Loon Lake, Stevens County, Washington
Integrated Aquatic Vegetation Management Plan

Prepared for the

Lake Management District of Loon Lake

March 2004

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By

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Loon Lake, Stevens County, WA

Integrated Aquatic Vegetation Management Plan

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INTRODUCTION

This Integrated Aquatic Vegetation Management Plan (IAPMP) has been prepared as an effort to develop a holistic, integrated approach to controlling and managing the growth of Eurasian watermilfoil, (*Myriophyllum spicatum*, referred to simply as 'Milfoil' herein) in Loon Lake, Stevens County, Washington. This IAVMP is, thus, an organized effort to protect the beneficial uses of this lake, including wildlife habitat and water quality. The process followed in the preparation of this Plan is outlined in the Washington Department of Ecology (WDOE) Aquatic Weeds Management Fund Program Guidelines (**WDOE 2001a**), the publication titled "A Citizen's Manual for Developing Integrated Aquatic Vegetation Management Plans" (**WDOE 1994**) and other WDOE vegetation management plan guidance (**WDOE 2001b**).

A depth contour ("bathymetric") map of Loon Lake is shown in **Figure 1**. The lake is just over 1,100 acres in size, has generally exceptional water quality, and as a result, supports a variety of beneficial uses including fishing, wildlife observation, swimming, water skiing and boating. This lake is heavily used by lakeshore residents and even secondary lots have lake access via neighborhood accesses. The lake is highly regarded as an amenity by the local community, with property values around the lake being influenced by this condition. There is one public boat launch on the lake which is open year-round and non-resident use of lake is considered moderate to heavy.

The Loon Lake residents have organized themselves into a number of community organizations including the Loon Lake Loon Association, the Loon Lake Historical Society, the Loon Lake Watershed Advisory Committee and various beach associations. The organization with the greatest overall membership and lake-wide representation, however, is the Loon Lake Property Owners Association (LLPOA). This group has the stated purposes of protecting the lake from environmental degradation and providing a forum by which the property owners may assist governmental agencies in better planning the use and resources of the Loon Lake area (LLPOA Bylaws, 2000). Following the initial finding of a pioneering infestation of Milfoil in the lake in 1996, the LLPOA was the primary local group that led the efforts to plan and implement the initial control work. During 1998 - 2000, representatives of the Loon Lake community worked with the Stevens County Commissioners to create the Lake Management District of Loon Lake, a local taxing entity, authorized under Washington State statue (Title 36 RCW, Chapter 36.61). The LMD was initially formed for a three-year period with its sole purpose being to bring about the control or eradication of Milfoil. It is for the LMD that this IAVMP has been prepared. The LMD Steering committee members responsible for the review and approval of this Plan are Jim Richardson, Chairman, Joe Haley, Jim Killingsworth, Jim Rudicil, George Swannak and Greg Young.

The contributions of two agency representatives, both in regard to the past Milfoil control work and this IAVMP, is gratefully acknowledged. Kathy Hamel, Manager of the WDOE Aquatic Vegetation Management Program, and Sue Winterowd, Coordinator of the Stevens County Noxious Weed Control Board (SCNWCB), have been actively involved with the Loon Lake residents from the time the initial infestation was identified through the present and the progress made on the control efforts can be largely attributed to the technical assistance and moral support they provided throughout the planning, permitting, surveying and treatment efforts.

