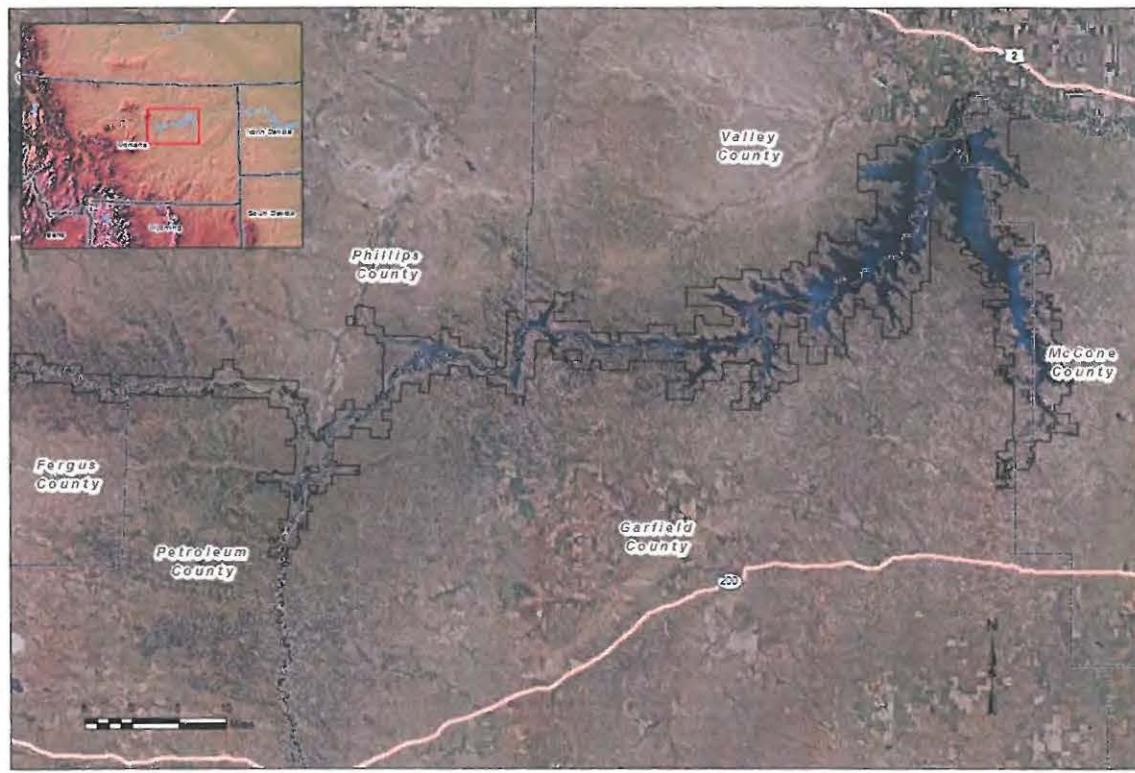


Figure 1. Proposed project location (property within black border) along the shoreline and adjacent upland areas of the Fort Peck Reservoir.

3. ALTERNATIVES CONSIDERED

3.1 Alternative 1: No Action

Under the No Action Alternative, no herbicides containing the chemicals *imazapyr* and *glyphosate* would be used to aerially treat saltcedar and Russian olive. Additional control methods for these woody species; foliar, cut-stump and basal bark applications using the herbicides *triclopyr*, *imazapyr* and *glyphosate* would also not be permitted.

According to the Corps' 2008 *Fort Peck Dam/Fort Peck Lake Master Plan and Integrated EA*, no detailed methods or materials are described for specific treatment of invasive species other than stating that “[t]he Corps is working cooperatively with other federal, state and local agencies to address the noxious weed problem at a statewide level” (USACE, 2008). The Montana Noxious Weed Summit Advisory Council (MNWSAC) is a conglomerate of state, federal and Tribal representatives that developed *Montana's Statewide Strategic Plan for Invasive Aquatic Plant Management and Resource Protection* (MNWSAC, 2011). This plan outlines various control methods, starting with public awareness and education to chemical and mechanical management strategies of invasive species. Non-chemical measures may continue to be utilized to assist in controlling saltcedar and Russian olive; however, such methods typically prove laborious or ineffective. While Alternative 1 would not meet the project purpose and need, it is carried forward for further consideration because it provides a benchmark against which to evaluate the impacts of the action alternative.

3.2 Alternative 2: Herbicide Application of *Imazapyr*, *Glyphosate* and *Triclopyr* to Control Saltcedar and Russian Olive

Under Alternative 2, the primary method of application to areas of large infestations would be treatment with the pre-emergent herbicides *imazapyr* and *glyphosate* through aerial spraying from a helicopter. Both of these herbicides have been approved for use in aquatic environments by the U.S. Environmental Protection Agency (EPA). Other methods for treatment would be foliar, cut-stump and basal bark application of the herbicides *triclopyr*, *imazapyr* and *glyphosate*. In order to control these invasive species, herbicide use is recommended as previous control methods such as *D. elongata* have failed. By evaluating the most effective and environmentally compatible herbicides for treatment of saltcedar and Russian olive, as well as developing treatment strategies that would prevent potential herbicide resistance in these noxious species, it is anticipated that the Corps' proposed measures would be more effective in managing infestations within the Fort Peck Reservoir area.

Aerial spraying would take place only to treat large areas of infestation of saltcedar and Russian olive through the use of a helicopter with an attached spray system. The process would start at a staging area coordinated by the Fort Peck Project Office where the helicopter would be loaded with water, herbicide, a surfactant and a drift retardant. A surfactant is used to enhance the performance of an herbicide by allowing the chemical mixture to spread, stick to and penetrate the plant. A surfactant with a LD₅₀ (median lethal dosage) of less than 10 mg/L (milligrams per liter) and labeled for use at aquatic sites, such as Agri-Dex® or equivalent surfactants, would be

added to the tank mixture if treatment sites are within 2,500 feet of a wetted perimeter. Other surfactants, such as R-11® may be used if the selected treatment area is 2,500 feet outside a wetted perimeter. R-11® has an EPA Inert Classification of 4-B, meaning EPA has concluded that there is sufficient information to conclude that current use patterns in pesticide products will not adversely affect public health and the environment (Diamond & Durkin, 1997). R-11®'s label states it may be used with aquatically labeled herbicides (see Appendix C); however, two studies which are further discussed in Section 5.8.1.2 and Section 5.8.4.2 have shown that Agri-Dex® has a markedly lower toxicity to aquatic fauna than R-11® and as such, would be selected over R-11® if treatment areas are within 2,500 feet of a wetted perimeter.

A drift retardant with a LD₅₀ of less than 10 mg/L labeled for use at aquatic sites, such as IN-PLACE® or an equivalent agent, would also be used. A drift retardant is an additive to the mixture which increases the viscosity of the liquid, thereby increasing drop size and making it less susceptible to wind. Drift retardants and surfactants will be collectively known as adjuvants throughout this document. An adjuvant is any additive used in conjunction with an herbicide to increase biological or herbicidal activity, efficacy or may alter physical properties of an herbicide to widen its range of usefulness. This total mixture of herbicide, water and selected adjuvants would be aerially applied at a rate of 15 gallons per acre with an estimated 6.67 acres covered for every 100 gallons of mixture. Two weeks prior to herbicide application at a proposed area, the spraying location and staging areas would be advertised in a press release in order to inform the public of temporary area closures (see Section 5.13). Best management practices (BMPs) would be implemented to minimize drift during helicopter application. See Appendix E for a complete list of BMPs. All product labels and guidance set forth by EPA would be adhered to. See Appendix C for product labels and Material Safety Data Sheets (MSDS).

Implementation of other on-the-ground methods would be utilized to treat smaller areas of infestation and single plants. The foliar application method is performed by applying herbicide to selected plants using a vehicle mounted broadcast sprayer, backpack sprayer or a hand sprayer, also known as an oil can. The cut-stump method would be performed by the manual or mechanical removal of saltcedar and Russian olive. Herbicide would then be applied to the stump in order to prevent the regrowth of adventitious shoots. Basal bark application consists of applying herbicide to the base of the shrub and would be done manually through the use of a backpack sprayer or oil can. These methods are particularly effective when a site can be difficult to access or when protection of other resources (environmental and cultural) are of specific concern (USDA, 2010). Dependent upon proximity to aquatic environments, selected surfactants would be added to the herbicides used for foliar applications of individual stands. For cut-stump and basal bark applications, an oil can with the appropriate herbicide mixture would be used. For all treatment sites where on-the-ground methods are being utilized, if a selected area is within 50 feet of a wetted perimeter or wetlands, only aquatically safe products would be utilized.

The herbicide *imazapyr* [2-(4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl)-3-pyridinecarboxylic acid] was first registered with EPA in 1985 and for aquatic use in 2003 (EPA, 2006). It is a systemic, non-selective herbicide used for pre- and post- emergent terrestrial and aquatic weeds. Systemic herbicides work through root or foliar adsorption and are then

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translocated to tissues throughout the plant. It is an amino acid synthesis inhibitor that targets pathways only found in flora. Because of its mode of action, it has a low toxicity to fauna. *Imazapyr* kills plants by inhibiting the production of amino acids, the branch-chained aliphatic amino acids, required for DNA synthesis and growth. Plant death takes approximately a month depending upon climatic conditions (WSDA, n.d.). The average half-life of *imazapyr* in soil is anywhere from 25 to 141 days and is primarily degraded through microbial metabolism and photolysis (chemical breakdown through light). Habitat® is approved for aquatic environments by the EPA and would be utilized for aerial spraying while Chopper® and Stalker® would only be used for the on-the-ground foliar, cut-stump and basal bark methods where treatment sites are outside of a 50-foot buffer from the wetted perimeter of the reservoir. Any on-the-ground treatment sites selected within 50 feet of a wetted perimeter or wetlands would use the aquatically approve formulation of *imazapyr*.

Glyphosate [N-(phosphonomethyl)glycine] was first registered with EPA in 1974 and has since been reregistered in 1993. Like *imazapyr*, it is also a systemic, non-selective herbicide that affects the shikimic acid pathway, another pathway only found in flora. This herbicide acts on the enzyme 5-enolpyruvylshikimate-3-phosphate (EPSP) synthase that then results in a reduction of amino acids that are necessary for protein synthesis and plant growth. The average half-life of *glyphosate* is approximately 47 days and is degraded primarily through microbial metabolism. Rodeo® would be used for aerial application as this formulation is aquatically approved and may be used for any of the on-the-ground methods.

Triclopyr [3,5,6-trichloro-2-pyridinyloxyacetic acid] is a selective, systemic herbicide used to treat broadleaf weeds and brush. *Triclopyr*, an auxin mimic, works by moving through plant tissue and interrupting cell growth and division. *Triclopyr* triethylamine salt (TEA) was first registered in 1979 and *triclopyr* butoxyethyl ester (BEE) was registered in 1980. Both formulations were reregistered in 1998. It has a soil half-life of approximately 30 days and is degraded through microbial metabolism, photolysis and hydrolysis (chemical breakdown through water). The brands of *triclopyr* that would be used for the on-the-ground foliar, cut-stump and basal bark application methods include Garlon 3A® (*triclopyr* TEA), Garlon 4® (*triclopyr* BEE), Garlon 4 Ultra® (*triclopyr* BEE), Remedy® (*triclopyr* BEE) and Renovate 3® (*triclopyr* TEA). Garlon 3A® and Renovate 3® are both approved for use in aquatic environments by the EPA and would be the formulations used if the selected treatment area is within 50 feet of a wetted perimeter or wetlands. No formulations of *triclopyr* are being proposed for aerial application.

All aerial herbicide spraying would be conducted from August to October on an annual basis as typically winds are much calmer and there is less precipitation during this time frame. Additionally, all on-the-ground applications would be conducted from March to May on an annual basis in order to effectively manage and control infestations and to prevent reoccurrences. Currently, two treatment sites have been selected for the fall of 2014 (Seven Blackfoot Creek in Garfield County) and the fall of 2015 (Snow Creek in Greenfield County). Additional future sites within the Fort Peck Reservoir area may be selected at the Corps' discretion. No more than 500 acres would be aerially treated per year and no more than 300 acres per year would be manually treated with the foliar, cut-stump and basal bark methods.

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4. ALTERNATIVES ANALYZED BUT NOT BROUGHT FORWARD FOR FURTHER CONSIDERATION

4.1 Alternative 3: Water Level Manipulation

Maintaining the Fort Peck Reservoir at full pool capacity for an extended period of time could naturally reduce and eliminate shoreline populations of saltcedar and Russian olive, as was apparent during the 2011 period-of-record high water event. In June of 2011, an all time elevation record was set through the combination of rain and snowmelt, in which the reservoir gained 14 vertical feet (MFWP, 2012).

The natural increase in reservoir water levels inundates shoreline stands; however, maintaining the reservoir at full pool capacity for controlling invasive species is not a viable alternative as it would greatly affect the multipurpose objectives of the Missouri River Reservoir System (System) and could cause adverse impacts to downstream users. The Corps operates and manages the System for eight congressionally authorized purposes; 1) flood control; 2) water supply; 3) navigation; 4) water quality; 5) irrigation; 6) recreation; 7) hydropower and 8) fish and wildlife. Furthermore, operation of the System must comply with other applicable federal statutory and regulatory requirements, including the Endangered Species Act. Water is allocated throughout the Missouri River Basin to satisfy these purposes.

In addition, water level manipulation would be ineffective in controlling stands that occur in the adjacent upland areas of the Fort Peck Reservoir. It is reasonable to assess that even if shoreline populations were controlled through water level manipulation, upland stands would still need to be managed through herbicidal control. If upland stands of saltcedar and Russian olive were not managed, there is a high potential that these species would re-colonize shoreline areas previously eradicated as saltcedar reproduces through vegetative shoots and seeds that are dispersed by water and wind.

Because this alternative is not conducive with the Corps' congressionally authorized purposes, nor does it effectively manage upland populations of invasive saltcedar and Russian olive, it is not being brought forward for further consideration.

5. EXISTING CONDITIONS AND ENVIRONMENTAL CONSEQUENCES

The current environmental conditions and the resources listed below provide information where it exists and references important information from previous documentation regarding current conditions. The affected environment in the proposed project area was assessed through aerial photographs and literature searches. The majority of the information about the physical environment was derived from the Corps' 2008 *Fort Peck Dam/Fort Peck Lake Master Plan and Integrated EA* as well as the U.S. Fish and Wildlife Service (USFWS) 2012 *Comprehensive Conservation Plan: Charles M. Russell and UL Bend National Wildlife Refuges, Montana* document.

Environmental consequences have been integrated with the affected environment to show the degree of potential impacts to individual resources; these impacts may either be positive or negative in nature.

5.1 Physiography and Topography

Because the Missouri River marks the southernmost advance of the Pleistocene glaciers in eastern Montana, this creates a sharp transition in topography. The glaciated northern portion of the river is relatively smooth with rolling uplands, while the unglaciated southern side is rugged and characterized by low hills and badlands. Uplands, breaks and floodplains dominate the Fort Peck Reservoir and surrounding lands. Upland areas are level to rolling prairies with the sagebrush-grassland plains vegetative communities while the floodplains are characterized by deciduous trees, sagebrush and grassland that are relatively flat (USACE, 2008).

5.1.1 No Action

Under the No Action Alternative, no aerial or manual application of herbicides would take place to control invasive saltcedar and Russian olive. No negative impacts would occur to physiography or topography through the implantation of this action.

5.1.2 Alternative 2 (Preferred Alternative)

Under Alternative 2, the herbicides *imazapyr* and *glyphosate* would be used to aerially treat large infestations of saltcedar and Russian olive. *Triclopyr*, *imazapyr* and *glyphosate* would be used to treat small infestations and single stands of the invasive species. This proposed action would have no adverse effects on physiography or topography.

5.2 Climate

According to the *Fort Peck Dam/Fort Peck Lake Master Plan and Integrated EA*, climate conditions are marked by distinct seasonal change. The proposed project area experiences winters that are typically cold with severe blizzards and summers that are hot. The mountains to the west block moist, cool Pacific Ocean air masses, though there is no barrier to the north or south. In the winter, cold, dry air masses flow over the area from the north, and in the summer warm, humid air masses from the tropical regions flow over the area. Because of these air masses and their associated fronts, the area typically experiences windy conditions and large day-to-day temperature fluctuations throughout all seasons (USACE, 2008).

5.2.1 No Action

The No Action Alternative would have no negative impacts on climatic conditions of the proposed project area.

5.2.2 Alternative 2 (Preferred Alternative)

Carbon dioxide (CO₂) emissions are becoming an increasing concern on the negative impacts to global warming and climate change. Climate change is a natural trend in our planet's history. Over 650,000 years, seven cycles of glacial advancement and retreats have occurred, impacting climate change. The last ice age occurred about 7,000 years ago which marks the current climate era of today. The heat-trapping nature of CO₂ has been demonstrated in the relatively sudden and dramatic shift to warmer temperatures. Atmospheric CO₂ has historically been below 300 parts per million (ppm), but since 1950 has precipitously inclined to today's current level, over 380 ppm (NASA, 2013).

BMPs, such as avoiding idling engines and utilizing only the smallest amounts of chemicals necessary, would be implemented. One of *triclopyr*'s final degradates is CO₂ (see Section 5.3.2).

As responsible stewards of the environment, it is important to reduce the carbon footprint of all actions where feasible and practical. No major long-term adverse effects are expected with the action alternative as the amount of CO₂ emitted from the use of *triclopyr* or through the use of associated equipment is not expected to be in excessive quantities.

5.3 Soils

There are four major soil orders within the Fort Peck Project area, Aridisols, Entisols, Mollisols and Vertisols. Aridisols, typically characteristic of dry areas, are found primarily on the gentle slopes found in Garfield and McCone Counties. Entisols are primarily found within the floodplains that include alluvial deposits from streams and sedimentary deposits. Mollisols are prairie soils found in areas with greater rainfall and are considerably limited in the Fort Peck Project area. The Vertisols are typically located north of the Missouri River and are found on sloping uplands (USFWS, 1985 as cited in USACE, 2008).

5.3.1 No Action

Under the No Action Alternative, no herbicidal spraying, aerial or manually applied, would take place. While no chemicals would be introduced to the environment, soil conditions could continue to deteriorate within the Fort Peck Reservoir area if the invasive saltcedar and Russian olive are not controlled. Vegetative communities have the ability to alter and form soil chemistry. Saltcedar, as its name implies, extracts salt from the groundwater and subsequently excretes these compounds through tissues and deposits them onto the soil surface through leaf senescence (death) and exudation (emission) (Ladenburger et. al., 2006 as cited in Cederborg, 2008). When excess soluble salts are present, nutrients such as calcium and magnesium become severely decreased. Additionally, sodium can disrupt particles that hold certain soil types together, causing erosion and runoff (Cederborg, 2008).

5.3.2 Alternative 2 (Preferred Alternative)

No long-term adverse impacts are likely to occur to soil from the proper and careful use of the herbicides *imazapyr*, *glyphosate* and *triclopyr*. In soil, *imazapyr* is considered persistent and mobile. Degradation through photolysis in aerobic soil has a half-life of approximately 149 days and a half-life of approximately 296 days if degraded through soil metabolism in aerobic conditions (EPA, 2006). Despite the longevity of *imazapyr*, it can be strongly adsorbed by soils and leaching into groundwater is generally not of concern as it rapidly degrades in water with a half-life of approximately 2 days. Only the aquatically approved formulation of *imazapyr* mentioned in Section 3.2 would be used for aerial application for large infestations of saltcedar and Russian olive or for on-the-ground application if the selected treatment site is within 50 feet of a wetted perimeter or wetlands. The other two formulations would be utilized for the manual application methods if the selected treatment site is 50 feet or more outside of a wetted perimeter or wetlands.