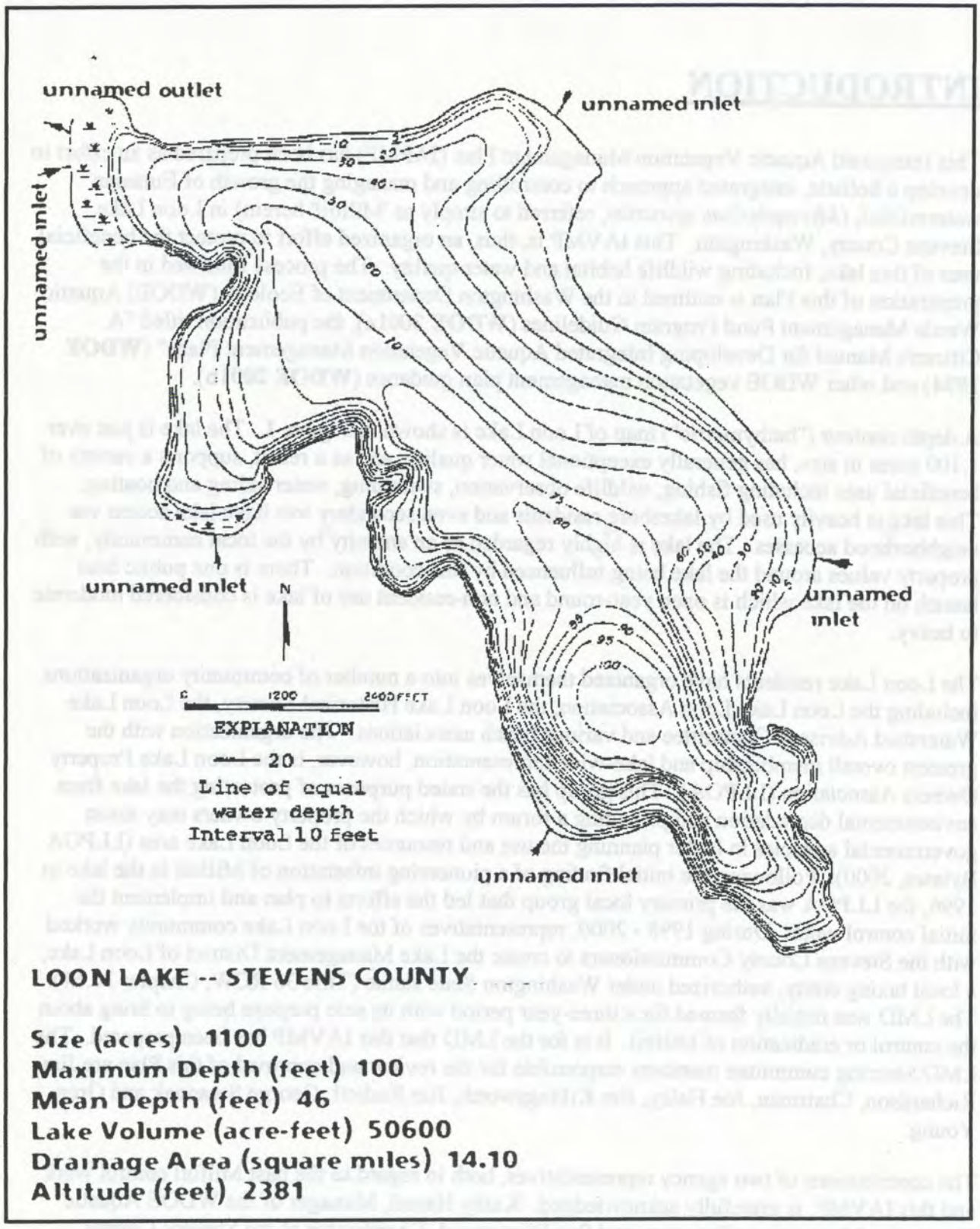

Figure 1. Map of Loon Lake showing depth contours, locations of inlets and the outlet and lake morphological characteristics (from Washington Department of Game 1955, scanned by SCNWCB).

LAKE MANAGEMENT HISTORY

Sewer System Construction

The first organized effort put forth to protect the quality of Loon Lake was the construction of a wastewater collection and treatment system, which was completed in 1986 for the Loon Lake Sewer District. The wastewater system is referred to as a "Septic Tank Effluent Pumping" (STEP) system. This means that each residence or commercial customer has a large plastic underground tank (750 to 1,000 gallon capacity, depending on size of the residence) which receives all wastewater from the property. This tank contains an electric pump that pumps liquid effluent from one chamber of the tank through a pressurized pipeline to a Sewer District lift station, located at on the north side of the lake. Wastewater flows by gravity to a treatment area located northeast of the lake which has aerated and storage lagoons and a nearby, seasonally operated spray irrigated disposal area. Solid material collected in each customer's tank is removed and disposed of by a licensed removal company. The current treatment system capacity is approximately 0.25 million gallons per day (MGD).