Glyphosate has a half-life of approximately 2 days in aerobic soil conditions. In studies reviewed by the EPA, bareground field dissipation trials from eight sites showed a median half-life for *glyphosate* applied at maximum annual use rates (not to exceed 10.7 lbs/acre) was approximately 13.9 days. When aerially applied at 3.75 lbs/acre to vegetated areas, *glyphosate* had an average of 652 to 1273 ppm on tree foliage post-treatment, then declined rapidly with a

half-life typically less than one day. This study showed that when glyphosate is used under normal practices in accordance with label directions, maximum combined glyphosate and its major degradate, aminomethyl phosphonic acid (AMPA) residue in soil was less than 5 ppm (EPA, 1993).

Triclopyr TEA will rapidly disassociate in water to parent compounds triclopyr acid/anion and triethanolamine while *triclopyr* BEE rapidly hydrolyzes to triclopyr acid/anion and butoxyethanol. Triethanolamine and butoxyethanol both will dissociate to the triclopyr anion at a pH > 5, meaning triclopyr acid will be the predominant residual compound left in the environment. Triclopyr acid is somewhat persistent and mobile as under normal environmental conditions, *triclopyr* TEA dissociates to the acid within minutes and the BEE formulation degrades to the acid within approximately 3 hours. In soil, the predominant degradation mechanism for triclopyr acid is biotic metabolism, and in aerobic conditions, has a half-life of approximately 8 to 18 days (EPA, 1998). Triclopyr acid degrades to 3,5,6,-trichloro-2-pyridinol (TCP) and 3,5,6-trichloro2-methoxypyridine (TMP) where the ultimate degradate is CO₂. In studies conducted by EPA, both TCP and TMP were recovered in vegetated soil up to 36 weeks (252 days) and recovered in bare soil up to 63 weeks (441 days) after treatment (EPA, 1998). Treatment would only take place in vegetated areas, and the use of this chemical would only be concentrated to individual stands and small infestations of saltcedar and Russian olive through the use of a vehicle mounted sprayer, backpack sprayer or hand sprayer.

No long-term, adverse impacts are expected to occur to soil conditions as all product labels and EPA guidance would be followed. Additionally, soil monitoring would take place on treated areas. Random transects would be selected in treatment areas prior to treatment and samples would be taken on an annual basis for three years post-treatment to ensure soil quality and environmental health is not being negatively affected.

5.4 Wetlands

Several types of wetlands occur within the Fort Peck Reservoir area which include extensive open shallows of the lake, nearly barren beaches and sandbars, small ponds and seasonally flooded riparian areas. The open shallows of the lake include waters that are less than 6 foot in depth and are found along the shoreline, especially in embayments, and in the natural river reach of the reservoir between the Musselshell River and the James Kipp Recreation area. During periods of low water, beaches fringe most of the reservoir. A number of stock watering reservoirs were constructed in areas within the Fort Peck Reservoir and adjacent areas within the last several decades. Many of these areas have proven productive for waterfowl and recreational opportunities. These areas receive periods of natural inundation in the spring and support stands of cottonwood (*Populus deltoides*) and willow (*Salix spp.*) (USACE, 2011).

5.4.1 No Action

Under the No Action Alternative, no herbicides would be used to control saltcedar and Russian olive within the Fort Peck Reservoir area. This could negatively impact wetlands as not only can water quality degrade (see Section 5.5.1) but native wetland vegetation could be choked out from both large or localized infestations. Wetland habitat could be severely diminished within the Fort Peck Reservoir area if these invasive species are not controlled.

5.4.2 Alternative 2 (Preferred Alternative)

By implementing Alternative 2, the aquatically approved formulations of *imazapyr* and *glyphosate* would be aerially applied to large infestations of invasive saltcedar and Russian olive. No long-term adverse impacts are expected to occur to wetlands from this proposed action, as surface waters would be completely avoided, and only previously established wetlands that have already become degraded with heavy infestations of these invasive species would be treated with the aerial application method. Additionally, BMPs to reduce aerial drift and runoff would be followed, such as not applying herbicides if wind speeds are greater than 10 mph and herbicide application would not take place if rain is imminent within 48 hours (see Appendix E for a complete list of BMPs).

On-the-ground methods with herbicides would not be utilized in wetland areas unless they are aquatically approved formulations of *triclopyr* (Garlon 3A® and Renovate 3®), *imazapyr* (Habitat®) or *glyphosate* (Rodeo®). All product labels and EPA guidance would be followed (see Appendix C for product labels and MSDS).

5.5 Water Quality

In accordance with the Clean Water Act (CWA) (33 U.S.C. §1251), states, Tribes, or the EPA must develop standards for their jurisdiction. Pursuant to the CWA, water quality consists of three components: 1) designated and existing uses, 2) water quality criteria necessary to protect these uses, and 3) an anti-degradation policy (40CFR Part 131.6; USACE 2008). Surface and groundwater water quality standards have been set forth by the Montana Water Quality Act and the CWA to include parameters such as pollutants, temperature and dissolved oxygen levels. In accordance with Section 303(d) of the CWA, states must identify surface waters that do not meet EPA-approved water quality standards. These affected waters must be placed on a 303(d) list which requires these waters to have total maximum daily load (TMDL) developed. A TMDL is based on the maximum amount of a pollutant that a body of water can receive and still meet water quality standards set forth and on an allocation of that pollutant amount among various sources. The Fort Peck Reservoir (EPA Waterbody ID # MT40E004_010) is currently on the 303 (d) impaired waters list due to levels of lead and mercury (EPA, 2013). However, the Fort Peck Reservoir has been found to be fully supporting of agricultural, drinking water, industrial and recreation uses, as well as partially supporting aquatic life and cold-water fishes (USACE, 2008).

5.5.1 No Action

Under the No Action Alternative, no negative impacts to water quality would occur as the herbicides *imazapyr* and *glyphosate* would not be used for aerial application and the herbicides *triclopyr*, *imazapyr* and *glyphosate* would not be used for on-the-ground treatment of the invasive species saltcedar and Russian olive. However, water quality could be negatively affected if these invasive species were left unmanaged. Large infestations could alter flows through increased siltation. Dense root systems can penetrate to a depth of 30 feet which can greatly contribute to increased transpiration rates that reduce water flow (USDA, 2010). This can increase sedimentation and create stagnant water conditions (MFWP, n.d.).

5.5.2 Alternative 2 (Preferred Alternative)

Under Alternative 2, aerial application of *imazapyr* is not expected to have harmful effects on water quality as only aquatically approved formulations of this chemical would be utilized and no herbicide would be directly applied to surface waters. Water contamination is generally not of concern as the primary form of degradation in water is photodegradation with a half-life of approximately 2 days (WSDA, n.d.). *Imazapyr* exposure to drinking water can occur from runoff, through groundwater, as well as aerial drift to surface waters. No cancer concentration limitations have been set for drinking water as *imazapyr* is considered “not likely to be carcinogenic in humans” (EPA, 2006).

Various models were used to predict drinking water concentrations from terrestrial applications. Modeled concentrations of *imazapyr* in ground water are not anticipated to exceed 36 $\mu\text{g/L}$ (micrograms per liter). This ratio was established using the maximum application rate of 1.5 lbs/acre (EPA, 2006). The estimated drinking water concentrations (EDWCs) for both surface and ground water from direct application to surface water are both 61 $\mu\text{g/L}$ (EPA, 2006), however, the proposed action would not apply any herbicides to surface waters. Health-Based Screening Levels (HBSLs) are benchmark concentrations of contaminants in water that may be of potential concern for human health, if exceeded. The HBSL established for *imazapyr* is 20,000 $\mu\text{g/L}$. Based on EPA’s determination, the dietary and aggregate risks (food, drinking water and residential exposure) for *imazapyr* are below EPA’s level of concern.

As previously stated, only the aquatically approved formulation of *glyphosate*, Rodeo®, would be used for aerial application. *Glyphosate* would primarily enter water from runoff or drift. The maximum contaminant level (MCL) set forth by EPA is 700 parts per billion (ppb) (EPA, 2012). *Glyphosate* can readily be removed from water supplies by conventional treatment methods such as sand filtration and through chlorination.

Triclopyr is not currently regulated under the Safe Drinking Water Act (SDWA); therefore, no MCL has been established. *Triclopyr* does not meet the detection triggers in ground water for recommending restricted use; however, this is in part due to limited monitoring of residues within the United States. Where data is available, the degradate of *triclopyr*, TCP, was found at 30 to 40 ppb in 30-45 centimeters (cm) of soil one week, two weeks and eight weeks after treatment, suggesting there may be limited leaching of *triclopyr* and TCP under certain conditions (EPA, 1998). Environmental fate studies reviewed by EPA have shown that *triclopyr* is non-persistent on surface waters. *Triclopyr* TEA has a half-life of 0.7 to 1.7 days in river water and the BEE formulation has a half-life of 0.5 days in natural water. While no herbicides are being applied on or near surface waters, there is only a small potential for *triclopyr* to be transported to surface waters via runoff, as this chemical does not adsorb to soil or soil particles (EPA, 1998). Application of this herbicide would not take place if rain is imminent within 48 hours post-treatment in order to minimize runoff potential.

Adjuvants are not regulated by EPA, therefore, no established concentrations for drinking water currently exist for these products. IN-PLACE® is a mixture of petroleum distillate and modified vegetable oil and according to the product label can be used in conjunction with aquatic labeled products (see Appendix C). R-11® is also recommended for use in aquatic environments with

herbicides such as glyphosate at 64 fl.oz/ 100 gallons of spray solution, however, has a much higher toxicity than Agri-Dex® (see Section 5.8.1.2 and Section 5.8.4.2); therefore, the proposed work at the Fort Peck Reservoir would not utilize R-11® if the area to be aerially treated is within 2,500 feet of a wetted perimeter or wetland areas. On-the-ground methods used within 50 feet of a wetted perimeter or wetlands would only use aquatically approved herbicides with aquatically friendly adjuvants, such as Agri-Dex®.

Neither aerial nor on-the-ground spraying techniques would apply herbicides or adjuvants directly to surface waters. The potential of adverse effects with the use of these products to water quality are extremely minimized as all spraying would focus on vegetated environments and the likelihood of aerial drift and runoff would only take place in negligible quantities if at all. All product labels' guidance in regards to application setbacks from potable water and irrigation intakes would be strictly adhered to. Additionally, the use of the drift retardants and surfactants would help minimize contamination to adjacent, non-target areas and assist by ensuring the chemicals better adhere to the plants. All product labels would be strictly adhered to (see Appendix C for a complete listing of all product labels and MSDS).

5.6 Air Quality

The Montana Department of Environmental Quality (MDEQ) regularly monitors ambient air quality standards (AAQS) throughout the state. While no air quality monitoring stations exist within the Fort Peck Reservoir area, all the counties within the associated region of the state and proposed project area are in attainment of federal and state AAQS (EPA, 2007 & MDEQ, 2007 as cited in USACE, 2008).

5.6.1 No Action

Under the No Action Alternative, no negative impacts to air quality are expected to occur. No herbicides would be used to treat invasive saltcedar and Russian olive.

5.6.2 Alternative 2 (Preferred Alternative)

The herbicide application involved is not expected to have an appreciable effect on overall air quality because of the rapid dilution of these chemicals in the air. Overall AAQS would not be negatively impacted through the implementation of Alternative 2. However, occupational exposure may temporarily and minimally effect localized air quality though the impacts are expected to be negligible. Post-treatment of *imazapyr*, a 48-hour restricted entry interval (REI) must be set due to the high acute toxicity of it being a Category I eye irritant (see Table 1 for a list of Category descriptions). Therefore, proper safety glasses or goggles would be used during application. There are no inhalation risks for *imazapyr* or *glyphosate*. *Glyphosate* has a low toxicity rating for eye irritation and is listed as a Category III irritant. *Triclopyr* is also a Category I eye irritant and therefore has the same REI as *imazapyr*. *Triclopyr* has an inhalation toxicity Category IV. All product label guidance would be followed and safety equipment would be used to minimize negative consequences.

Emissions from equipment use are not expected to have lasting effects on air quality. BMPs, such as powering off equipment when not in use would be implemented to reduce impacts to air quality.

Table 1. Acute toxicity categories for pesticide products, derived from 40 CFR § 156.64.

Hazard Indicators	Category I	Category II	Category III	Category IV
Oral LD ₅₀	Up to and including 50 mg/kg	>50 thru 500 mg/kg	>500 thru 5000mg/kg	>5000 mg/kg
Dermal LD ₅₀	Up to and including 200 mg/kg	>200 thru 2000 mg/kg	>2000 thru 20000 mg/kg	>20000 mg/kg
Inhalation LC ₅₀	Up to and including 0.2 mg/L	>0.2 thru 2mg/L	>2 thru 20 mg/L	>20 mg/L
Eye Irritation	Corrosive; corneal opacity not reversible within 7 days	Corneal opacity reversible within 7 days, irritation persisting for 7 days	No corneal opacity; irritation reversible within 7 days	No irritation
Skin Irritation	Corrosive	Severe irritation at 72 hours	Moderate irritation at 72 hours	Mild or slight irritation at 72 hours

5.7 Noise

Under the Noise Control Act of 1972 and its amendments (Quiet Communities Act of 1978; U.S.C. Title 42, Parts 4901-4918), states have the authority to regulate environmental noise by which governmental agencies must comply with in addition to community noise policies and regulations. Noise conditions in the Fort Peck Reservoir and adjacent areas vary depending upon recreational usage, which is typically seasonal. Because of the distance from populous areas and limited access on the Fort Peck Reservoir, visitation is commonly low. Thus, the noise condition is relatively low, which is characteristic of a natural setting with infrequent intrusions of man-made noise (USACE, 2008).

5.7.1 No Action

Under the No Action Alternative, no significant increase in noise levels would occur.

5.7.2 Alternative 2 (Preferred Alternative)

Temporary noise disturbances during treatment periods would occur in the form of equipment use, such as helicopters and sprayers. BMPs, such as turning off equipment when not in use would be implemented to reduce noise impacts.

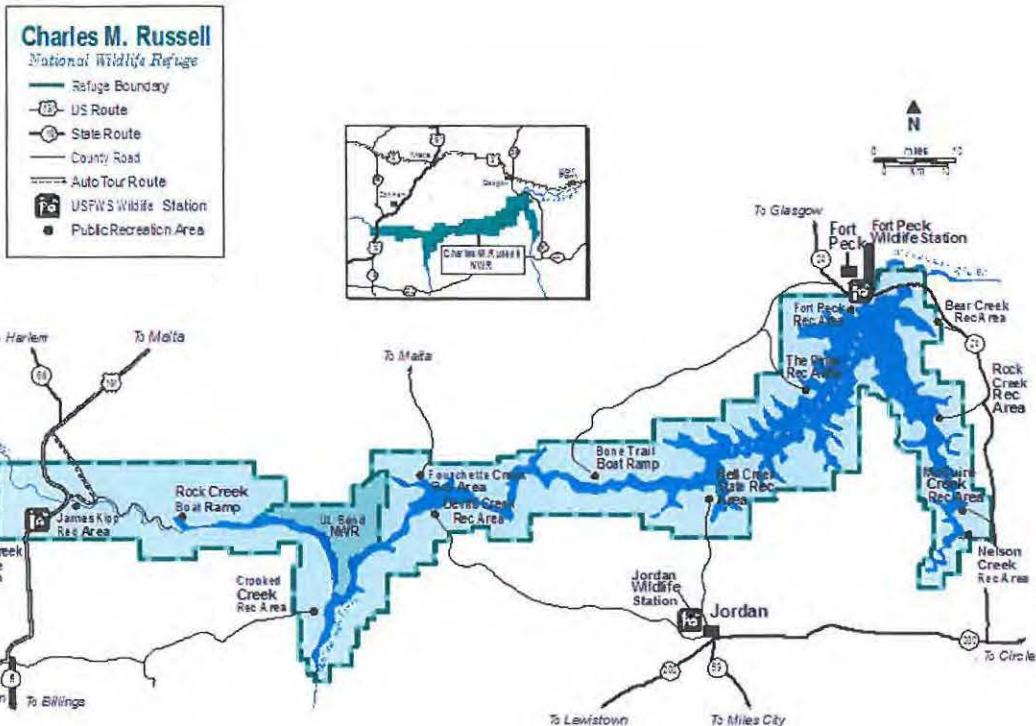


Figure 2. Charles M. Russell National Wildlife Refuge in north-central Montana. Photo derived from the USFWS at [http://www.fws.gov/uploadedFiles/CMR_GBmap\(1\).pdf](http://www.fws.gov/uploadedFiles/CMR_GBmap(1).pdf)

5.8 Fish and Wildlife

The Fort Peck Reservoir and adjoining areas are hosts to a variety of fish and wildlife species that promote an intrinsic and esthetic value to the area. E.O. 7509 dated December 11, 1936 set aside 1.1 million acres and designated it a National Wildlife Refuge (NWR), now known as the Charles M. Russell National Wildlife Refuge (CMRNWR). The CMRNWR is located in north-central Montana all along the Fort Peck Reservoir (see Figure 2). The CMRNWR 2003 Wildlife Checklist, the recently published USFWS *Comprehensive Conservation Plan: Charles M. Russell and UL Bend National Wildlife Refuges, Montana* (May 2012), and the *Fort Peck Dam/Fort Peck Lake Master Plan and Integrated EA* depict the most accurate and complete list of species occurrences to the proposed project site. Therefore, it is assumed species located within the CMRNWR have great potential to occur at or near the project site.

5.8.1 Fish

The area supports a diversity of warm and cold water fishes including the shovelnose sturgeon (*Scaphirhynchus platorynchus*), a close relative of the endangered pallid sturgeon (*Scaphirhynchus albus*) (see Section 5.9.1). Other species of note include; paddlefish (*Polyodon spathula*), catfish, sport fish such as largemouth bass (*Micropterus salmoides*), sauger (*Stizostedion canadense*), walleye (*Stizostedion vitreum*), and northern pike (*Esox lucius*), as well as a variety of minnows and suckers. Some cold water fish in the Salmonidae family, such as the Chinook salmon (*Oncorhynchus tshawytscha*) are also located in these waters.

A total of 16 species have been introduced to the Fort Peck Reservoir, including walleye and northern pike in 1951. Fishery crews have collected approximately 85 million walleye eggs annually for a 10-year average in the Big Dry Arm of the reservoir. These walleye eggs are then transferred to the Fort Peck Hatchery or the Miles City Hatchery where 75 % of all walleye production at these two locations is used to stock Fort Peck (USACE, 2008). Other species introduced include the lake trout (*Salvelinus namaycush*) in the 1950s, smallmouth bass (*Micropterus dolomieu*) in 1981, and Chinook salmon in 1983, as well as forage fish, cisco (*Coregonus artedi*) and spottail shiners (*Notropis hudsonius*).

5.8.1.1 No Action

Under the No Action Alternative, no herbicides would be used to treat saltcedar or Russian olive. While there would be no direct negative impacts, there could be indirect adverse effects to fish under the No Action Alternative. By not effectively controlling these invasive species, they could eventually overtake susceptible aquatic habitats. As mentioned previously (see Section 5.5.1), dense stands of saltcedar can alter hydrology. It is reasonable to predict that the increased sedimentation from the dense root system could dry up small springs, marshes and ephemeral streams that native fish species may utilize.

5.8.1.2 Alternative 2 (Preferred Alternative)

Implementing Alternative 2 would not have any long-term adverse impacts to fish. While surface waters are being completely avoided under this proposed action, there is a possibility of small amounts of the herbicides *imazapyr*, *glyphosate* and *triclopyr* to enter into a water body through aerial drift or runoff. Only the aquatically approved formulations of *imazapyr* and *glyphosate* are being utilized for aerial treatment, and only aquatically approved formulations of *triclopyr*, *imazapyr* or *glyphosate* would be utilized for the manual application methods if the selected treatment site falls within 50 feet of a wetted perimeter or wetland.

Imazapyr is considered practically non-toxic to fish by EPA. The acute toxicity LC₅₀ (median lethal concentration) for the tested species, rainbow trout (*Oncorhynchus mykiss*), channel catfish (*Ictalurus punctatus*) and bluegill (*Lepomis macrochirus*) were above 100 mg/L, greater than the highest concentration tested. Because the level of concern (LOC) was not exceeded, acute risks were not calculated when *imazapyr* was reregistered (EPA, 2006). As previously stated, *imazapyr* effects a chemical pathway found only in flora (see Section 3.2) and is therefore not considered specifically toxic to fauna.

The *glyphosate* formulation proposed for use under the action alternative, Rodeo®, is practically non-toxic to fish. Acute toxicity findings reviewed by the EPA produced a range of LC₅₀ dependant on the tested species. For the representative cold-water species, rainbow trout, the LC₅₀ was 140 mg/L, and the two warm-water sample species, bluegill and channel catfish, were 150 mg/L and 130 mg/L respectively (Miller et al., 2010).

Triclopyr acid and *triclopyr* TEA, as with the two previous chemicals, are also considered practically non-toxic to fish, however *triclopyr* BEE is highly to moderately toxic to fish. No BEE formulations (Garlon 4®, Garlon 4 Ultra® or Remedy®) would be used for the manual application methods if the selected treatment site is within 50 feet of any wetted perimeter. Both

triclopyr acid and TEA had an LC₅₀ over 100 mg/L in both the cold-water and warm-water test species while BEE had an LC₅₀ ranging from 0.1 to 10 ppm (approximately 1 to 10 mg/L) for the same species (NPIC, 2002). Setting up the buffer zone of 50 feet from any wetted perimeter further allows the Corps to effectively treat invasive species while minimizing any potential harmful effects to fish.

R-11®'s active ingredient, nonylphenol polyethoxylate (NPE) is considered moderately toxic as a study on fathead minnows (*Pimephales promelas*) concluded an LC₅₀ value of 4.5 mg/L, while the metabolite of NPE, nonylphenol (NP) is slightly more toxic with an LC₅₀ of 0.13 mg/L. Both NPE and NP demonstrate estrogen-like properties which could prove to be a concern (Trumbo, 2005) as it may affect the endocrine system. Agri-Dex ® would be used in treatment areas within 2,500 feet of water as it is considered practically non-toxic, it has an LC₅₀ of greater than 1,000 mg/L according to a study on bluegill and rainbow trout while R-11® had an LC₅₀ of 4.2 and 3.8 mg/L, respectively, in the same study species (Diamond & Durkin, 1997).

5.8.2 Mammals

According to the *Comprehensive Conservation Plan*, the Fort Peck Reservoir and the surrounding areas are home to many large game species such as mule deer (*Odocoileus hemionus*), moose (*Alces alces*), elk (*Cervus canadensis*), and pronghorn (*Antilocapra americana*), as well as large carnivores such as black bear (*Ursus americanus*) and mountain lion (*Puma concolor*). The area is also home to a variety of bats, furbearers such as rabbit (*Sylvilagus spp.*), American beaver (*Castor canadensis*), striped skunk (*Mephitis mephitis*) and raccoon (*Procyon lotor*), as well as several species of weasel and the common porcupine (*Erethizon dorsatum*).

5.8.2.1 No Action

Under the No Action Alternative, no herbicide would be applied to saltcedar or Russian olive through aerial or manual means. This could negatively affect the wildlife that utilize the Fort Peck Reservoir area, as previously stated, saltcedar and Russian olive are highly invasive and tend to form dense stands of a monoculture. By reducing native vegetation, this would lead to a reduction in mammal biodiversity. Saltcedar provides little to no forage or habitat value, as the seeds have a low protein content and the scale-like leaves are not considered suitable for browsing herbivores such as deer, elk and moose (Hoddenbach, 1987). Russian olive may provide some benefits to mammals as some species feed on the berries; however, the overall detrimental effects such as displacement of wildlife that infestations can create far outweigh any foraging benefits.

5.8.2.2 Alternative 2 (Preferred Alternative)

If saltcedar and Russian olive are chemically controlled, native vegetation could return to the heavily infested areas, leading to an increase in wildlife biodiversity. In studies reviewed by EPA, *imazapyr* is considered practically non-toxic to mammals as it targets the branch-chained aliphatic amino acids (see Section 3.2), a pathway that only occurs in flora. Acute oral studies conducted on rats produced an LD₅₀ of greater than 5,000 mg/kg (EPA, 1992) which places this chemical in toxicity Category IV (see Table 1). During a one-year feeding study conducted on

dogs, a No Observed Effect Level (NOEL) of 250 mg/kg/day was established, which was the highest dose given (EPA, 2006).

Glyphosate is also low in toxicity, in rats the LD₅₀ was greater than 4,320 mg/kg. As discussed in Section 3.2, *glyphosate* affects the shikimic acid pathway which is specific to plants. In a chronic toxicity study, domestic beagles were fed capsules of 0, 20, 100, or 500 mg/kg/day of *glyphosate* over a one-year period and no effects were observed for a NOEL of greater than 500mg/kg/day. Several mice and rat treatment groups were fed a diet containing varying levels of *glyphosate* over a two-year period, where in high dose treatment groups symptoms ranged from decreased weight gain, decreased urinary pH, increased liver weights and ocular cataracts. No symptoms were found in the low dose treatment groups, therefore the Lowest Observed Effect Level (LOEL) for systemic toxicity was 940 and 1183 mg/kg/day for males and females respectively (Miller et al., 2010).

One study looked at the potential for *glyphosate* to affect reproduction; rats were fed varying doses of 99% pure *glyphosate* over a three-week period and the two highest doses, 25,000 and 50,000 ppm, showed significant reduction in sperm concentrations and slightly longer estrus cycles. *Glyphosate* is currently on the draft list for screenings under the EPA Endocrine Disruptor Screening Program (EDSP) (Miller et al., 2010). Chemicals placed on this list are under consideration for screening not because of suspected potential of being an endocrine disruptor, but because of how heavily they are used throughout the country.

Triclopyr had an LD₅₀ of 1,847 and 830 mg/kg for the TEA and BEE formulations respectively and is therefore considered practically non-toxic as the LOC was not exceeded for the maximum amounts of herbicide allowable for application in one season on product labels. Developmental effects from oral dosing on pregnant rabbits occurred at 100 mg/kg/day for BEE formulations and 300 mg/kg/day in TEA formulations in rats. Fetuses lacked bone tissue formation, a decrease in mean body weight and an increase in skeletal abnormalities. Therefore, the BEE formulation LOEL is 100 mg/kg and NOEL is 30 mg/kg while the TEA formulation has a LOEL of 300 mg/kg and also a NOEL of 30 mg/kg. Long-term exposure studies found that dogs fed 20 mg/kg/day for 228 days exhibited decreased body weight, blood chemistry anomalies and an increase in liver and kidney weights. Lower doses (2.5-5 mg/kg/day) given over 183 days showed no symptoms (NPIC, 2002).

All product labels would be followed in order to minimize any potential effects of application on mammals. Application rates would not be exceeded and all guidance from EPA would be followed. No long-term adverse effects are expected to occur to mammals as the most common mode of toxicity is orally at high doses for long durations. Any mammal ingesting these herbicides from a secondary source, such as plant material, would not likely consume the amount necessary to exceed the prescribed LOEL for the individual chemicals.

5.8.3 Birds

According to the CMRNWR 2003 Wildlife Checklist, there are an estimated 276 species of birds that have been observed on or near the refuge. Of the 276 observed species, 125 of those are breeding species. Some breeding species of note are the American white pelican (*Pelecanus*

erythrorhynchos), double-crested cormorant (*Phalacrocorax auritus*) and golden eagle (*Aquila chrysaetos*). There are also five introduced species, two of which are gallinaceous birds; the gray partridge (*Perdix perdix*) and the ring-necked pheasant (*Phasianus colchicus*).

5.8.3.1 No Action

Under the No Action Alternative, no herbicides would be aerially or manually applied to control saltcedar or Russian olive. While some songbirds do utilize Russian olive for nesting and many species of waterfowl, game birds and songbirds forage on its berries, overall habitat diversity would continue to degrade as monotypic stands would take over native plant communities.

Saltcedar provides virtually no benefits to birds. According to a study of bird populations along the lower Colorado River, lower species richness and total density resulted in areas infested with saltcedar compared to areas with native vegetation (Anderson & Ohmart, 1984). In order to maintain native avian diversity found within the Fort Peck Reservoir, saltcedar and Russian olive need to be effectively controlled.

5.8.3.2 Alternative 2 (Preferred Alternative)

Under this alternative, the aquatically approved formulations of *imazapyr* and *glyphosate*, Habitat® and Rodeo®, respectively, would be utilized for aerial application to large infestations of saltcedar and Russian olive. Additionally, the herbicides *imazapyr*, *triclopyr* and *glyphosate* would be used to treat smaller areas of infestations and individual stands by the foliar, cut-stump and basal bark application methods.

As with mammals, *imazapyr* is practically non-toxic to birds as the pathway this chemical targets is only found in flora (see Section 3.2 and Section 5.8.2.2). The LD₅₀ is greater than 2,150 mg/kg for the study species, mallard duck (*Anas platyrhynchos*) and bobwhite quail (*Colinus virginianus*). Acute risks were not estimated because no mortality or other signs of toxicity occurred during acute oral and dietary studies, and the LOC was not exceeded for the registered uses and application rates (EPA, 2006).

Acute oral studies conducted on bobwhite quail showed that *glyphosate* is practically non-toxic to birds, with an LD₅₀ of greater than 2,000 mg/kg. Subacute dietary studies conducted both on mallards and bobwhite quail, where test species were fed technical grade *glyphosate* for 8 days, showed a LC₅₀ at greater than 4,640 ppm, making it no more than slightly toxic. This data reviewed by EPA does not indicate a requirement for precautionary labeling (EPA, 1993).

Both *triclopyr* TEA and BEE formulations are considered slightly toxic. Acute oral studies performed on mallards concluded an LD₅₀ of 2,055 mg/kg for *triclopyr* TEA and an LD₅₀ of 735-849 mg/kg in bobwhite quail for *triclopyr* BEE. Data collected on the major degradate of *triclopyr*, TCP, concluded that it is slightly toxic to practically non-toxic. On a subacute dietary basis, both formulations are practically non-toxic to birds, and TCP has a low toxicity. Chronic studies were also performed on birds because of *triclopyr*'s ability to somewhat persist in the environment, and it was determined reproduction may be affected at levels greater than 100 ppm (EPA, 1998). One study conducted in 1991 looked at the potential effects of *triclopyr* residues on forest songbirds by feeding 500 mg/kg/day of BEE (sub-lethal amounts) to zebra finches (*Taeniopygia guttata*) over a 29-day interval. Consumption and body weight significantly

decreased, however, prolonged exposure at lower doses (50-150 mg/kg/day) had no significant effect on the study species, and a conclusion was drawn that no significant adverse effects are expected at concentrations that are greater than expected environmental concentrations provided all product labels and prescribed application rates are followed (Holmes et al., 1994).

As previously stated, all herbicides would be used in accordance with product labels and applications rates and product usage would not exceed seasonal or annual limitations. No significant or long-term adverse effects are expected to occur to birds in treatment areas, as application duration and herbicide amounts would not be excessive.

5.8.4 Reptiles and Amphibians

The proposed project location and surrounding areas have a relatively limited amount of herpetofauna. It is thought that water impoundment had negative consequences on the herpetofauna, causing a severe loss of habitat (USACE, 2008). The tiger salamander (*Ambystoma tigrinum*); a handful of frogs, spadefoots, and toads; three species of turtle; and eight species of snake, including the venomous prairie rattlesnake (*Crotalus viridus*), are currently the only species known to reside in the area according to the *Comprehensive Conservation Plan*.

5.8.4.1 No Action

If the No Action Alternative is implemented, negative impacts to herpetofauna could occur if saltcedar and Russian olive are not effectively controlled. A study conducted in Arizona selected four habitat sites, one site being a dense strip of mature saltcedar trees that bordered the Gila River, to test for herpetofauna density. Of the four habitats, the saltcedar site had 3 to 5 times less individuals and the conclusion was formed that due to the dense canopy that the saltcedar formed, the herbaceous layers and light penetration were reduced. Because the structural diversity of the site was compromised, there would likely be less use of herpetofauna and the limited light reduced the temperature which can negatively impact heliothermic (gaining heat from the environment) species (Jakle & Gatz, 1985).

5.8.4.2 Alternative 2 (Preferred Alternative)

Unfortunately, not much information is available on herbicide effects specifically on herpetofauna. Typically, for reregistration with the EPA, toxicological results from studies conducted on fish are often extrapolated to amphibians. *Imazapyr* is considered practically non-toxic to mammals, birds, honeybees, fish and aquatic invertebrates, however there are uncertainties regarding potential toxic effects on reptiles and amphibians due to the lack of data. No studies have been submitted to the EPA (Durkin, 2011).

As is true with *imazapyr*, no specific studies analyze the potential effects of aquatically safe Rodeo® on herpetofauna. Many studies have analyzed the effects of *glyphosate* formulations such as Roundup® that contain the toxic surfactant polyoxyethyleneamine (POEA) and their adverse impacts on reptiles and amphibians. It is logical to conclude that the surfactant free formulation of *glyphosate* would pose less of a risk; however, a surfactant must be mixed with Rodeo®. One study analyzed the effects of the Rodeo®/R-11® mixture on the larval stages of the northern leopard frog (*Rana pipiens*). An application of the mixture was applied directly to a

water surface in order to determine “worst-case impacts” but comparison of toxic units concluded that toxicity was likely due to R-11®. It was determined that although Rodeo® could be toxic to larval amphibians at levels greater than 500 mg/L, R-11® could be toxic at 1 to 6 mg/L and in a 2:1 mixture, the toxicity of R-11® decreased very little (LC₅₀ value decreased by 1.8x), but the toxicity of glyphosate increased dramatically (LC₅₀ value decreased 208x) (Trumbo, 2005). Also, as previously stated (Section 5.8.1.2), the metabolites of the active ingredient in R-11® exhibit estrogen-like properties which would raise concern in susceptible groups of species such as herpetofauna. In order to minimize such negative consequences, the surfactant Agri-Dex® would be used in treatment areas within 2,500 feet of water and wetland areas, as these areas are typically the preferred habitat of herpetofauna.

There also have been no studies specifically analyzing the effects of *triclopyr* on herpetofauna, though toxicity studies conducted on fish (see Section 5.8.1.2) are often substituted toxicity endpoints for reptiles and amphibians. According the *Environmental Impact Statement for Permitted Use of Triclopyr*, no laboratory work was conducted on *triclopyr* TEA against amphibians but it is “anticipated that amphibians will be affected by *triclopyr* TEA both acutely and chronically at concentrations similar to affecting fish” (WSDE, 2004). *Triclopyr* TEA and BEE would only be utilized for the manual application methods that would be used to treat small areas of infestation or individual stands. Care would be utilized and all product guidance would be followed in order to minimize potential exposure and reduce adverse impacts.

5.8.5 Mussels and Macroinvertebrates

While no site-specific studies exist for the project area, in the state of Montana, there are three native and three non-native mussel species. The giant floater (*Pyganodon grandis*), the fatmucket (*Lampsilis siliquoidea*) and the western pearlshell (*Margaritifera falcata*) are all native species. The black sandshell (*Ligumia recta*), the mapleleaf (*Quadrula quadrula*) and the creek heelsplitter (*Lasmigona compressa*) are introduced species (Stagliano, n.d.).

In August of 2011, zebra mussels (*Dreissena polymorpha*), a small, invasive mollusk, were found attached to a boat trailer at a watercraft check station at the Fort Peck Reservoir (USFWS, 2011). This is cause for some alarm, as zebra mussels are highly aggressive and outcompete native species, as they prefer to attach themselves to the shells of live mussels. The zebra mussel is a Russian species and it has been generally accepted that they first established in the Great Lakes region in the late 1980's. As of 2011, in addition to Montana, they have been found in 30 states and documented in over 600 lakes and reservoirs (Benson, 2013).

Many species of insects also occur within the Fort Peck Project area; which include the lance-tipped darner (*Aeshna constricta*), which is a potential species of concern, several species of caddisflies, mayflies, the sand-dwelling mayfly (*Analetris eximia*), which is also a species of potential concern, butterflies, moths and beetles (Montana Field Guide, 2012).

5.8.5.1 No Action

Under the No Action Alternative, direct and indirect negative impacts could occur to macroinvertebrates through the loss of quality habitat if saltcedar and Russian olive cannot be

effectively managed. If these two invasive species continue to outcompete native plant communities, overall ecosystem biodiversity becomes severely compromised.

5.8.5.2 Alternative 2 (Preferred Alternative)

Under the preferred alternative, aquatically approved formulations of *imazapyr* and *glyphosate* would be used for aerial application to treat large infestations of saltcedar and Russian olive. There is no risk of concern associated with *imazapyr* to aquatic invertebrates or honeybees (EPA, 2006) as it is considered practically non-toxic. Exposure to mussels would occur through direct contact to surface water, and the proposed project does not include applying herbicide directly to surface waters.

According to studies analyzed by EPA, *glyphosate* is considered practically non-toxic to slightly toxic to freshwater invertebrates. The study species *Daphnia magna* (a freshwater water flea) had an LC₅₀ of 780 mg/L and *Chironomus plumosus* (a buzzer midge) had an LC₅₀ of 55 mg/L when exposed to technical 83% and 96.7% technical (pure) *glyphosate*, respectively in acute toxicity tests. A chronic toxicity test showed that *D. magna* had reduced reproductive capacity when exposed to 99.7% technical *glyphosate*. These results indicated that no precautionary labeling to aquatic invertebrates was necessary as negative effects are minimal. In honeybees, acute oral and acute contact studies were also conducted with 36% technical *glyphosate* and was found to be practically non-toxic, with an LD₅₀ of greater than 100 µ/bee (microgram per bee) (EPA, 1993).

Studies were also conducted using *D. magna* to determine potential toxicity of *triclopyr*. In acute studies, *triclopyr* acid and *triclopyr* TEA were both found to be practically non-toxic to aquatic invertebrates, while BEE was found to be slightly to moderately toxic. In chronic studies, TEA was found to affect total young and mean brood size of *D. magna*. While there is no EPA protocol for assessing risks to non-target insects, all forms of *triclopyr* were found to be practically non-toxic to honeybees, so it is not expected that insects would not be adversely affected with the proper and careful use of this herbicide (EPA, 1998).

All product labels and guidance from EPA would be followed in order to minimize potential harmful effects to macroinvertebrates. Established BMPs (see Appendix E) such as cleaning all boats, equipment and gear used at sites applied with herbicide would be thoroughly cleaned, decontaminated and inspected for zebra mussels in order to prevent the spread of this invasive mollusk.

5.9 Species of Special Concern

In accordance with Section 7 of the Endangered Species Act (7 U.S.C. § 136, 16 U.S.C. § 1531), the USFWS was consulted to obtain information on federally listed threatened and endangered species that have the potential to occur within the proposed project area.

5.9.1 Pallid Sturgeon

It is thought that river channelization and mainstem dam construction and operation have resulted in loss of habitat to the pallid sturgeon. The pallid sturgeon received a federally endangered status on September 6, 1990 (USFWS, 1998). This big river fish species was

historically found in the lower Mississippi, Missouri, and Yellowstone Rivers. Pallid sturgeons prefer turbid and murky water at a variety of depths ranging from 2 to 48 feet deep (Bramblett & White, 2001).

A conceptual life-history model was provided for the pallid sturgeon from a combined study conducted by the U.S Department of the Interior (DOI) and the U.S. Geological Survey (USGS). It has been determined that pallid sturgeon spawn between spring and summer upstream, after which the adults migrate downstream and overwinter. The larvae incubate upstream and drift downstream. It is thought that the timing of spawning has seasonally evolved through environmental cues such as hydrological flows. Since these flows have been altered through anthropogenic means, recruitment has suffered (Wildhaber et al., 2007).