Stevens County Aquatic Weed Survey

Aquatic vegetation was surveyed in Loon Lake in 1994 as part of a County-wide project funded by the County and WDOE (**Resource Management Inc. 1994**). This project was an effort to assess the extent and coverage of noxious, exotic aquatic and wetland plant infestations in the County, and to outline control methods where exotic species were found. This project utilized diver and boat surveys in conjunction with Global Positioning System (GPS) plant locating, Geographic Information System (GIS) mapping and aerial shoreline imaging. Of the 30 lakes or river segments surveyed for this project, Milfoil was found only in the Little Pend Oreille chain of lakes and in the Columbia River. The only other noxious exotic plant found in this survey was Purple Loosestrife (*Lythrum salicaria*) which was found in Loon, Waitts and Williams Lakes. The Loon and Waitts infestations were established growths that were being controlled by the Washington Department of Fish and Wildlife (WDFW).

The 1994 County study also surveyed and mapped the dominant native aquatic plant communities present in the various waterbodies. The results of this effort for Loon Lake are presented in the Aquatic Plant Characterization section, below.

Early Infestation Project

In August, 1996 a lake resident reported possible Milfoil at the northwestern corner of the lake to the Loon Lake Property Owners Association. A sample of this plant was forwarded to the WDOE and its identification was confirmed. In September of that year the lake was boat-surveyed by WDOE staff who found this weed densely infesting a dead-ended canal off the Northwest corner but also spread somewhat along the North and West shorelines. This finding led the Property Owners Association (with assistance from the County Weed Board) to apply to

WDOE for funding from the Aquatic Weeds Management Fund under their Early Infestation program. The funding request was approved and a grant was offered in November, 1996.

The Early Infestation Project involved essentially three phases or elements: treatment of the canal with herbicide, diver survey of the lake littoral areas and treatments outside of the canal. Following completion of a consultant selection process, the LLPOA hired Resource Management, Inc. (later this name was changed to AquaTechnex, LLC) to perform the necessary diver surveys, herbicide applications and other control treatments.

On-site work began in April 1997 with the setting up of a barrier curtain across the mouth of the infested canal, which was about 40 feet wide (see **Figure 2**). This barrier consisted of a woven geotextile material (Trade name Mirafi) that was suspended from a log boom and weighted along the bottom edge with steel pipes. The barrier would both contain the Milfoil growing within the canal (see **Figure 3**) and minimize dilution of the herbicide that was to be applied there. The herbicide used was Sonar AS®, a liquid formulation containing the active ingredient fluridone, which is a systemic chemical capable of killing all parts of the Milfoil plants. This product would be applied by the consultant (a licensed aquatic applicator) four times at two week intervals to maintain the lethal dose of 10 - 20 parts per billion (ppb) for an eight week period. The initial application took place on May 7 and the final application on July 9, 1997. Analysis of water samples collected from within the treatment area helped guide the amount of product needed for each successive application

The diver survey of the lake's littoral areas began in late May and proceeded into June, 1997. The diver work involved the use of one or two divers being towed behind a boat using "tow boards". These tow boards allowed the divers to position themselves near the bottom for best viewing of small plants and also to rise above dense, tall growing plants. There were typically two people in the boat towing the divers, one to operate the boat and another to record Milfoil locations observed by the divers (usually indicated by the divers tugging on the tow rope). Milfoil locations were recorded using GPS equipment as well as noting on laminated orthophotographs of the shoreline areas.

Because it in not always possible to tow divers close to docks and in very shallow areas, the diver survey effort was supplemented in September, 1997 with a walking survey of the shoreline. The map produced from the combined survey efforts is shown in **Figure 4**. This map also shows the total possible area that could be infested by Milfoil, that is areas to the 20-foot depth contour.

Also starting in May and continuing through June was diver hand removal of scattered Milfoil plants outside the canal barrier. At first this work focused on the area just outside the canal, along the neighborhood beach and docks referred to as Meadowview (see **Figure 4**). Following the completion of the lake-wide diver survey in early June, however, hand-pulling work was also directed at sparse Milfoil growths found south of the WDFW boat launch and at the northeast corner of the lake. The hand removal involved a team of two divers who would crisscross an area carrying nylon mesh bags into which they would put entire Milfoil plants as they found them. Lake resident volunteers in boats assisted this effort by collecting and emptying the bags and by transporting the Milfoil to a disposal area near the lake. A total area of about one-acre was hand picked during this time.