In attempts to alleviate population constraints on this species, pallid sturgeons have been artificially propagated since 1994. Adult pallid sturgeons are captured, spawned, and released on an annual basis. In turn, fertilized eggs are retained until they have hatched and these juvenile fish are then reared in state and federal hatcheries. Though their spawning requirements are not directly known, it is thought they will spawn in the Fort Peck area in the months of May and June (USFWS, 1995; USACE, 2008).

5.9.1.1 No Action

Under the No Action Alternative, no negative impacts would occur to the pallid sturgeon, other than indirect impacts from a reduced terrestrial biodiversity. Reduced biodiversity leads to a weakened ecosystem, and this could eventually have negative impacts on the aquatic habitat or food sources that the pallid sturgeon relies on. Additionally, as stated in previous sections (see Section 5.5.1 and Section 5.8.1.1), water quality can become reduced from the behavior of saltcedar, as its dense stands alter hydrology through sedimentation, and dense root systems can stagnate water, increasing temperature and lowering dissolved oxygen levels. By not controlling these invasive species, there is potential for negative impacts to occur in shallower, shoreline susceptible aquatic habitats that may be used as foraging habitat for pallid sturgeon as smaller prey fish are often found in these conditions.

5.9.1.2 Alternative 2 (Preferred Alternative)

While no spraying would be applied directly to the water surface, aerial spraying would take place between August and October. It is reasonable to assume that larval stages of pallid sturgeon would be more susceptible than adults to any introduction of chemicals in the water (such as runoff); however, this timeframe is thought to be after pallid sturgeon have completed spawning and larval fish have already drifted downstream.

On-the-ground applications, however, would take place from March to May, which is thought to overlap with spawning season. BMPs would be followed, as any treatment site selected within 50 feet of a wetted perimeter would use only aquatically approved herbicides and aquatically friendly adjuvants. Additionally, no spraying would take place on the shoreline within 5 feet of the wetted perimeter surrounding the entire Fort Peck Reservoir. See Appendix E for a list of BMPs.

As previously stated in Section 5.8.1.2, the aquatically approved formulations of *imazapyr*, *glyphosate* and *triclopyr* TEA are considered practically non-toxic to fish, as the pathways these chemicals inhibit are only found in flora. *Triclopyr* BEE formulations are considered slightly to highly toxic to fish and would therefore, not be utilized within 50 feet of aquatic environments and would only be used for the manual foliar, cut-stump and basal bark application methods to treat small infestations and individual stands of saltcedar and Russian olive. Additionally, R-11® would not be used within 2,500 feet of open waterbodies, but the surfactant Agri-Dex® would be used as it is considered practically non-toxic to fish. All label guidance would be followed and care would be exercised to avoid any negative impacts to pallid sturgeon. No short- or long-term effects are expected to occur to pallid sturgeon through Alternative 2.

5.9.2 Interior Least Tern and Piping Plover

The interior least tern (*Sterna antillarum athalassos*) was designated federally endangered in 18 states and state endangered in 14 of these 18 states in 1985, shortly after the American Ornithologist Union recognized it as a subspecies to *A. athalassos* in 1983. Historically, this species was found along sand and gravel bars of large river systems near shallow-water feeding grounds (Mitchell, 1998), but populations have significantly depleted due to the anthropogenic activities such as the lock and dam system which directly eradicated primary nesting habitat.

The USFWS 2003 Amendment to the 2000 Biological Opinion (BiOp) on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance (O&M) of the Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System calls for an average productivity rate of 0.7 fledglings per breeding pair in order to avoid species jeopardy. Fledgling rates vary from season to season along the different nesting locations and current data dictate a fledgling rate of 0.5 per breeding pair is necessary for current populations to remain stable (USFWS, 2000, 2003; Mitchell, 1998).

Currently, surrounding areas of the Fort Peck Reservoir are believed to contain populations of the interior least tern. According to the *Montana Interior Least Tern Management Plan*, Montana supports one of the smallest populations, though it has met or exceeded its specific recovery goal of 50 adult birds for the past 19 years (Atkinson & Dood, 2006). Interior least terns are known to breed along the shorelines and islands of the Fort Peck Reservoir as well as midstream sandbars in the Missouri River downstream of the Fort Peck Dam (USFWS, 1990; Atkinson & Dood, 2006). Refer to Figure 3 for locations of observed direct evidence of breeding within the proposed project location.

The piping plover (*Charadrius melanotos*) was listed as federally threatened and endangered on January 10, 1986 (USFWS, 2012a), but is only listed as threatened in Montana. The piping plover suffered the same habitat loss as that of the interior least tern as they both have similar habitat requirements. Because of the lock and dams and the implementation of the BSNP, USFWS concluded that if these operations continued on the Missouri River, there could be a potential 22% total loss from the population due to the elimination of critical breeding grounds (USFWS, 1990; Sidle et al., 1991). The BiOp calls for an average productivity rate of 1.44 fledglings per breeding pair in order for the species to avoid jeopardy (USFWS, 2000, 2003; Sidle et al., 1991).

The westernmost breeding population is found in Valley County, Montana on the west end of the Fort Peck Dam, as well as along the shorelines of the Big Dry Arm of the Fort Peck Reservoir. The piping plover is a resident of Fort Peck during the nesting season from mid-April to early August (USACE, 2008) (refer to Figure 3). Like the interior least tern, they too typically nest from mid-May to mid-July and rear chicks from mid-June to mid-August.



Figure 3. Direct evidence of interior least tern breeding locations (green) (left) and direct evidence of piping plover breeding locations (green)(right). Courtesy of the Montana Natural Heritage Map Viewer (2013). Courtesy of the Montana Natural Heritage Map Viewer (2013).

5.9.2.1 No Action

Under this alternative, no adverse effects are expected to occur to the interior least tern or piping plover. Aquatically approved formulations of *imazapyr* and *glyphosate* would not be used to aerially apply herbicide to large infestations of saltcedar and Russian olive; nor would *imazapyr*, *triclopyr* or *glyphosate* be used to manually treat smaller infestations and individual stands of these invasive species. However, if saltcedar and Russian olive continue to infest the Fort Peck Reservoir, native plant diversity would be severely reduced which could have undesirable indirect impacts to the interior least tern and piping plover. As previously stated, water quality could be diminished which would in turn have adverse effects on the interior least tern's and piping plover's prey as the quality of foraging habitat could become compromised.

5.9.2.2 Alternative 2 (Preferred Alternative)

The interior least tern and piping plover both typically nest between mid-May to mid-July and chick rearing takes place from approximately mid-June to mid-August. No spraying or human disturbance would occur near actively nesting interior least terns or piping plovers as application is proposed to take place after the chicks have fledged and the birds have migrated. As stated in Section 5.8.3.2, *imazapyr* and *glyphosate* are considered practically non-toxic to birds, while both formulations of *triclopyr* are considered slightly toxic, however the major degradate of *triclopyr*, TCP is considered slightly to practically non-toxic. Additionally, only chemicals approved for aquatic environments would be used with manual application methods if the selected treatment area is within 50 feet of water. The proposed action does not include directly treating the neither surface waters nor sandbars, which is the nesting habitat of these birds. No negative impacts are expected to occur through the implementation of the preferred alternative.

5.9.3 Whooping Crane

The whooping crane (*Grus americana*) was classified as federally endangered on March 11, 1967. Their population declined to an estimated 16 individuals in 1941 due to overhunting and habitat disturbance. Today, there is a small, self-sustaining wild population that nests in the Wood Buffalo National Park in Saskatchewan, Canada and overwinters on the Texas Gulf Coast at the Aransas NWR. There are also a few captive populations that have been in an experimental reintroduction program scattered across a handful of zoos and research parks (USFWS, 2010b).

According to MFWP, in 1994 two whooping cranes were seen near Fort Peck and one was observed in neighboring Sheridan County, Montana. Typically, the whooping crane lays one to three eggs between late April and early May, and the fall migration starts in mid-September (USACE, 2008).

5.9.3.1 No Action

No adverse impacts to the whooping crane are expected to occur if the No Action Alternative was implemented.

5.9.3.2 Alternative 2 (Preferred Alternative)

Under Alternative 2, no negative effects are expected to occur to the whooping crane. As previously stated, *imazapyr*, *glyphosate* and *triclopyr* TEA are all considered practically non-toxic to birds as these chemicals target pathways found only in flora. *Triclopyr* BEE is considered slightly toxic, however, when BEE formulations are being utilized, it is being applied in a targeted manner to individual stands through backpack sprayers and hand nozzles. Prior to an area being treated, surveys would be conducted to determine if whooping cranes are in the area. If evidence of any whooping cranes in the area would arise, care would be exercised as to not disturb them and USFWS would be contacted. Concentration levels set forth by the EPA would not be exceeded and all product labels would be followed.

5.9.4 Black-footed Ferret

The black-footed ferret (*Mustela nigripes*) has been listed as federally endangered since March 11, 1967 (USFWS, 2010a). As of 2011, 2,600 of the 7,000 captive bred kits have been reintroduced to their natural habitat and because of these efforts there are approximately 1,000 black-footed ferrets in the wild and 280 in breeding facilities (USFWS, 2010a).

Black-footed ferrets rapidly declined in the early 1900s when their primary prey, prairie dogs (*Cynomys spp.*) were eradicated. Additionally, they are threatened by diseases such as canine distemper (*Morbillivirus*) and the sylvatic plague (*Yersinia pestis*). The last known wild population in existence was located in Meeteetse, Wyoming, where in 1987, the remaining 18 individuals were placed in a captive breeding facility (USACE, 2008).

There are currently no known populations of the black-footed ferret in the proposed project area or surrounding area. Last observations of the black-footed ferret within the Fort Peck Reservoir were in 2011.

5.9.4.1 No Action

By reducing or eradicating dense stands of invasive saltcedar and Russian olive, native species would thrive, lending to a more holistic and natural food chain which could indirectly benefit the black-footed ferret. The No Action Alternative would do nothing to improve the quality of habitat for the black-footed ferret.

5.9.4.2 Alternative 2 (Preferred Alternative)

Under this alternative, no long-term adverse impacts are expected to occur to the black-footed ferret. If this species is within the Fort Peck Reservoir area as it was historically found, the herbicides would have little to no negative impacts on them. As stated in Section 3.2 and Section 5.8.2.2, the proposed chemicals to be used under this alternative are low to practically non-toxic to mammals, as the pathways these herbicides target are found only in flora. All product labels would be followed and application rates and seasonal quantities would not be exceeded.

5.9.5 Candidate Species

The USFWS identified the greater sage grouse (*Centrocercus urophasianus*) and the Sprague's pipit (*Anthus spragueii*) as two candidate species that are currently present in Valley, Garfield, Fergus, McCone and Phillips Counties. Greater sage grouse have been defined for protection under Section 7 of the ESA, but protecting this species would cause the take of other species facing more immediate extinction threats. Sprague's pipit is also a species that has been found reasonable to warrant protection under Section 7 of the ESA, but is precluded by the need to complete more urgent listings first. The USFWS has created species and habitat management plans that accommodate both of these species.

5.9.5.1 No Action

Under the No Action Alternative, the Sprague's pipit and the greater sage grouse could suffer undesirable impacts from reduced native vegetation and low biodiversity associated with heavily infested areas of saltcedar and Russian olive. Both of these birds are associated with grassland ecosystems which could be potentially threatened from the rapid dispersion of these invasive species. Therefore, it is plausible to assume that in areas where saltcedar and Russian olive invade, there could potentially be reduced valuable nesting habitat for the Sprague's pipit and the greater sage grouse.

5.9.5.2 Alternative 2 (Preferred Alternative)

Under Alternative 2, there are no adverse impacts expected to occur to either candidate species. As stated above in regards to birds, *imazapyr*, *glyphosate* and *triclopyr* TEA are considered practically non-toxic while *triclopyr* BEE can be slightly toxic to birds. However, all spraying, both aerial and manual methods, would be taking place in areas not likely utilized by these birds as they are grassland-associated species.

5.9.6 Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was federally listed as a threatened species under the ESA (7 U.S.C. § 136, 16 U.S.C. § 1531) in 1973 though they were officially declared as endangered prior to the ESA in 1967. On August 9, 2007, the bald eagle was removed from the federal list of threatened and endangered species but continues to be protected under the Bald

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and Golden Eagle Protection Act (16 U.S.C. § 668-668d), Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703-712, though §709 is omitted) and the Lacey Act (16 U.S.C. § 701). Bald eagles are known to inhabit forested areas along the Missouri River. These birds tend to construct their nests in mature trees near aquatic habitats, especially in cottonwood trees. Bald eagle nests are typically easy to identify due to their large size and their height (they can be eight feet or more in diameter and 12 feet or more in height). They feed primarily on fish and crippled waterfowl, but may feed on upland game birds and other birds, carrion, and small rodents.

5.9.6.1 No Action

If saltcedar and Russian olive are not effectively managed, potential future impacts could occur to the bald eagle. While they nest in mature trees, typically cottonwood, if saltcedar and Russian olive continue to invade and establish on the banks of the Fort Peck Reservoir, cottonwood regeneration could suffer. Additionally, the reduced vegetation and wildlife biodiversity could negatively impact their diet.

5.9.6.2 Alternative 2 (Preferred Alternative)

Because bald eagles are a riparian associated species, they are known to utilize the trees along the riverbank in the proposed project area. Care would be taken to minimize any impact to this species. Prior to spraying, bird surveys would be conducted. If an active nest is located within the proposed spraying area, application activities would immediately cease and guidance from USFWS would be sought.

5.9.7 Migratory Birds

All federal agencies are subject to the provisions of the MBTA which regulates the take of any migratory bird species. If a Corps project is expected to impact any migratory bird species, coordination with the USFWS is typically initiated in order to minimize impacts to these species. The Fort Peck Reservoir area falls within the Central Flyway Route which merges easterly towards the Mississippi Flyway as it follows along the Missouri River. Common loons (*Gavia immer*), scaups (*Aythya spp.*), mergansers (*Mergus spp.*), teals (*Anas spp.*) and mallards are all common residents of the area. Additionally, raptors such as osprey (*Pandion haliaetus*), great horned owls (*Bubo virginianus*), and bald and golden eagles are all commonly found nesting and hunting in and around the project area. Currently, two species of migratory nongame birds are of management concern in the United States, the common loon and the American bittern (*Botaurus lentiginosus*). The American bittern currently has a documented breeding record in the area.

5.9.7.1 No Action

Under this alternative, no herbicides would be used to control invasive saltcedar and Russian olive. Direct and indirect adverse impacts could arise if the No Action Alternative is implemented. Many species of migratory birds rely on a diverse ecosystem for food, nesting and brooding habitat, shelter and reproduction. If overall native vegetation and biodiversity is reduced by not effectively managing invasive saltcedar and Russian olive, this could adversely impact the habitat that migrating bird species depend on.

5.9.7.2 Alternative 2 (Preferred Alternative)

No adverse impacts to migratory birds are expected to occur as a result of implementing Alternative 2 (see Section 5.8.3). In fact, habitat utilized by some migratory birds, such as *Environmental Assessment*

passerine songbirds would improve as reducing noxious, invasive species allows for native communities to re-establish. Native species returning to the area create a greater level of biodiversity, as large monoculture stands of saltcedar and Russian olive would provide limited dietary and habitat value to migratory bird species. The increased biodiversity would have positive direct and indirect benefits on migratory birds. To ensure minimal impacts would occur to migratory birds, all chemical product labels, EPA guidance and BMPs would be followed.

5.10 Vegetation

Vegetation of the Fort Peck Reservoir area is primarily comprised of short grasses, pine (*Pinus spp.*), juniper (*Juniperus spp.*) and sagebrush (*Artemisia spp.*). The short-grass prairie community within the area is intermixed with sagebrush. Key species found in this community type are bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass (*Pascopyrum smithii*) and green needlegrass (*Nassella viridula*). Tree cover is variable throughout the area, though they tend to be primarily located in protected ravines and tributary valleys where moisture is more available. There are five major vegetative associations within the Fort Peck Reservoir area; 1) sagebrush-greasewood (*Sarcobatus vermiculatus*)-grassland, 2) ponderosa pine (*Pinus ponderosa*)-juniper, 3) deciduous shrub, grassland, 4) riparian-deciduous river bottoms and 5) wetlands (USACE, 2008).

5.10.1 No Action

If the No Action Alternative is implemented, severe consequences could occur to native vegetation as plant communities and biodiversity are reduced in areas of saltcedar and Russian olive infestations. Monotypic stands of saltcedar and Russian olive lead to the overall reduction of native plant communities and biodiversity and can have trophic impacts that could affect the entire ecosystem.

5.10.2 Alternative 2 (Preferred Alternative)

Under this alternative, there is limited potential for adverse effects to non-target vegetation; however, the broad aerial application method would only take place in areas of heavy invasive saltcedar and Russian olive infestations which already have limited native plant communities. Additionally, smaller areas that receive targeted herbicide application through the foliar, cut-stump and basal bark methods only have the potential to effect non-target vegetation through residual chemicals in surrounding soil. Because there is a risk to harm non-target plants from the application of herbicides, BMPs must be utilized to minimize spray drift, such as applicators using a courser droplet size, applications not taking place if wind speeds are greater than 10 miles per hour and the boom length not exceeding 90% of the rotor blade diameter (see Appendix E for a complete list of BMPs). All established BMPs, product labels and EPA guidance would be followed to minimize adverse impacts to native and non-target vegetation. No long-term consequences are expected to occur, in fact, native plant diversity is expected to increase with the implementation of this alternative.

5.11 Socioeconomics and Environmental Justice

According to the 2010 census figures for the six bordering counties of the Fort Peck Reservoir; Fergus, Garfield, McCone, Petroleum, Phillips and Valley Counties, the total combined area is approximately 23,364 square miles and has a combined total population of approximately 26,647.

Of the total population of Montana, 989,415 people, the primary ethnic group is white, representing 89.4% in 2010. American Indian and Alaska Native are the second largest ethnic group, comprising 6.3% of the total state population. African American (0.4%), Asian (0.6%), Native Hawaiian and other Pacific Islander (0.1%) and Hispanic ethnicities (2.9%) are relatively numerically small (U.S. Census, 2010). Of the seven American Indian Reservations located in Montana, only two are within the Fort Peck Reservoir Area, the Fort Peck Reservation which is partially located in Valley County and the Fort Belknap Reservation which is partially located in Phillips County.

According to the Bureau of Labor, as of June 2013, unemployment in the state of the Montana is only 5.4% compared to the national average of 7.4% (BLS, 2013). The majority of jobs held in the state of Montana fall under the Trade, Transportation and Utilities category, with approximately 89,000 jobs held, the second largest trade is Government, with approximately 87,600 jobs held. Education and Health Services hold approximately 69,200 positions and Leisure and Hospitality holds approximately 62,000 jobs. In 2012, the annual salary average was \$38,030 while the national average was \$45,790 (BLS, 2012).

5.11.1 No Action

Under this alternative, no adverse impacts would occur regarding social and environmental justice.

5.11.2 Alternative 2 (Preferred Alternative)

The proposed project is not expected to have measurable impacts on demographic distributions. No environmental or health impacts are expected for local human residents, since the population of the area is low with no residences or towns nearby the project area. Any minor effects to the local population would not be expected to disproportionately affect low income or minority components of the population.

5.12 Cultural Resources

According to an August 2013 file search, a total of 145 cultural resource sites are known to exist in the project area (reflected in Appendix D). Two are listed on the National Register of Historic Places (NRHP), eight are considered eligible for the NRHP, 102 are unevaluated against NRHP criteria, 30 have been determined not eligible, and two sites are reportedly destroyed. Data recovery and mitigation of portions of the NRHP listed sites has been undertaken. There is currently one National Register District located in the project area.

5.12.1 No Action

The No Action Alternative would have no adverse impacts on cultural resources.

5.12.2 Alternative 2 (Preferred Alternative)

According to a review of the proposed alternative, to aerially and manually apply *imazapyr*, *glyphosate* and *triclopyr* to treat invasive saltcedar and Russian olive, conducted by an Omaha District archeologist, it was concluded that the project would have no potential to negatively affect historic resources as the proposed work involves no excavation of any kind.

5.13 Recreation

The Fort Peck Reservoir and adjacent areas, such as the CMRNWR, provide an abundance of natural and scenic resources. Recreational attractions such as hunting, fishing, wildlife observation, photography, hiking, boating and swimming are all activities that nearly 250,000 visitors to the refuge and surrounding areas enjoy (USFWS, 2012). There are a total of nine Corps-owned recreation areas, several camping grounds, hiking and horse trails and boat access ramps within the Fort Peck Reservoir.

According to the *Comprehensive Conservation Plan*, approximately 60,000 visitors participate in fishing activities. Walleye tournaments are popular, the most well-known walleye tournament, the Governor's Cup Tournament, is held on an annual basis in July. Hunting is extremely popular in the area as there are opportunities for trophy hunters to hunt elk, mule deer, bighorn sheep and other species not commonly present in other ecoregions in North America.

5.13.1 No Action

Under the No Action Alternative, intrinsic and aesthetic value may be lost to the areas infested by saltcedar and Russian olive as effected habitat would continually degrade. This could have negative impacts on recreational activities and opportunities.

5.13.2 Alternative 2 (Preferred Alternative)

The application of herbicides may temporarily disrupt some of these recreational activities at the project sites, and additionally, there will be temporary closures and restrictions to areas in and around the treated locations. As stated in Section 3.2, two weeks prior to herbicide application at a proposed area, spraying location and staging areas would be advertised in a press release in order to inform the public of the temporary area closures. After completion of annual sprayings, the area would re-open with no expected long-term adverse effects.

6. CUMULATIVE IMPACTS

The combined incremental effects of human activity are referred to as cumulative impacts (40 CFR 1508.7). While these incremental effects may be insignificant on their own, accumulated over time and from various sources, they can result in serious degradation to the environment. The cumulative impact analysis must consider past, present and reasonably foreseeable actions in the study area. The analysis also must include consideration of actions outside of the Corps, to include other state and federal agencies. As required by NEPA, the Corps has prepared the following assessment of cumulative impacts related to the alternatives being considered in this EA.

Substantial cumulative impacts have occurred throughout the Missouri River, which likely contributed to the decline of federal and state listed threatened and endangered species known to occur within and along the Missouri River. Anthropogenic alteration of the river hydrographs and dynamic processes has resulted in dramatic changes, and the loss of properly functioning conditions. When considering the cumulative impacts of the proposed work to take place in this area, it is also important to note recent and similar projects taking place in the same footprint. In the summer of 2012, ERDC conducted field trials on controlling Eurasian watermilfoil (*Myriophyllum spicatum*) within the Fort Peck Reservoir utilizing the aquatically approved

herbicides *endothall* and *triclopyr* as outlined in the Corps' *Environmental Assessment and Finding of No Significant Impact: Control of Eurasian Water Milfoil, Fort Peck Project Area, Various Counties, Montana* (May 2011 EA) and an ERDC published report, *Demonstration and Evaluation of Eurasian Watermilfoil Control using Aquatic Herbicides in Fort Peck Lake, MT* (Pennington et. al, 2013). Additionally, a *Supplemental Environmental Assessment and Finding of No Significant Impact: Control of Aquatic Invasive Species, Fort Peck Reservoir, Montana, October 2013* (USACE, 2013) further analyzed additional control methods with the herbicides *penoxsulam* and *flumioxazin* to allow ERDC additional field trials and treatment alternatives in treating Eurasian watermilfoil and other aquatic invasive species beginning in the summer of 2014. These events take place on the surface waters of the reservoir, while the proposed project reflected in this EA targets areas surrounding the reservoir and would not take place on surface waters.

In 2004, *D. elongata* was released in McCone County in hopes of biologically controlling saltcedar within the Fort Peck Reservoir, which has thus far proven disappointing. Now, chemical control is being sought as a potential control mechanism, specifically, through the herbicides *imazapyr*, *glyphosate* and *triclopyr*. Section 5.3.2 discusses the varying half-lives and chemical residues in soil, which it should be noted, can be lengthy in anaerobic conditions. However, no residual long-term effects are expected from the use of *imazapyr*, *glyphosate* and *triclopyr* as these herbicides do not bioaccumulate. While chemical breakdown for these herbicides typically occurs faster in aquatic environments where they hydrolyze, degradation for these chemicals would primarily occur through microbial metabolism or photolysis as treatment sites are not directly associated with surface waters. In order to minimize and monitor chemical residues, soil testing would be done by sampling transects within treatment sites pre- and three year post- application. Furthermore, all product labels and EPA guidance would be followed during mixing and application periods, maximum concentration levels would not be exceeded, safety procedures would be followed and appropriate permits would be obtained prior to using the herbicides.

Although it is likely these herbicides would not completely eradicate saltcedar or Russian olive without repeated use and measures, it is possible that they would effectively decrease the spread of these invasive species, and substantially improve habitat within the Fort Peck Reservoir; their use does have the potential to provide some incremental cumulative benefits to the Missouri River ecosystem. By implementing EPA regulations and product label guidance, as well as BMPs, there would be no residual or cumulative negative impacts to the affected environment. The use of these herbicides and associated control methods would likely have direct and indirect benefits on the fish and wildlife that rely on the habitat the Fort Peck Reservoir provides.

7. COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

American Indian Religious Freedom Act (AIRFA) of 1978, 42 U.S.C. 1996. *In compliance.* AIRFA protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. The Fort Peck Reservoir project would not adversely affect the protections offered by this act. Access to sacred sites by Tribal members would not be affected.

Bald and Golden Eagle Protection Act, 16 U.S.C. Sec. 668, 668 note, 669a-668d. *In compliance.* This act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions for the scientific or exhibition purposes, for religious purposes of Indian Tribes, or for the protection of wildlife, agriculture or preservation of the species. The proposed project would have no adverse effects on the bald eagle.

Clean Air Act, as amended, 42 U.S.C. 185711-7., et seq. *In compliance.* The purpose of this act is to protect public health and welfare by the control of air pollution at its source and to set forth primary and secondary National Ambient Air Quality Standards to establish criteria for states to attain, or maintain. Some temporary emission releases and minor inhalation risks may occur during spraying activities; however, air quality is not expected to be significantly impacted to any measurable degree by the supplemental action. All safety procedures would be followed during application of herbicides.

Clean Water Act, as amended, (Federal Water Pollution Control Act) 33 U.S.C. 1251., et seq. *In compliance.* The objective of this act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (33 U.S.C. 1251). The proposed application of all herbicides would be in accordance with label instructions. No permits are required for the proposed project from Montana Department of Environmental Quality (MDEQ) of MFWP as herbicide is not being applied directly to any water surfaces; however, coordination with these agencies would take place prior to seasonal application. The use of any herbicides would continue to be closely monitored by the Fort Peck project office to ensure water quality is maintained.

Comprehensive Environmental Response Compensation and Liability Act (CERCLA). *In compliance.* Typically CERCLA is triggered by (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment which presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 CFR Part 373 requires notification of CERCLA hazardous substances in a land transfer. This project will not involve any real estate transactions.

Endangered Species Act, as amended, 16 U.S.C. 1531, et seq. *In compliance.* Section 7 (16 U.S.C. 1536) states that all federal departments and agencies shall, in consultation with and with the assistance of the Secretary of the Interior, ensure that any actions authorized, funded, or carried out by them do not jeopardize the continued existence of any threatened or endangered (T&E) species, or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary to be critical. This project has been coordinated with the USFWS. A letter dated July 24, 2013 was sent to the USFWS stating that the Corps is proposing to control invasive saltcedar and Russian olive through herbicide application utilizing a combination of methods. A response letter was provided, dated August 22, 2013, where USFWS determined and listed any threatened, endangered and candidate species with the potential to occur at the Fort Peck Reservoir and the surrounding area. Analysis of noted species can be found in Section 5.9, Species of Special Concern. It has been determined, through this document

that it is likely “no effect” would occur to threatened and endangered species as a result of the proposed project.

Environmental Justice (E.O. 12898). *In compliance.* Federal agencies shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. The project does not disproportionately impact minority or low-income populations.

Farmland Protection Policy Act (Subtitle I of Title XV of the Agriculture and Food Act of 1981), effective August 6, 1984. *In compliance.* This act instructs the Department of Agriculture, in cooperation with other departments, agencies, independent commissions, and other units of the federal government, to develop criteria for identifying the effects of federal programs on the conversion of farmland to nonagricultural uses. A letter dated July 24, 2013 was sent to the Montana Department of Agriculture; no response was received. However, this project would have no significant effect on any prime farmland soils that may occur within the Fort Peck Reservoir area.

Federal Water Project Recreation Act, as amended, 16 U.S.C. 460-1(12), et seq. *In compliance.* The act establishes the policy that consideration be given to the opportunities for outdoor recreation and fish and wildlife enhancement in the investigating and planning of any Federal navigation, flood control, reclamation, hydroelectric or multi-purpose water resource project, whenever any such project can reasonably serve either or both purposes consistently. The purpose of this project can be considered fish and wildlife habitat enhancement, and it will not negatively impact recreational use of the river.

Fish and Wildlife Coordination Act, 16 U.S.C. 661, et seq. *In compliance.* A letter dated July 24, 2013, was prepared by the Corps and sent to the USFWS and the MFWP to solicit comment on the proposed project. The USFWS responded in a letter dated August 22, 2013 regarding potential threatened and endangered species that may occur within the Fort Peck Reservoir area. No further action under the Fish and Wildlife Coordination Act is required.

Floodplain Management (E.O. 11988). *In compliance.* E.O. 11988 requires federal agencies provide leadership and take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains. These requirements apply in carrying out its responsibilities for 1) acquiring, managing, and disposition of federal lands and facilities; 2) providing federally undertaken, financed, or assisted construction and improvements; and 3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. This project would not adversely affect the flood holding capacity or flood surface profiles of any stream, as such the project is in compliance with the requirements of E.O. 11988.

Land and Water Conservation Fund Act (LWCFA), as amended, 16 U.S.C. 4601-4601-11, et seq. *Not applicable.* Planning for recreation development at Corps projects is coordinated with

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the appropriate states so that the plans are consistent with public needs as identified in the State Comprehensive Outdoor Recreation Plan (SCORP). The Corps must coordinate with the National Parks Service (NPS) to ensure that no property acquired or developed with the assistance from this act will be converted to other than outdoor recreation uses. If conversion is necessary, approval of NPS is required, and plans are developed to relocate or re-create affected recreational opportunities. No lands involved in the proposed project were acquired or developed with LWCFA funds.

Migratory Bird Treaty Act of 1918 as amended, 16 U.S.C. 703-711, et seq. *In compliance.* The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over utilization. E.O. 13186 (2001) directs executive agencies to take certain actions to implement the act. The Corps would conduct field surveys prior to implementation of the proposed action in order to take great care not to negatively impact migratory birds or their nests during herbicide application.

National Environmental Policy Act (NEPA), as amended, 42 U.S.C. 4321, et seq. *In compliance.* This EA has been prepared for the proposed action and to satisfy the NEPA requirement. An Environmental Impact Statement is not required.

National Historic Preservation Act, as amended, 16 U.S.C. 470a, et seq. *In compliance.* Appendix D contains a list of a total of 145 cultural resource sites known to exist within the project area. Of these 145 sites, two are listed on the National Register of Historic Places (NRHP), 102 are unevaluated against NRHP criteria, 30 were determined ineligible for listing and two sites were destroyed. There is always potential for an unanticipated discovery of cultural resources during activities. In the event that historic resources are found, a district archeologist would be notified. However, no impacts are expected to occur to cultural resources as no excavation would be taking place under the proposed alternative.

Noise Control Act of 1972, 42 U.S.C. 4901, et seq. *In compliance.* While there will be minor noise disturbance during spraying, there will be no long-term noise disturbances associated with this project.

North American Wetlands Conservation Act, 16 U.S.C. Sec. 4401 et seq. *Not applicable.* This act establishes the North American Wetlands Conservation Council (16 U.S.C. 4403) (NAWCC) to recommend wetlands conservation projects to the Migratory Bird Conservation Commission (MBCC). Section 9 of the act (16 U.S.C. 4408) addresses the restoration, management, and protection of wetlands and habitat for migratory birds on federal lands. Federal agencies acquiring, managing, or disposing of federal lands and waters are to cooperate with USFWS to restore, protect, and enhance wetland ecosystems and other habitats for migratory birds, fish and wildlife on their lands, to the extent consistent with their mission and statutory authorities.

Environmental Assessment

Protection of Wetlands (E.O. 11990). *In compliance.* Federal agencies shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agencies' responsibilities. The Corps would improve the quality of wetlands by reducing/eradicating the presence of invasive species.

Rivers and Harbors Act, 33 U.S.C. 401, et seq. *In compliance.* This act prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. A Section 10 permit is not required for Corps projects, nor would the proposed project alter navigable waters in any way.

Watershed Protection and Flood Prevention Act, 16 U.S.C. 1101, et seq. *In compliance.* This act authorizes the Secretary of Agriculture to cooperate with states and other public agencies in works for flood prevention and soil conservation, as well as the conservation, development, utilization and disposal of water. This act imposes no requirements on Corps Civil Works projects.

Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271, et seq. *Not applicable.* This act establishes that certain rivers of the Nation, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The area in which the proposed activity would occur is not designated as a wild or scenic river, nor is it on the National Inventory of Rivers potentially eligible for inclusion.

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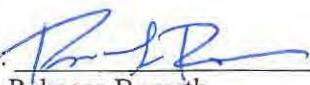
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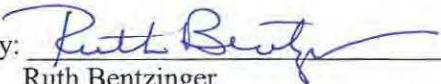
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9. PREPARER

This EA and the associated Finding of No Significant Impact (FONSI) was prepared by Ms. Rebecca Bozarth, Environmental Resource Specialist. The address of the preparer is: U.S. Army Corps of Engineers, Omaha District; PM-AC, 1616 Capitol Avenue, Omaha, Nebraska 68102.

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Date: 19 Dec. 2013

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Acting Chief, Environmental Resources and Missouri River Recovery Program Plan Formulation Section

Date: 20 Dec. 2013

Appendix E

Best Management Practices

*Supplemental Environmental Assessment
Control of Saltcedar and Russian Olive
March 2016*

In order to ensure minimal negative and adverse effects to the proposed project sites and in consideration of potential effects on other resources, Best Management Practices (BMPs) would be utilized. BMPs include, but are not limited to:

1. Regularly checking equipment and implementing safety measures to minimize the risk of spills.
2. Promptly cleaning spills following applicable standards.
3. Limiting idling of equipment.
4. Locating equipment and staging areas away from sensitive resource areas (e.g., wetlands).
5. Limiting the staging area to the minimum area needed.
6. Restoring disturbed areas to original state upon completion of project activities.
7. Fuel and herbicides would be added to vehicles at sites away from the water. Fill sites would have proper spill protection equipment in place to contain and clean up any spilled material.
8. Nozzle orientation would be appropriately aligned to produce the desired droplet size.
9. Application would not occur if wind speeds are greater than 10 miles per hour in order to avoid spray drift.
10. Application would not occur in areas of temperature inversions or during conditions of low humidity/and or high temperatures.
11. During aerial application the helicopter would fly slowly and low as slow speeds can be combined with lower pump pressures to produce larger droplets.
12. Boom length would be less than 90% of the rotor blade diameter, to reduce spray drift.
13. A microfoil boom or equivalent drift control system would be used.
14. Aerial applicators would check calibration and follow all practices to ensure accurate delivery of herbicides.
15. No spraying would take place if rain is imminent within 48 hours.
16. Two weeks in advance, a press release would inform the general public of the selected treatment site and associated area closures.
17. Supplemental plantings of native species or those endemic to the area would be planted in accessible areas and where feasible in order to deter non-native ruderal species.

Appendix F

IPaC Trust Resources Report

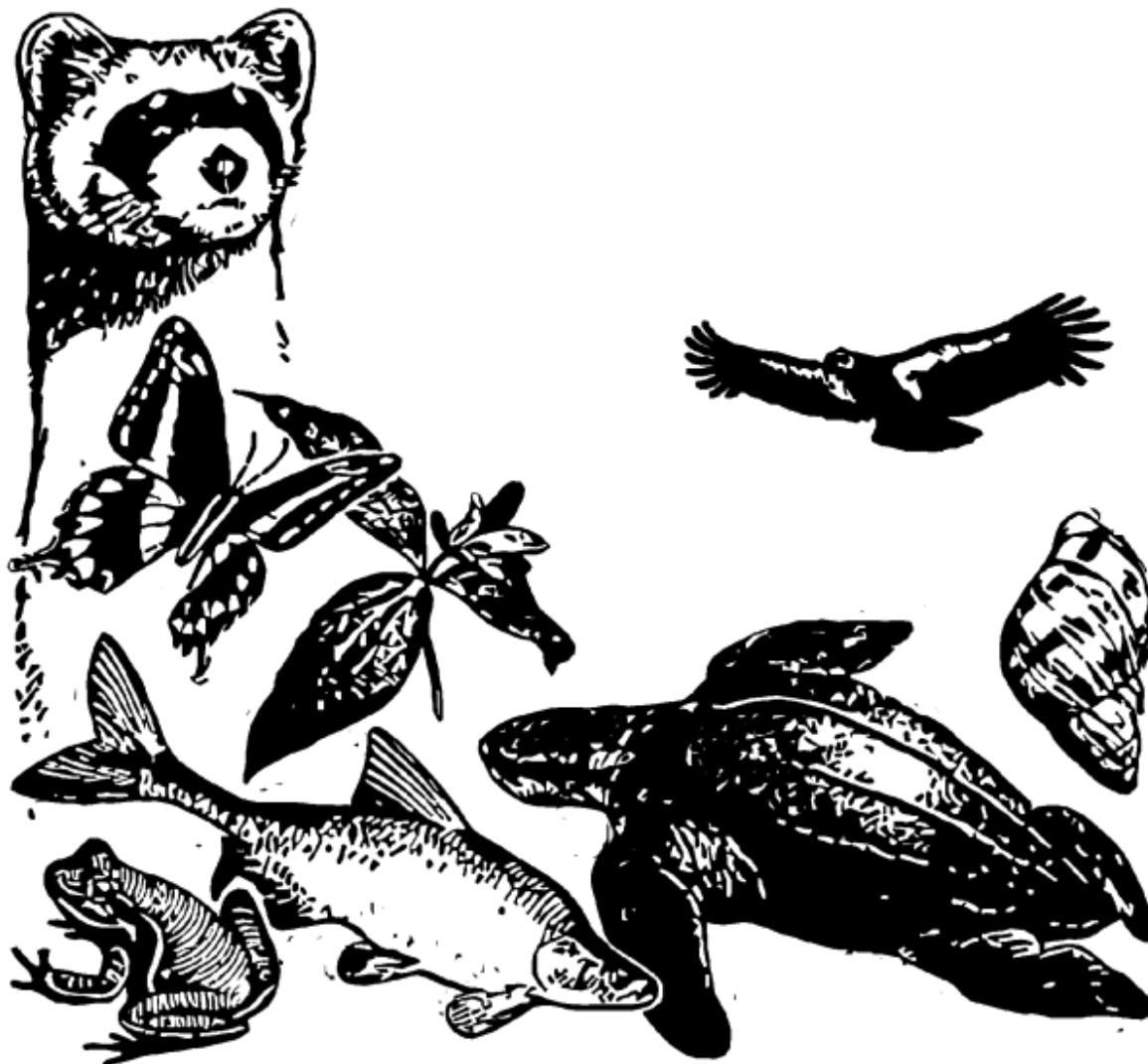
*Supplemental Environmental Assessment
Control of Saltcedar and Russian Olive
March 2016*

SaltCedar SEA

IPaC Trust Resource Report

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This report is for informational purposes only and should not be used for planning or analyzing project-level impacts. For projects that require FWS review, please return to this project on the IPaC website and request an official species list from the Regulatory Documents page.