Figure 2. Photograph of surface mat of Milfoil in Loon Lake canal, 1997, prior to treatment (courtesy SCNWCB).

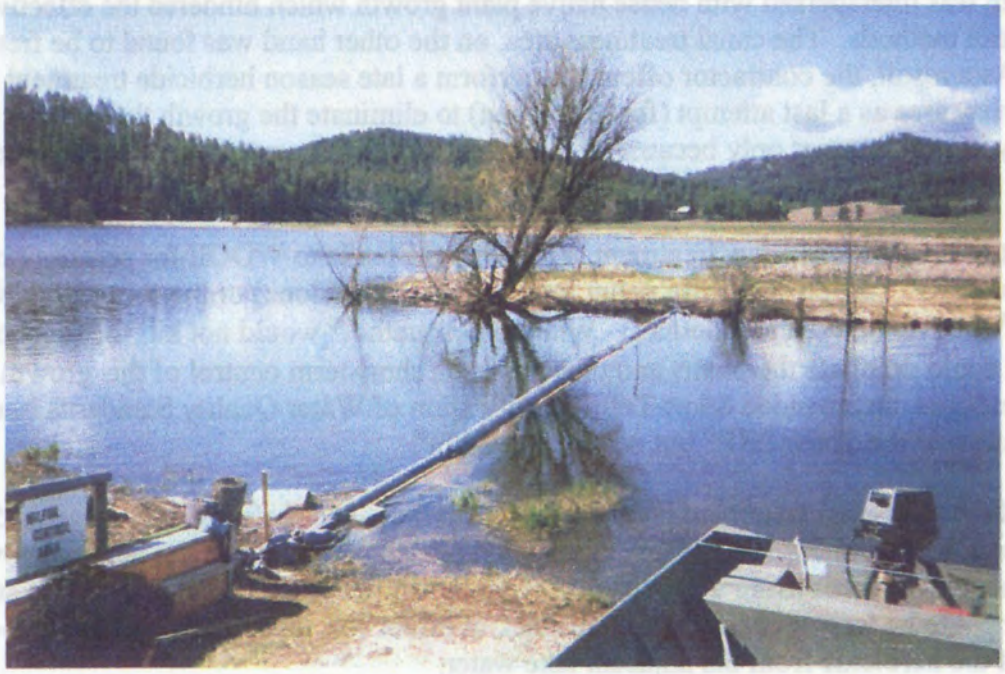

Figure 3. Photograph looking west across mouth of Loon Lake canal with barrier and treatment boat in view; May, 1997 (courtesy SCNWCB).

As the 1997 season progressed more and more Milfoil was found in the Meadowview area. This prompted the consultant to recommend the placement of bottom barriers over areas where there were considered to be too many plants to easily hand pull. The bottom barrier placement involved a team of three or four divers with a support boat to roll out woven geotextile material (trade name Texel in most cases) over areas of Milfoil growth and securing this with sand or gravel filled nylon bags. The sand/gravel bags were filled by lake resident volunteers, another of the many project tasks that the residents assisted with. Bottom barriers placed along shorelines were typically 12- or 15-foot wide rolls, while those placed in open water areas were 30 x 50-foot sheets. A total of 38,000 square feet of barrier was laid during June and July 1997, covering an area of approximately 0.8 acres. Divers and volunteer boaters removed all bottom barriers in 1998 and 2000.

The Early Infestation Project also included diver directed suction removal (also known as diver dredging) of Milfoil plants that were found in moderate densities, primarily in the Meadowview area. This work involved the use of a pontoon barge-mounted pump, hose system and expanded metal baskets. A diver would direct the suction intake to collect plants (including roots) which were drawn to the boat by a Venturi action and discharged into the metal baskets, to allow water and sediment materials to drain back into the lake. The collected plant matter would then be loaded into large plastic buckets for transport to the disposal areas. Diver dredging was performed over an area of approximately one-acre.