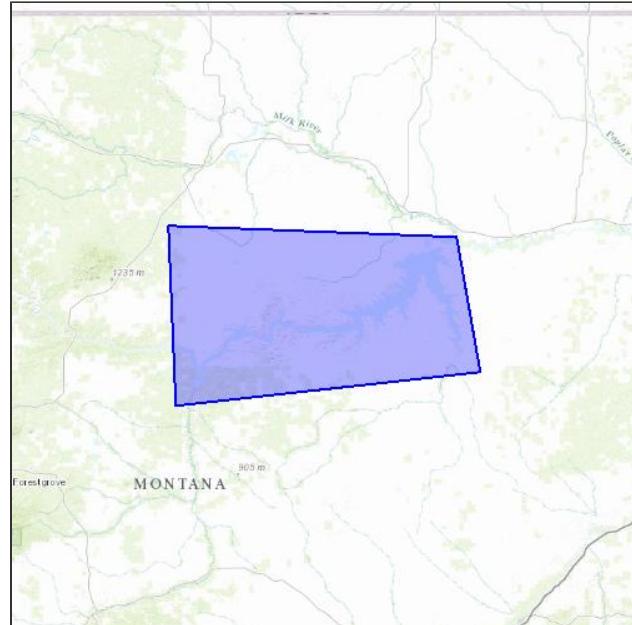


US Fish & Wildlife Service

IPaC Trust Resource Report



Project Description

NAME**SaltCedar SEA****PROJECT CODE****BWVNF-FWSRZ-E37BF-3IAZF-BW7E5Y****LOCATION****Montana****DESCRIPTION****No description provided**

U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Montana Ecological Services Field Office

585 Shepard Way, Suite 1

Helena, MT 59601-6287

(406) 449-5225

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the [Endangered Species Program](#) and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under [Section 7](#) of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an official species list on the Regulatory Documents page.

Birds

Least Tern <i>Sterna antillarum</i>	Endangered
CRITICAL HABITAT	
No critical habitat has been designated for this species.	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B07N	
Piping Plover <i>Charadrius melanotos</i>	Threatened
CRITICAL HABITAT	
There is final critical habitat designated for this species.	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B079	
Red Knot <i>Calidris canutus rufa</i>	Threatened
CRITICAL HABITAT	
No critical habitat has been designated for this species.	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0DM	
Sprague's Pipit <i>Anthus spragueii</i>	Candidate
CRITICAL HABITAT	
No critical habitat has been designated for this species.	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0GD	
Whooping Crane <i>Grus americana</i>	Endangered
CRITICAL HABITAT	
There is final critical habitat designated for this species.	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B003	

Fishes

Pallid Sturgeon *Scaphirhynchus albus*

Endangered

CRITICAL HABITAT

No critical habitat has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E06X>

Mammals

Black-footed Ferret *Mustela nigripes*

Endangered

CRITICAL HABITAT

No critical habitat has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A004>

Black-footed Ferret *Mustela nigripes*

Experimental Population, Non-Essential

CRITICAL HABITAT

No critical habitat has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A004>

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the [Bald and Golden Eagle Protection Act](#).

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service ([1](#)). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

American Bittern <i>Botaurus lentiginosus</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F3	
Baird's Sparrow <i>Ammodramus bairdii</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B09B	
Bald Eagle <i>Haliaeetus leucocephalus</i>	Bird of conservation concern
Year-round	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008	
Black Tern <i>Chlidonias niger</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B09F	
Brewer's Sparrow <i>Spizella breweri</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HA	
Burrowing Owl <i>Athene cunicularia</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0NC	
Common Tern <i>Sterna hirundo</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B09G	
Dickcissel <i>Spiza americana</i>	Bird of conservation concern
Season: Breeding	
Ferruginous Hawk <i>Buteo regalis</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06X	
Golden Eagle <i>Aquila chrysaetos</i>	Bird of conservation concern
Year-round	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0DV	

Grasshopper Sparrow <i>Ammodramus savannarum</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0G0	
Greater Sage-grouse <i>Centrocercus urophasianus</i>	Bird of conservation concern
Year-round	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06W	
Loggerhead Shrike <i>Lanius ludovicianus</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY	
Long-billed Curlew <i>Numenius americanus</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06S	
Marbled Godwit <i>Limosa fedoa</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0JL	
Mccown's Longspur <i>Calcarius mccownii</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HB	
Mountain Plover <i>Charadrius montanus</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B078	
Peregrine Falcon <i>Falco peregrinus</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU	
Prairie Falcon <i>Falco mexicanus</i>	Bird of conservation concern
Year-round	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0ER	
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i>	Bird of conservation concern
Season: Breeding	
Sage Thrasher <i>Oreoscopetes montanus</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0ID	
Short-eared Owl <i>Asio flammeus</i>	Bird of conservation concern
Year-round	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD	
Sprague's Pipit <i>Anthus spragueii</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0GD	
Swainson's Hawk <i>Buteo swainsoni</i>	Bird of conservation concern
Season: Breeding	
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B070	

Upland Sandpiper *Bartramia longicauda*

Bird of conservation concern

Season: Breeding

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HC>**Western Grebe** *aechmophorus occidentalis*

Bird of conservation concern

Season: Breeding

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0EA>**Yellow Rail** *Coturnicops noveboracensis*

Bird of conservation concern

Season: Breeding

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0JG>

Refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

Charles M. Russell National Wildlife Refuge

1,840,085.62 acres

PHONE (406) 538-8706

ADDRESS

333 Airport Road
Lewistown, MT 59457

<http://www.fws.gov/refuges/profiles/index.cfm?id=61520>

UI Bend National Wildlife Refuge

111,640.97 acres

PHONE (406) 538-8706

ADDRESS

C/o Charles M. Russell Nwr
333 Airport Road
Lewistown, MT 59457

<http://www.fws.gov/refuges/profiles/index.cfm?id=61529>

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Wetland data is unavailable at this time.

Appendix G

Montana Pollution Discharge Elimination System Permit

*Supplemental Environmental Assessment
Control of Saltcedar and Russian Olive
March 2016*

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

GENERAL PERMIT For PESTICIDE APPLICATION

Permit No.: MTG870000

AUTHORIZATION TO DISCHARGE UNDER THE MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM

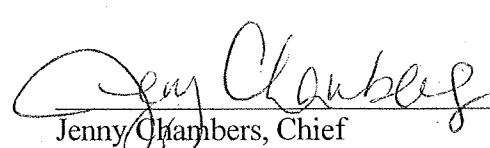
In compliance with Montana Water Quality Act, Title 75, Chapter 5, Montana Code Annotated (MCA), and the federal Water Pollution Control Act (the "Clean Water Act"), 33 U.S.C. 1251 *et. seq.*, applicants issued an authorization letter for this Pesticide General Permit, are permitted to discharge wastewater to state waters in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

A copy of this General Permit and a written authorization letter from the Department must be available on site at all times. The General Permit is not valid without a current authorization letter from the Department.

This permit shall become effective on **November 1, 2011**.

This permit and the authorization to discharge shall expire at midnight, **October 31, 2016**.

FOR THE MONTANA DEPARTMENT
OF ENVIRONMENTAL QUALITY


Jenny Chambers, Chief
Water Quality Bureau
Permitting and Compliance Division

Issuance Date: April 9, 2011

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I. COVERAGE UNDER THIS GENERAL PERMIT

A. Coverage Area

The Pesticide General Permit (PGP) applies to all areas of the State of Montana, except for within the boundaries of Indian Reservations.

B. Activities Eligible for Coverage under this General Permit

As of the permit's effective date, this permit is available to any owner or operator who discharges to state surface waters through the application of (1) biological pesticides or (2) chemical pesticides that leave a residue (collectively "pesticides") in state surface waters when the application is for one of the following pesticide use patterns provided below. The requirements of the PGP are separated into two categories:

- Tier I - Requirements for all owner/operators.
- Tier II – Additional requirements for owners/operators that apply pesticides to an area greater than the treatment area annual threshold identified below.

#	Pesticide Use Pattern	Treatment Area Annual Threshold ^{1,2}
1	Piscicides and Other Nuisance Animals (i.e. zebra mussels)	10 acres
2	Weeds and Algae	100 acres
3	Aerial Pest Control (i.e. Forest Canopy)	1000 acres
4.	<i>Mosquito and Other Flying Insect Pests</i>	
4a.	Larvae chemical control	100 acres
4b.	Chemical adulticide	1000 acres
4c.	Biological control	6,400 acres
5.	Research & Development	10 acres
6	Other not classified	1000 acres

1. Calculations should include the area of the applications made to: (1) state surface waters *that contain water at the time of pesticide application* and (2) conveyances with a hydrologic surface connection to state surface water *at the time of pesticide application*. For calculating annual treatment area totals, count each pesticide application activity as a separate activity. For example, applying pesticides twice a year to a ten acre site should be counted as twenty acres of treatment area.

2. Any pesticide discharge into waterbodies classified A-closed has a threshold of > 0 acres and is therefore subject to Tier II requirements.

C. Activities Ineligible for Coverage this General Permit.

The following activities are ineligible for coverage under the PGP:

1. A discharge of pesticides covered by another MPDES permit.
2. The pesticide is not labeled for use in water by the Federal Insecticide, Fungicide, Rodenticide Act (FIFRA).

3. The discharge or application of Endosulfan or its metabolites in Hauser Lake, because the lake is listed as impaired for Endosulfan on Montana's list of impaired water bodies.

D. Sources seeking coverage under the PGP.

As of the effective date of this permit, an owner or operator seeking to obtain coverage under the PGP must submit a complete Notice of Intent (NOI) package, including a signed NOI Form (Appendix A) and the fee (includes both permit application fee and annual fee for first year as required under ARM 17.30.201) prior to discharging.

An owner/operator may chose to obtain coverage anywhere within the boundaries of one county ("single-county"), or within the boundaries of up to twenty contiguous counties ("multi-county"). The NOI package should request coverage for any pesticide use patterns that are the responsibility of the owner/operator in the covered area unless authorization will be obtained under a separate NOI.

An owner/operator must determine whether they annually apply pesticides to "under the threshold (Tier I)" or "over the threshold (Tier II)" acres of water area. As part of the NOI submittal, the owner/operator must indicate which of the following permit types they are requesting:

(A) Tier I - Under annual threshold:

- (1) Single-county
- (2) Multi-county

(B) Tier II - Over annual threshold

- (1) Single county
- (2) Multi-county

Completion of the NOI acknowledges compliance with the relevant parts of the PGP. For instance, for owner/operators over the annual threshold, this includes the requirement to develop and maintain a pesticide management plan as detailed in Part II.B.1.

Submittal of the plan to the Department is not required. However, the plan must be completed and up-to-date, and must be available upon Department request.

The Department will issue a letter of acknowledgement to the owner/operator after receiving a complete NOI package submittal. Coverage under the PGP is renewable on a five-year basis. The owner/operator is required to pay the annual fee and comply with all relevant requirements contained in the PGP until they are required to renew or they request to terminate the permit.

Any pesticide application that has historically been authorized under the 308 program shall continue to be authorized under the 308 program until the PGP is effective. As long as the PGP is effective, the 308 Authorization permit shall no longer be an active program as stated by 75-5-308(3), MCA "The department may not authorize an exemption from water quality standards for an activity that requires a discharge permit under rules adopted by the board pursuant to 75-5-401."

E. Termination of Permit Coverage

Permit coverage remains in effect until the General Permit is renewed or the Department receives a complete Notice of Termination (NOT) form from the permittee that the point source discharge has been eliminated. The NOT must be signed and certified in accordance with the signatory requirements in Part V.G of this General Permit and all applicable fees must be paid. Failure to submit a NOT shall result in accrual of annual fees until this notice is received by the Department.

In addition to the ability to request a termination, the owner or operator of a facility covered under this General Permit may request to be excluded from coverage under this General Permit by applying for and obtaining an individual MPDES permit pursuant to Title 17, Chapter 30, Subchapter 13. If an individual MPDES permit is issued to the owner or operator of the facility, coverage under this General Permit is terminated on the effective date of the final MPDES permit.

F. Transfer of Coverage

The Department may transfer a pesticide authorization to a new owner or operator in accordance with Part V.M. of this General Permit.

II. EFFLUENT LIMITATIONS, MONITORING REQUIREMENTS & OTHER CONDITIONS

A. Effluent Limitations

1. *Tier I: All Owner/Operators:*

Effective immediately and lasting for the duration of the permit, all owners/operators of pesticide applications that discharge into state surface water and who are subject to this General Permit must:

- a. Control the discharge as necessary to meet applicable numeric and narrative water quality standards by complying with this permit; and
- b. Apply pesticides within labeled rates and/or in accordance with pesticide use directions under FIFRA and other state pesticide requirements.

2. *Tier II: Greater than Threshold Owner/Operators*

Every owner/operator who is above an annual treatment area threshold shall comply with the above Tier I effluent limits for "all owner/operators" as well as the following additional Tier II requirements:

- a. Ensure pesticide application equipment is maintained in proper operating condition by inspecting, cleaning and repairing such equipment on a regular basis.
- b. Ensure pesticide application equipment is calibrated in order to have effective pesticide application and pest control by adhering to any manufacturer's conditions and industry practices.

B. Tier II Special Condition – Pesticide Management Plan

The Department has determined that the requirement to maintain a pesticide management plan is an appropriate treatment method for pesticide application discharges by Tier II "Greater than Threshold" Owner/Operators:

Tier II owners/operators must develop and maintain a written pesticide management plan. To the extent that an owner/operator follows an existing plan [i.e., weed control plan, mosquito control plan, or Integrated Pest Management Plan (IPM)] which already contains the following information, the owner/operator need only reference the existing plan. However, at a minimum, prior to the first pesticide application covered under the PGP and at least once per calendar year thereafter, each Tier II owner/operator must evaluate and update their plan(s) to include the following:

- a. Pesticide management team. The owner/operator must identify an individual or group of individuals (names or titles) that are a pest management "team" and clarify specific responsibilities. It must identify who is/are the decision-makers by organization name as well as either name or title of individuals. In addition, the team must identify whether an in-house or for-hire applicator will be the pesticide applicator, and clarify the recordkeeping and reporting responsibilities that will be required for such applicator. Individuals must be identified for developing and

revising the plan, reviewing and implementing control measures, and taking corrective action.

b. Description of the pest problem.

- o *pest identification*— identification of each target pest(s) that are in or over state surface water;
- o *general location map* – the map must identify the geographic boundaries of the entire area to which the plan applies, the approximate areas for the upcoming years' pest management area for each target pest, and the location of the state surface water(s) that will be impacted. Additionally, the map (or a separate description) should include any sensitive resources in the area. The map should be reviewed annually and updated if there are any changes; and
- o *action thresholds* –the plan must include the level of pest prevalence (pest densities) or other trigger that will cause the owner/operator to initiate action to reduce the pest problem (see “action threshold” definition in Part VI). Include a description of how the action threshold was established, such as a reference to literature or policy. The action level might not always be a number; for instance, the pest may be an identified noxious weed and any incidence (>0) would trigger the action level, or the action threshold may currently be dictated by other factors.

c. Description of control measures.

The plan must include documentation on the evaluation and implementation of any pest management tools (no action, prevention, mechanical/physical methods, cultural methods, biological control agents, and pesticides) that could feasibly be taken to minimize pesticide discharge into state surface waters for the pesticide projects authorized by the NOI. The owner/operator should use best professional judgment as well as experience with any of the control measures previously used at the site(s) to reduce pesticide discharge to base their evaluation. The plan should consider impact to non-target organisms and cost effectiveness when evaluating and selecting the most efficient and effective means of pest management to minimize pesticide discharge to state surface waters.

d. Planning.

Every Tier II owner/operator is required to include responsibilities, planning and program information in their pesticide management plan. Various agreements for some or all of the following requirements may be needed between responsible parties (such as decision-makers and for-hire applicators) and are the responsibility of the owner/operator:

- o *Pesticide application equipment preventative maintenance program* - the plan shall include the identification of who (name or title) is responsible for inspecting, cleaning, and repairing the application equipment prior to use, as well as the frequency of such PM. Reviewing this procedure annually, and updating as necessary, is considered documentation for compliance with the effluent limitation in Part II.a.2.a.

- *Pesticide application equipment calibration* – the plan shall include the identification of who (name or title) is responsible, the methods used, and how often the equipment will be calibrated. Records of calibration will be required to be kept in conformance with Part II.D.2.
- *Assessment of environmental conditions* - description of who will assess and make the decision whether environmental conditions are satisfactory for pesticide application, and what factors will be used (wind speed, expected rain, temperature, etc.). Compliance with this requirement can be satisfied by using other existing environmental assessment forms.
- *Pesticide application rate and frequency*- who will determine, and what is, the desired pesticide concentration and number of applications necessary to control each target pest. The application rate and frequency must meet pesticide label requirements.
- *Pre-application pest monitoring* – description of how the pest treatment area will be assessed before treatment to determine when the action threshold(s) are met and in what geographical area. The plan must include who (employer and name or title) will make the determination and what basis they will use.
- *Post-application monitoring* - description of the process for post-pesticide application monitoring, if any. Includes determining the location and timing of any visual monitoring during or after the pesticide application, who will conduct the monitoring, and procedures for documenting any observed impacts to non-target organisms. This is not required if it is not part of expected business practice or if conditions make it infeasible or dangerous.
- *Adverse incident response procedures*. The Tier II owner/operator must identify and document the course of action or response to any potential adverse incident that might be attributed to their pesticide application (see definition of adverse incident in Part VI.) in their plan. It must include the identification of responsibilities for complying with the notification requirements, including those in Part II.E.3. of this PGP.

The plan must include a list of the chain of command notification both internally and externally, contact agencies and phone numbers, identification and contact information for nearest emergency medical facility and nearest hazardous chemical responder (including police and fire department).

- *Spill prevention program* – The Tier II owner/operator must identify and document the course of action or response to any spills or releases that are part of the activities covered by this PGP in their plan.

The plan should also address any areas and activities that typically pose a high risk for spills during the preparation for and implementation of pesticide applications covered under this PGP. It should address appropriate material handling procedures, storage requirements, and containment or diversion equipment that will minimize the potential for spills, or in the event of a spill enable proper and timely response.

In addition, the plan must document procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. It must include documentation of the procedures for notification for appropriate facility personnel, emergency response agencies, and regulatory agencies. The response to any spills or leaks that occur while covered under this permit must be documented.

- e. *Plan Updates* - Owners/operators must review and, as necessary, revise the plan at least once a year. In addition, the plan must be reviewed and, as necessary, revised whenever any of the following triggering conditions for corrective action occur:
- an unauthorized release or discharge;
 - the permittee becomes aware, or the Department determines, that control measures are not stringent enough for the discharge to meet applicable water quality standards;
 - an inspection or evaluation by a Department representative determines that modifications are necessary to meet the non-numeric effluent limits; or
 - the permittee observes or is otherwise made aware (e.g., a third party notification) of an adverse incident for which symptoms are unusual or unexpected during the normal course of treatment.

The owner/operator must take follow-up actions to assess and correct problems including the above triggering conditions. They must ensure that corrective action be completed before the next pesticide application that results in a discharge, if practicable, or if not, as soon as practicable thereafter. The owner/operator must document what steps were taken to eliminate the problem.

C. Monitoring Requirements

The testing procedures set forth in Part 136, Title 40 of the Code of Federal Regulations do not apply to the following monitoring requirements.

1. *Tier I: All Owner/Operators:*
 - a. All owners/operators must document the rationale for determining the type and amount of pesticide to be used. This is satisfied by having the pesticide label available.
2. *Tier II: Greater than Threshold Owner/Operators*
 - a. All Tier II owners/operators must monitor their operation to ensure the integrity of application equipment by inspecting, cleaning, and repairing equipment on a regular basis, in accordance with their pesticide management plan.
 - b. All Tier II owners/operators must monitor their operation to ensure the effectiveness of application by calibrating the pesticide equipment on a regular basis, in accordance with their pesticide management plan.
 - c. All Tier II owners/operators must conduct appropriate visual monitoring to determine if any pesticide use practices may need to be revised, and to ensure that avoidable

adverse impacts to the environment do not occur, in accordance with their pesticide management plan.

D. Recordkeeping Requirements

All records required by this PGP must be prepared as soon as possible but no later than 14 days following completion of the associated activity. This may necessitate owners/operators that are decision-makers only make appropriate arrangements with contracted for-hire applicator(s). Copies of these documents must be available upon request, and must be maintained for a period of at least three years, or in the case of the PGP and NOI three years from the date the coverage under this permit expires or is terminated.

1. *Tier I: All Owner/Operators:*

All permittees must maintain the following records:

- A copy of the PGP (electronic access is sufficient); and
- A copy of the NOI submitted to the Department, any correspondence exchanged between you and the Department specific to coverage under this permit, and a copy of the Department acknowledgment letter assigning your permit tracking number.

2. *Tier II: Greater than Threshold Owner/Operators*

Tier II permittees must maintain the following records in addition to the Tier I records:

- A copy of your pesticide management plan, including any modifications made to the plan during the term of this permit. Other existing plans (such as IPM, Weed Control or Mosquito Control plans) can satisfy this requirement as long as all of the components for a pesticide management plan required in this PGP are met;
- Pesticide Application information. Copies of, or access to, the following required pesticide applicator records. (As some of this information may be available on another record, such as a MDA Form, it does not have to be duplicated.) The required information for any pesticide application with a discharge to surface waters includes:
 - Company name and contact information for pesticide applicator;
 - Dates of application;
 - Description of treatment area, including location (name of county - include center location of treatment area (lat/long));
 - Identification of any waters, either by name or by location, to which you discharged any pesticide(s);
 - Approximate size of treatment area (acres of water);
 - Trade name, Manufacturer, and EPA Registration Number of each pesticide product used; and

- Rate of pesticide applied (and specify if quantities are for the pesticide product as packaged or as formulated and applied).
- Copies of, or access to, equipment calibration records (required to be maintained by the entity performing the pest management activity on behalf of self or client); and
- Post-application monitoring - date(s) and time(s) of any monitoring that resulted in unusual or unexpected findings, and a description of the unusual or unexpected effects identified to non-target organisms.

E. Reporting Requirements

1. *Tier I: All Owner/Operators:*

All owner/operators are subject to the adverse incident reporting requirements in Section II.E.3.

2. *Tier II: Greater than Threshold Owner/Operators*

Tier II permittees are also required to submit annual reports that contain basic information on their pesticide discharges to state surface waters, on a form issued by the Department. The annual report is due by January 28th of each year. The annual report must include information for the previous calendar year, with the first annual report required to include activities for the portion of the calendar year after the effective date of the NOI. If the effective date of the NOI is after December 1, the owner/operator is not required to submit an annual report for that first partial year but must submit annual reports thereafter, with the first annual report submitted also including information from the first partial year.

The annual report is a summary of the pest control activities for each applicable use pattern. The annual report must contain the following information specific to each pest treatment area covered under the permit:

- a. Pesticide applicator(s) information;
- b. Approximate amount of each pesticide product applied to or over water for the reporting year including Manufacturer, Product Trade Name, and EPA registration number(s); and
- c. Identification of any waters to which you discharged any pesticide(s) and an estimate of the total water acreage treated

When a Tier II owner/operator terminates permit coverage, they must submit an annual report for the portion of the year up through the date of the termination. The annual report is due no later than 30 days after the termination date, or January 28th of the following year, whichever is earlier.

3. *Adverse Incident Reporting.*

Owner/operators must conduct appropriate visual post-application monitoring for possible adverse incidents that were brought to their attention by any means, including internal or external notification or, for Tier II owner/operators, in accordance with their

pesticide management plan. The Department expects each owner/operators to use their best professional judgment in determining the extent to which non-target effects appear to be abnormal or indicative of an unforeseen problem associated with an application of pesticides.

Records of all visual inspections conducted at sites where an adverse incident is suspected, even for situations that do not require reporting to the Department, must be kept on site with the permittee. Observations must be noted unless they are deemed not to be aberrant.

Owners/operators are required to provide oral notice to the Department at (406) 444-3080 within 24 hours and then follow-up with a written report within five days of becoming aware of an adverse incident at the following address:

Montana Department of Environmental Quality
Water Protection Bureau
P.O. Box 200901
Helena, Montana 59620-0901

In summary, every owner/operator is required to perform the following activities in response to any suspected adverse incident:

- Provide 24-hour notification, including the date of the finding, a general discussion of the incident and a review of the necessity to conduct corrective action.
- Document the verbal notification information, including the date, time, and person you notified and a description of any deviations from notification requirements based on nuances of the adverse incident.
- Provide a written report of the adverse incident within 5 days of discovering the adverse incident. The adverse incident report must include the following information:
 - Date, time, and person(s) (including Department(s)) to whom you orally reported the adverse incident;
 - Responsible Party information;
 - Location of incident, including the names of any waters affected and appearance of those waters (sheen, color, clarity, etc.);
 - Date, time, and duration of incident;
 - Pesticide involved (Trade name, manufacturer, and EPA Registration#), pesticide application rate, and method of application;
 - A description of the incident including types of plants and animals affected, and approximate quantity and size of dead or distressed organisms, as can be reasonably ascertained with a visual inspection;
 - Magnitude of the effect (e.g., estimate of the aquatic square area affected); and
 - Actions to be taken to prevent recurrence of the incident.

F. Mixing Zone

No mixing zone will be allowed because the water quality standards for pesticides apply throughout the receiving stream [ARM 17.30.507(b)].

G. Obligation to Obtain Other Permits

Authorization under the PGP does not waive obligations to obtain other permits that may be required (e.g., Department of Environmental Quality Storm Water authorization or the Montana Natural Streambed and Land Preservation Act (310) permit). In addition, authorizations do not waive the responsibility to comply with the federal Endangered Species Act.

Any pesticide applicator must ensure pesticide use is in conformance with the requirements of the Montana Pesticides Act. That act authorizes the Montana Department of Agriculture (MDA) to adopt rules incorporating regulations adopted by EPA under FIFRA, which generally prescribe methods of registration, application, and the sale or use of pesticides.

Authorization under the PGP replaces the requirement for a 308 Authorization [75-5-308, MCA].

III. STANDARD CONDITIONS

A. Reporting Requirements

All monitoring data shall be reported on the supplied annual report forms and sent to the Department (see address below), postmarked no later than the 28th day of January following the reporting year.

Montana Department of Environmental Quality
Water Protection Bureau
ICIS Coordinator
P.O. Box 200901
Helena, Montana 59620-0901
Phone: (406) 444-3080

B. Monitoring and Recording of Results

For monitoring requirements of this permit the permittee shall record visual observations as required. Monitoring must be conducted according to test procedures approved under Part 136 Title 40 of the Code of Federal Regulations, unless other test procedures have been specified in this permit.

C. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit the results of such monitoring shall be included in the monitoring report. Such increased frequency shall be indicated.

D. Record Retention

All records and information resulting from the monitoring activities required by this permit shall be retained for a minimum of three (3) years, or longer if requested by the Department.

E. Noncompliance Notification

If for any reason, the permittee does not comply with or will be unable to comply with any effluent limitation specified in this permit, the permittee shall notify as soon as possible by phone and provide the Department with the following information, in writing, within five (5) days of becoming aware of such condition:

1. A description of the discharge and cause of noncompliance; and
2. The period of noncompliance including exact dates and times, or if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the non-complying discharge.

F. Inspection and Entry

The permittee shall allow the head of the Department or the Regional Administrator, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,
4. Sample, or monitor at reasonable times for the purpose of assuring permit compliance, any substances or parameters at any location.

IV. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give the Department advance notice of any planned changes at the permitted facility or of an activity, which may result in permit noncompliance.

B. Penalties for Violations of Permit Conditions

The Montana Water Quality Act provides that any person who violates a permit condition of the Act is subject to civil or criminal penalties not to exceed \$25,000 per day of such violation. Any person who willfully or negligently violates permit conditions of the Act is subject to a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than 2 years, or both.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment.

E. Toxic Pollutants

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

F. Changes in Discharge of Toxic Substances

Notification shall be provided to the Department as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

- a. One hundred micrograms per liter ($100 \mu\text{g/l}$);
- b. Two hundred micrograms per liter ($200 \mu\text{g/l}$) for acrolein and acrylonitrile; five hundred micrograms per liter ($500 \mu\text{g/l}$) for 2,4-

- dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
- c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or,
 - d. The level established by the Department in accordance with 40 CFR 122.44(f).
2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - a. Five hundred micrograms per liter (500 $\mu\text{g}/\text{l}$);
 - b. One milligram per liter (1 mg/l) for antimony;
 - c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or,
 - d. The level established by the Department in accordance with 40 CFR 122.44(f).

V. GENERAL REQUIREMENTS

A. Planned Changes

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of pollutant discharged. This notification applies to pollutants, which are not subject to effluent limitations in the permit.

B. Anticipated Noncompliance

The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

C. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of the permit, the permittee must apply for and obtain a new permit.

E. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

F. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information.

G. Signatory Requirements

All applications, reports or information submitted to the Department shall be signed and certified.

1. All permit applications shall be signed as follows:

a. For a corporation: by a responsible corporate officer;

- b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
 - c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.
2. All reports required by the permit and other information requested by the Department shall be signed by a person described above or by a duly authorized representative of that person. A person is considered a duly authorized representative only if:
 - a. The authorization is made in writing by a person described above and submitted to the Department, and,
 - b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
3. Changes to authorization. If an authorization under Part V.G.2 of this permit is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part V.G.2 of this permit must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports

The Montana Water Quality Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$25,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by the Clean Water Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

K. Property or Water Rights

The issuance of this permit does not convey any property or water rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

L. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers

Permit coverage is not transferable to any person except after notice is given to the Department and a transfer fee is paid. Notice of transfer must be completed on the form provided by the Department and must be received by the Department at least 30 days prior to the anticipated date of transfer. The form must be signed by both the existing owner/operator and the new owner/operator following the signatory requirements of Part V.G of this General Permit.

N. Fees

The permittee is required to submit payment of an annual fee as set forth in ARM 17.30.201. If the permittee fails to pay the annual fee within 90 days after the due date for payment, the Department may:

1. Impose an additional fee assessment plus interest computed at the rate established under ARM 17.30.201, or
2. Suspend the processing of the application for a permit or authorization or, if the nonpayment involves an annual permit fee, suspend the permit, certificate, license or other authorization for which the fee is required. The Department may lift the suspension at any time up to one year after the suspension occurs if the holder has paid all outstanding fees, including all penalties, assessments and interest imposed under this subsection.

O. Reopener Provisions

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary), or other appropriate requirements if one or more of the following events occurs:

1. Water Quality Standards: The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
2. TMDL or Wasteload Allocation: TMDL requirements or a wasteload allocation is developed and approved by the Department and/or EPA for incorporation in this permit.
3. Water Quality Management Plan: A revision to the current water quality management plan is approved and adopted which calls for different effluent limitations than contained in this permit.
4. Toxic Pollutants: A toxic standard or prohibition is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit.

VI. DEFINITIONS

1. "**A-Closed**" waterbodies are the 15 waterbodies identified in ARM 17.30.607, .608, and .610, with specific water quality standards under ARM 17.30.621.
2. "**Act**" means the Montana Water Quality Act, Title 75, Chapter 5, MCA.
3. "**Action Threshold**" means the point at which pest populations or environmental conditions can no longer be tolerated necessitating that pest control action be taken based on economic, human health, aesthetic, or other effects. Sighting a single pest does not always mean control is needed. Action thresholds help determine both the need for control actions and the proper timing of such actions.
4. "**Administrator**" means the administrator of the United States Environmental Protection Agency.
5. "**Adverse Incident**" means an incident that you have observed upon inspection or of which you otherwise become aware, in which:
 - (1) A person or non-target organism may have been exposed to a pesticide residue, and
 - (2) The person or non-target organism suffered a toxic or adverse effect.

The phrase "toxic or adverse effects" includes effects that occur within state surface waters on non-target plants, fish or wildlife that are unusual or unexpected (e.g., effects are to organisms not otherwise described on the pesticide product label or otherwise not expected to be present) as a result of exposure to a pesticide residue, and may include:

- Distressed or dead juvenile and small fishes
- Washed up or floating fish
- Fish swimming abnormally or erratically
- Fish lying lethargically at water surface or in shallow water
- Fish that are listless or nonresponsive to disturbance
- Stunting, wilting, or desiccation of non-target submerged or emergent aquatic plants
- Other dead or visibly distressed non-target aquatic organisms (amphibians, turtles, invertebrates, etc.)

The phrase, "toxic or adverse effects," also includes any adverse effects to humans (e.g., skin rashes) or domesticated animals that occur either directly or indirectly from a discharge to state surface waters that are temporally and spatially related to exposure to a pesticide residue (e.g., vomiting, lethargy).

6. "**Best management practices (BMPs)**" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of state waters. BMP's also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage[ARM 17.30.1304(9)].
7. "**Biological Pesticide**" (also called biopesticides) - include microbial pesticides, biochemical pesticides including methoprene and other insect growth regulators, and plant-incorporated protectants (PIP):

- *Microbial pesticide* means a microbial agent intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or dessicant, that (1) is a eucaryotic microorganism including, but not limited to, protozoa, algae, and fungi; (2) is a procaryotic microorganism, including, but not limited to, Eubacteria and Archaebacteria; or (3) is a parasitically replicating microscopic element, including but not limited to, viruses. [40 CFR 158.2100(b)]
 - *Biochemical pesticide* mean a pesticide that (1) is a naturally-occurring substance or structurally-similar and functionally identical to a naturally-occurring substance; (2) has a history of exposure to humans and the environment demonstrating minimal toxicity, or in the case of a synthetically-derived biochemical pesticides, is equivalent to a naturally-occurring substance that has such a history; and (3) Has a non-toxic mode of action to the target pest(s). [40 CFR 158.2000(a)(1)]
 - *Plant-incorporated protectant* means a pesticidal substance that is intended to be produced and used in a living plant, or in the produce thereof, and the genetic material necessary for production of such a pesticidal substance. It also includes any inert ingredient contained in the plant, or produce thereof. [40 CFR 174.3]
8. ***“Calibration of Equipment”*** means measurement of dispersal or output of application equipment and adjustment of such equipment to control the rate of dispersal, and droplet or particle size of a pesticide dispersed by equipment [ARM 4.10.1501(15)].
9. ***“Chemical Pesticides”*** means all pesticides not otherwise classified as biological pesticides.
10. ***“Control measures”*** are actions (including processes, procedures, schedules of activities, prohibitions on practices and other management practices), to prevent or reduce water pollution. Use of the term control measure is intended to describe the range of pollutant reduction practices that may be employed, whether they are structural, non-structural or procedural and includes BMPs as one of the components.
11. ***“Department”*** means the Montana Department of Environmental Quality (MDEQ).
12. ***“Director”*** means the Director of the Department of Environmental Quality and/or a designee.
13. ***“Direct Chemical Pesticide Application”*** means any chemical residue from the application of chemical pesticides directly to state surface waters in order to control pests. For chemical or conventional pesticides applied directly to waters, it is the pesticide residue, including excess pesticide that is present outside of the treatment area or within the treatment area once the target pests have been controlled that is considered a pollutant under this permit.
14. ***“Discharge of a pollutant”*** and “discharge of pollutants” each means any addition of any pollutant or combination of pollutants to state waters from any point source. This definition includes additions of pollutants into water of the state from: surface runoff which is collected or channelled by man; discharges through pipes, sewers, or other conveyances owned by a state, municipality, or other person which do not lead to a treatment works. [ARM 17.30.1304(16)].
15. ***“Drift or Spray Drift”*** means movement of a pesticide during or immediately after application or use through air to a site other than the intended site of application or use [ARM 4.10.1501(38)].
16. ***“EPA”*** means the United States Environmental Protection Agency.
17. ***“Federal Clean Water Act”*** means the federal legislation at 33 USC 1251, et seq.

18. "**Integrated Pest Management (IPM)**" – is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM uses current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment [EPA PGP]. IPM as defined in FIFRA, is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks (FIFRA, 7 U.S.C. 136r-1). IPM is not a single pest control method but, rather, a series of pest management evaluations, decisions and controls.
19. "**Mixing Zone**" is defined in 75-5-103, MCA and also means a limited area of a surface water body or a portion of an aquifer, where initial dilution of a discharge takes place and where water quality changes may occur and where certain water quality standards may be exceeded.
20. "**Multi-county,**" means the general permit authorizing pesticide application within the boundaries of more than one county as identified by the applicant. The application is restricted to identifying twenty (20) contiguous counties under any one multi-county permit;
21. -"**Owner/operator**" means a person who owns, leases, operates, controls, or supervises a point source [75-5-103, MCA and ARM 17.30.1304(38)]. This could include:
 - Entity with control over the financing or decision to perform pesticide applications, or
 - Entity with day-to-day control (pesticide applicators).
22. "**Pest**" means any organism under circumstances that make it deleterious to man or the environment, if it is:
 - (a) Any vertebrate animal other than man;
 - (b) Any invertebrate animal, including but not limited to, any insect, other arthropod, nematode, or mollusk such as a slug and snail, but excluding any internal parasite of living man or other living animals;
 - (c) Any plant growing where not wanted, including any moss, alga, liverwort, or other plant of any higher order, and any plant part such as a root; or
 - (d) Any fungus, bacterium, virus, or other microorganism, except for those on or in living man or other living animals and those on or in processed food or processed animal feed, beverages, drugs (as defined in FFDCA sec. 201(g)(1)) and cosmetics (as defined in FFDCA sec. 201(i)).
23. "**Pest Management Area**" means the area of land, including any water, for which you are conducting pest management activities covered by this permit.
24. "**Pesticide**" means:
 - (a) a substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest;
 - (b) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant; and
 - (c) any nitrogen stabilizer, except that the term "pesticide" shall not include any article that is a "new animal drug" within the meaning of section 201(w) of the federal Food, Drug, and

Cosmetic Act, 21 U.S.C. 321(w), that has been determined by the United States Secretary of Health and Human Services not to be a new animal drug by a regulation establishing conditions of use for the article, or that is an animal feed within the meaning of section 201(x) of 21 U.S.C. 321(x) bearing or containing a new animal drug. The term "pesticide" does not include liquid chemical sterilant products (including any sterilant or subordinate disinfectant claims on such products) for use on a critical or semi-critical device, as defined in section 201 of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. 321. For purposes of the preceding sentence, the term "critical device" includes any device that is introduced directly into the human body, either into or in contact with the bloodstream or normally sterile areas of the body, and the term "semi-critical device" includes any device that contacts intact mucous membranes but that does not ordinarily penetrate the blood barrier or otherwise enter normally sterile areas of the body.

The term "pesticide" applies to insecticides, herbicides, fungicides, rodenticides, and various other substances to control pests. The definition encompasses all uses of pesticides authorized under FIFRA.

Note: drugs used to control diseases of humans or animals (such as livestock or pets) are not considered pesticides; such drugs are regulated by the Food and Drug Administration (FDA). Fertilizers, nutrients, and other substances used to promote plant survival and health are not considered plant growth regulators and thus are not pesticides.

25. "**Point source**" means any discernible, confined, or discrete conveyance ... from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff [75-5-103(28), MCA and ARM 17.30.1304(41)].
26. "**Pollutant**" means ...chemical wastes, biological materials, ... and industrial, municipal, and agricultural wastes discharged into water [ARM 17.30.1304(42)].
27. "**Receiving stream**" means the river, stream, or creek, which receives the wastewater discharge from the construction activity.
28. "**Regional Administrator**" means the administrator of Region VIII of EPA, which has jurisdiction over federal water pollution control activities in the state of Montana.
29. "**Research and Development**" means activities undertaken on a systematic basis to gain new knowledge (research) and/or the application of research findings or other scientific knowledge for the creation of new or significantly improved products or processes (experimental development).
30. "**Single-county,**" means the general permit authorizing pesticide application within the boundaries of one county.
31. "**State waters**" means a body of water, irrigation system, or drainage system, either surface or underground [75-5-103(33), MCA]. The term does not apply to:
 - (i) ponds or lagoons used solely for treating, transporting, or impounding pollutants; or
 - (ii) irrigation waters or land application disposal waters when the waters are used up within the irrigation or land application disposal system and the waters are not returned to state waters.
32. "**Surface waters**" means any waters on the earth's surface including, but not limited to, streams, lakes, ponds, and reservoirs; and irrigation and drainage systems discharging directly into a

stream, lake, pond, reservoir, or other surface water. Waterbodies used solely for treating, transporting, or impounding pollutants shall not be considered surface water [ARM 17.30.602(33) and 17.30.702(23)].

33. "**TMDL**" means the total maximum daily load limitation of a parameter, representing the estimated assimilative capacity for a water body before other designated uses are adversely affected. Mathematically, it is the sum of wasteload allocations for point sources, load allocations for non-point and natural background sources, and a margin of safety.
34. "**Treatment Area**" means the area of any waters to which pesticides are being applied. Multiple treatment areas may be located within a single "pest management area." The "treatment area" includes the entire area, over water, where the pesticide application is intended to provide pesticidal benefits. In some instances, the treatment area will be larger than the area where pesticides are actually applied. For example, the treatment area for a stationary drip treatment into a canal should be calculated by multiplying the width of the canal by the length over which the pesticide is intended to control weeds. The treatment area for a lake or marine area is the water surface area where the application is intended to provide pesticidal benefits.
35. "**Unavoidable Discharge of Chemical Pesticides**" means the application of chemical pesticides to control pests that are present on or over surface water, including near such waters, where a portion of the pesticides will unavoidably be deposited into waters of the state. For any pesticide applied over water (e.g., adulticide mosquito control or aerial application of insecticides to a forest canopy where surface water may be present below the canopy), any pesticide or pesticide residue that is incidentally deposited in state surface waters is considered a pollutant since the intended purpose of the application is to target pests above the water but it was unavoidable that some of the application missed the pests and ended up in the water. However, the PGP does not include "spray drift" – the airborne movement of pesticide sprays away from the target application site into a water of the state – or application of pesticides to terrestrial agriculture crops where storm water may pick up residual. As non-point sources, spray drift and stormwater runoff are not covered by the PGP.
36. "**Visual monitoring**" means an examination of the area of treatment to ensure treatment was successful and to ascertain whether an adverse impact occurred.

Appendix A: Notice of Intent



Agency Use

NOI No.:

Date Rec'd

Amount Rec'd

Check No.

Rec'd By

**FORM
NOI**

**Notice of Intent (NOI)
Pesticide Application
MTG870000**

The NOI form is to be completed by the owner or operator of pesticide activity to or over water that is eligible for coverage under the Montana Department of Environmental Quality's *Pesticide General Permit* (PGP). Please read the attached instructions before completing this form. Also see the instructions for the thresholds for completing the NOI-Tier II Supplement. You must print or type legibly; forms that are not legible, not complete, or unsigned will be returned. You must maintain a copy of the completed NOI form for your records.

Section A - NOI Status and Application Fee (Application fee must be included to be considered complete)

NEW PROJECT - No prior NOI submitted. (*New Project Fee includes first annual fee*).

Less Than Threshold

- | | |
|--|----------|
| <input type="checkbox"/> NEW – Single-county: | \$50.00 |
| <input type="checkbox"/> NEW – Multi-counties: | \$100.00 |

Greater than Threshold

- | | |
|--|------------|
| <input type="checkbox"/> NEW – Single-county: | \$500.00 |
| <input type="checkbox"/> NEW – Multi-counties: | \$1,200.00 |

EXISTING, NOI Number: M T G 8 7 _____

Less Than Threshold

- | | |
|--|-----------|
| <input type="checkbox"/> RENEWAL – Single-county: | \$25.00 |
| <input type="checkbox"/> RENEWAL – Multi-counties: | \$50.00 |
| | |
| <input type="checkbox"/> Resubmitted | -\$500.00 |

Greater than Threshold

- | | |
|--|----------|
| <input type="checkbox"/> RENEWAL – Single-county: | \$250.00 |
| <input type="checkbox"/> RENEWAL – Multi-counties: | \$600.00 |
| | |
| <input type="checkbox"/> Modification | \$500.00 |

Section B - Site (Pesticide Activity) Information (See instruction sheet):

Site (Pesticide Activity) Name _____

Site Location (T/R/S if no address): _____

(Centroid): Latitude _____ Longitude _____

Nearest City or Town _____ Zip Code _____ County _____

Is any part of the site located on or within the boundaries of Indian Lands? Yes No

*NOTE: USEPA holds permitting authority for Indian lands in Montana. If all of this site is within the boundaries of an Indian Reservation, no NOI is required for the State of Montana and permitting must be pursued with the EPA, only.

Check one, below:

- NOI coverage under the PGP for pesticide application within a single county as described above.
- NOI coverage for multiple counties (Complete Section D for all additional counties).

Section C - Applicant (Owner/Operator) Information

Agency Use

NOI No.:

Owner/Operator Name _____

Mailing Address _____

City, State, and Zip Code _____

Applicant contact person (*name, title*) _____Phone Number (_____) E-mail (*optional*) _____Applicant is: (*Check all that apply - see definitions*) Owner OperatorStatus of Applicant (*Check one*) Federal State Public Private Other (*specify*) _____**Standard Industrial Classification (SIC) Codes***(Provide the SIC code(s) which best reflects the industry activity for the owner/operator):*

SIC Code	Description	SIC Code	Description
1		2	

Section D - Additional Pesticide Activity Location Information (*only for applicants with multiple counties*)*(Complete a line for each county requested)*

	Location Name	Location – Closest City, Zip code	County	Application Area Latitude/Longitude (Centroid)
1				--- See Section B ---

Note: Only applicants requesting multiple counties complete the following, add additional pages as necessary:

2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

Is any part of the site located on or within the boundaries of Indian Lands? Yes No

If yes list which counties: _____

**NOTE: USEPA holds permitting authority for Indian lands in Montana. If all of this site is within the boundaries of an Indian Reservation, no NOI is required for the State of Montana and permitting must be pursued with the EPA, only.*

Notice of Intent (NOI) Tier II Supplement
NOI Pesticide Application Supplement for Greater than Threshold
MTG870000

Section E - Pesticide Activity Location Information	# _____ of _____	Agency Use NOI No.: _____
--	------------------	------------------------------

If you are a Tier II facility, please complete a separate Section E for each county covered under this NOI that you may discharge pesticides into surface waters of the state. Otherwise proceed to Section F.

County Name _____

Pesticide Use Patterns for this establishment (complete information for all that apply):

Use Pattern	Estimated Annual Treatment Area (Acres)
<input type="checkbox"/> 1. Piscicide or Other Nuisance Animals	
<input type="checkbox"/> 2. Weeds and Algae	
<input type="checkbox"/> 3. Aerial Pest Control (ie., Forest Canopy)	
4. Mosquitoes and Other Flying Insects	
<input type="checkbox"/> 4a. Chemical Larval Control	
<input type="checkbox"/> 4b. Chemical Adulicide	
<input type="checkbox"/> 4c. Biological Control	
<input type="checkbox"/> 5. R&D – Describe:	
<input type="checkbox"/> 6. Other – Describe:	

Attach a map (or maps) that delineate the potential area(s) of pesticide treatment.

Map of Extent of Each Activity Included? Yes, topographic map Yes, satellite map Yes, other: _____

Receiving Surface Water(s):

Within the location(s) identified above, identify which receiving surface waters you are requesting coverage for.

- Coverage is requested for all waters within this county.
 Coverage is requested only for the waters identified below.

Receiving Surface Water Name	Pesticide Use Pattern

- Coverage is requested for all waters in the specified area EXCEPT for:

Section F - CERTIFICATION FOR ALL OWNER/OPERATORS

Applicant Information: This form must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Applicants Must Complete the Following Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information; including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

A. Name (Type or Print)

B. Title (Type or Print)

C. Phone No.

D. Signature

E. Date Signed

Section E - Tier II Pesticide Activity Location Information**ADDITIONAL PAGE**

_____ of _____

Agency Use

NOI No.: _____

Please complete a separate Section E for each county covered under this NOI that you may discharge pesticides into surface waters of the state.

County Name _____**Pesticide Use Patterns for this establishment (complete information for all that apply):**

Use Pattern	Estimated Annual Treatment Area (Acres)
<input type="checkbox"/> 1. Piscicide or Other Nuisance Animals	
<input type="checkbox"/> 2. Weeds and Algae	
<input type="checkbox"/> 3. Aerial Pest Control (ie., Forest Canopy)	
4. Mosquitoes and Other Flying Insects	
<input type="checkbox"/> 4a. Chemical Larval Control	
<input type="checkbox"/> 4b. Chemical Adulicide	
<input type="checkbox"/> 4c. Biological Control	
<input type="checkbox"/> 5. R&D – Describe:	
<input type="checkbox"/> 6. Other – Describe:	

Attach a map (or maps) that delineate the potential area(s) of pesticide treatment.

Map of Extent of Each Activity Included? Yes, topographic map Yes, satellite map

Yes, other: _____

Receiving Surface Water(s):

Within the location(s) identified above, identify which receiving surface waters you are requesting coverage for.

- Coverage is requested for all waters within this county.
 Coverage is requested only for the waters identified below.

Receiving Surface Water Name	Pesticide Use Pattern(s)

Coverage is requested for all waters in the specified area EXCEPT for:

INSTRUCTIONS FOR

Form NOI – Notice of Intent for Pesticide Application (MTG870000)

IMPORTANT:

As per the federal Sixth Circuit Court of Appeals decision of January 2009, the application of pesticides in or over surface water is a discharge of a pollutant from a point source which requires a surface water discharge permit. The Department of Environmental Quality permits discharges to state surface water under the Montana Pollutant Discharge Elimination System (MPDES) program.

ARM 17.30.1304(16) "*Discharge of a pollutant*" means any addition of any pollutant or combination of pollutants to state waters from any point source. This term does not include an addition of pollutants by any "indirect discharger," such as stormwater runoff or spray drift.

ARM 17.30.1304(41) "*Point source*" means any discernible, confined, or discrete conveyance ... from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

ARM 17.30.602(33) and ARM 17.30.702 (23) "*Surface waters*" are any water on the earth's surface including, but not limited to, streams, lakes, ponds, and reservoirs and irrigation drainage systems discharging directly into a stream, lake, pond, reservoir, or other water on the earth's surface. Water bodies used solely for treating, transporting, or impounding pollutants, such as wastewater treatment lagoons, are not considered surface water.

The Pesticide General Permit (PGP) is available to any owner or operator who discharges to state surface waters through the application of (1) biological pesticides or (2) chemical pesticides that leave a residue (collectively "pesticides") in state surface waters when the application is for one of the following pesticide use patterns provided below. The requirements of the PGP are separated into two categories:

- Tier I - Requirements for all owner/operators.
- Tier II – Additional requirements for owners/operators that apply pesticides to an area greater than the treatment area annual threshold identified below.

#	Pesticide Use Pattern	Treatment Area Annual Threshold ^{1,2}
1	Piscicides and Other Nuisance Animals (i.e. zebra mussels)	10 acres
2	Weeds and Algae	100 acres
3	Aerial Pest Control (i.e. Forest Canopy)	1000 acres
4.	<i>Mosquito and Other Flying Insect Pests</i>	
4a.	Larvae chemical control	100 acres
4b.	Chemical adulticide	1000 acres
4c.	Biological control	6,400 acres
5.	Research & Development	10 acres
6	Other not classified	1000 acres

1. Calculations should include the area of the applications made to: (1) state surface waters *that contain water at the time of pesticide application* and (2) conveyances with a hydrologic surface connection to state surface water *at the time of pesticide application*. For calculating annual treatment area totals, count each pesticide application activity as a separate activity. For example, applying pesticides twice a year to a ten acre site should be counted as twenty acres of treatment area.

2. Any pesticide discharge into waterbodies classified A-closed has a threshold of > 0 acres and is therefore subject to Tier II requirements.

Calculations for determining annual pesticide application area should include all applications made to state surface waters. For calculating annual treatment area totals, count each pesticide application activity as a separate activity. For example, applying pesticides twice a year to a ten acre site should be counted as twenty acres of treatment area.

The Pesticide Notice of Intent Form (NOI form) is to be completed by the owner/operator of a pesticide activity to or over surface water that is eligible for coverage under the Department's *Pesticide General Permit (PGP)* as described above. The PGP and the owners/operators authorized under the PGP are on a five-year cycle for renewal, and the information must be adequate to include application areas for the life of the authorization –otherwise, a modification or additional NOI form will be required. PGP documents and related forms are available on the MDEQ website at: <http://www.deq.mt.gov> or from the Department at (406) 444-3080.

You must provide all of the information requested in the NOI form to be complete, including submittal of specified fees and completed certification by the appropriate signatory. Please type or print legibly; applications that are not legible or are not complete will be returned. Responses must be self-explanatory and must not refer exclusively to attached maps, plans, or documents. You must maintain a copy of the PGP and completed NOI Form for your records. Mail the completed NOI Form and fee to:

Montana Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901

SPECIFIC ITEM INSTRUCTIONS

Section A – NOI Status and Application Fee

New Project

If this NOI is the first submitted for this project, it is considered a “new project”. Check the appropriate box, which is based on two independent decisions as follows:

1. First, decide if your pesticide water coverage area annual amount will be “Less than Threshold” (Tier I) or “Greater than Threshold” (Tier II) as shown in the above table; and
2. Then decide if you want coverage within the boundaries of a single county, or under multiple counties (up to 20 contiguous counties).

Since the permit coverage will be for a five year period (unless modified or terminated), you should ensure that the areas identified in the NOI are as broad as possible. The Department will assign a permit number when the NOI is submitted. The permit number is a 9-digit code beginning with ‘MTG87.’

Existing Project

Include the permit number that the Department assigned on any correspondence with the Department regarding this site. Indicate which of the permitting actions you are now requesting:

- If the Department has renewed the *Pesticide General Permit* (renewable on a 5-year basis), any owner/operator that wishes to continue coverage under this general permit must submit a NOI for renewal. Check whether it is (a) less than the threshold or greater than the threshold, and (b) for a single county or multiple counties.
- If the Department returned your NOI to you as deficient or incomplete, check Resubmitted.
- If there is a change in the facility or site information, check Modification.

Do not use this form to transfer permit coverage to a new owner or operator -- you must use Form PTN.

Section B –Site (Pesticide Activity) Information:

A site is the general area of pesticide application to water, within the confines of a single county. Identify the name of the site or what the pesticide activity project will be called (examples: the name of the county; the irrigation district; the watershed; or a water treatment plant's supply water). If the owner/operator wishes to obtain coverage for multiple counties, pick one county as the primary site under Section B and complete information about each additional site locations (i.e., counties) in Section D.

If the area to be treated is consistent year to year (for example, only in one specific lake) then the boundaries of the pesticide application can be the extent of coverage and the center location is for that body of water. If the area to be treated may vary (for example invasive species control), the center of the county should be identified as the site location.

The site location may be a physical mailing address, a description of how the site may be accessed, or the Township/Range/Section (T/R/S) of the center of the pesticide application area (PO boxes are not acceptable). Locational Sources include GPS, a USGS topographic map, and/or "Topofinder" from <http://nris.mt.gov/interactive.html>.

Section C – Applicant (Owner/Operator) Information:

Give the name, as it is legally referred to, of the person, business, public organization, or other entity that owns, operates, controls or supervises the site(s) described in Section B and Section D of this NOI form. **The permit will be issued to the entity identified in this section (Section C)**. The owner or operator assumes all liability for discharges from the site and compliance with the terms and conditions of the General Permit. If the owner or operator is other than a person or government entity, it must be registered with the Montana Secretary of State's office.

Complete the contact information as requested. Give the name, title, work phone number, and email address (optional) of a person who is thoroughly familiar with the operation of the facility or site activity or project and with the facts reported in this form, and who can be contacted by the Department for additional information. Those facilities with periodic changes in the contact person may provide only the Title for the contact person position instead of a person's name.

List the primary and secondary four-digit Standard Industrial Classification (SIC) Code(s) that best describe the business of the owner/operator. Also, provide a brief description in the space provided. At least one SIC code must be provided. See attached table for common SIC codes. A complete list of SIC Codes (and conversions from the newer North American Industry Classification System (NAICS)) can be obtained from the Internet at <http://www.census.gov/epcd/www/naics.html>, in paper form from the document entitled "Standard Industrial Classification Manual", Office Management and Budget, 1987, or at <http://www.osha.gov/pls/imis/sicsearch.html>.

Section D– Additional Pesticide Activity Location Information (only for applicants with pesticide activity within multiple counties)

Section D must be completed by any owner/operator who is requesting authorization under the PGP for pesticide activity within more than one county. The multiple counties must all be contiguous (either located within a general area or a linear project). Indicate if any pesticide activity in this district will occur within the boundaries of an Indian Reservation (please note that the USEPA regulates these wastewater discharges).

NOI TIER II Supplemental Information

Section E - Pesticide Activity Location Information

Every Tier II owner/operator must complete a Section E for every county that needs authorization under the PGP. An identification number corresponding to the site locations listed in Section D should be assigned for each Section E. For example, if there were nine counties requested, the 3rd location listed in Section D should be identified as “#3 of 9” at the top of this form (in shading).

Identify the name of the county.

Pesticide Use Patterns for this Establishment:

Check the box for each use pattern that may apply to your operations within that county, and provide an estimate of the annual water treatment area (in acres) for each. **Note that the projection is an estimate of annual treatment area each year for the five-year permit cycle.** Also, please note that you need to count each pesticide application activity as a separate activity for the calculation. (For example, applying pesticides twice a year to a ten-acre site would be counted as twenty acres of treatment area.) Indicate the location of the pesticide application for each Pattern Use. You may use the center (centroid) location for that pesticide use pattern, or provide a beginning and end point.

A map (or maps) delineating the potential area(s) of pesticide discharge into water over the next five years is required. If work may occur within the entire county for one pattern use, outline the county. If the pesticide activity may occur only in discrete locations, outline those locations.

Receiving Surface Water:

Every potential receiving surface water body for the next five years must be identified, as requested. The owner/operator can request all waters within the county, all waters within the county except certain waters, or identify specific water bodies. **Please be aware that discharge to a waterbody that is not identified in the NOI is prohibited, and would require the owner/operator to submit a modification or a new NOI.**

Section F - Certification

For all owner/operators (both Tier I and Tier II). The NOI form certification must be completed by a signatory for the owner/operator who is responsible for the authorization as identified under Section C. The requirement for a signatory is described in ARM 17.30.1323.

Common Standard Industrial Classification (SIC) Codes for Pesticide Applicators

Category	SIC	NAICS	Examples
Agricultural parties – general agricultural interests, farmers/producers, forestry, and irrigation	01 - 08	111 Crop Production	Producers of crops mainly for food and fiber
	0811	113110 – Timber Tract Operations	The operation of timber tracks for the purposes of selling standing timber
	0831	113210 – Forest Nurseries Gathering of Forest Product	Growing trees for reforestation and/or gathering forest products
Public Health Parties (includes mosquito or other vector control districts and commercial applicators that service these)	4971	221310 – Water Supply for Irrigation	Operating irrigation systems
	9431	923120 – Administration of Public Health Programs	Government establishments
Resource Management Parties (includes state departments of fish and wildlife, pesticide regulation, environmental agencies, and universities)	9511	924110 – Administration of Air and Water Resource and Solid Waste Management Programs	Government establishments
Public Health Parties	9431	923120 – Administration of Public Health Programs	Government Establishments
	9512	924120 – Administration of Conservation Programs	Government Establishments
Utility Parties	41 - 49	221 – Utilities	Provide electric power, natural gas, steam supply, water supply, and sewage removal through a permanent infrastructure of lines, mains, and pipes.