By the end of July it became apparent that diver controls were not keeping up with the Milfoil growth in a number of areas in Loon Lake. The Meadowview area, in particular, was seen to support Milfoil covering five to six acres at various densities and stages of maturity. Much of this growth was interspersed with dense native plant growth which hindered the effectiveness of diver control methods. The canal treatment area, on the other hand was found to be free of Milfoil. As a result, the contractor offered to perform a late season herbicide treatment in the Meadowview area as a last attempt (for the season) to eliminate the growth there. This area was of primary importance not only because of the extent of Milfoil growth but also the potential this posed for re-infestation of the canal once the containment barrier was removed.

In support of this Meadowview treatment, a request was made to WDOE for permission to use either Sonar SRP® (the slow-release pellet formulation of fluridone) or the contact herbicide Aquathol® (active ingredient endothall). While the Aquathol® would not kill the roots of the Milfoil, it could defoliate the plants and thus present a short-term control of this growth. The WDOE response, an amended Short Term Modification of Water Quality Standards issued 8/12/97, allowed the Sonar SRP® but not the Aquathol®.

The Meadowview Sonar treatment proceeded with applications performed on August 25, September 3, 8, 16 and 29, 1997. Each application placed 40 pounds of the herbicide over approximately five acres using a backpack blower. Unfortunately, inspections of this area found this treatment to be largely ineffective. This lack of effect was most likely due to wind-induced dilution of the herbicide from the adjacent lake water.

Demonstration Project

Following the 1997 treatment season it could be seen that the growth of Milfoil was far from controlled in Loon Lake. The September shoreline survey showed that the Meadowview treatment was largely ineffective and that Milfoil was present, and in some cases dense, at numerous locations along the lakeshore (see **Figure 4**). This prompted the consultant and WDOE to recommend that a large-scale herbicide treatment be performed using a fast-acting, selective, systemic herbicide. While there were two such products that were known to have documented systemic effectiveness on Milfoil, neither of these was approved for use in Washington at that time. These two products were Navigate® (active ingredient 2,4-D) and Renovate® (active ingredient triclopyr).

Navigate® had a United States Environmental Protection Agency (EPA) approved label and was approved in a number of states for Milfoil control. Renovate® was under review by the EPA and had a temporary Experimental Use Permit (EUP) label. Due to the lack of other products that could quickly control Milfoil while not harming other beneficial aquatic, wetland or upland plants, there was a considerable discussion about the possibility of using either of these products on a trial basis at Loon Lake. These discussions eventually led to a plan (and WDOE funding) to perform a demonstration project using both of these herbicides in separate plots with concurrent monitoring of aquatic plant populations and herbicide residues. In addition to the financial support for these treatments, the WDOE also contracted with the US Army Corps of Engineers - Waterways Experiment Station (USACE-WES) for help in developing the experimental design so that the monitoring results would produce scientifically defensible conclusions.

As plans were being finalized for the treatment and monitoring efforts, applications were being prepared for the necessary permits. The Aquatic Plant Management Permit application for the Navigate® treatment was prepared April 1998 and a supporting SEPA checklist and Determination of Nonsignificance the next month. The Short term Modification permit was issued 6/11/98. An application for a State EUP for the Renovate® treatment was also prepared during April and this permit was granted on 5/7/98.

The EUP label for Renovate® contained several water use restrictions which would have limited the use of treated areas for a period of time. While these restrictions were not considered significant during the planning effort (due in part to the limited extent of the treatment) media reporting of the planned treatment resulted in some adverse resident response. As a result, it was decided to drop Renovate® from the treatment plan, and to use only Navigate®.

The treatment of all known Milfoil infestation areas (60 acres total) using granular AquaKleen® (a formulation identical to Navigate® but marketed by a different company) was performed on July 8, 1998 using an airboat equipped with two granular spreaders (see **Figure 5**). A 'jon-boat' was used to bring the chemical in 50-pound sacks to the airboat from two stockpile locations on the east and west shores. A total of 6,000 pounds of product was used, following the recommended label rate of 100 pounds per acre. The expected concentration of 2,4-D in the water resulting from this rate was 1 mg/L. Prior to the treatment, 'Caution' buoys were placed around all areas to be treated and large (2-foot by 3-foot) notices were placed at all access points around the lake.

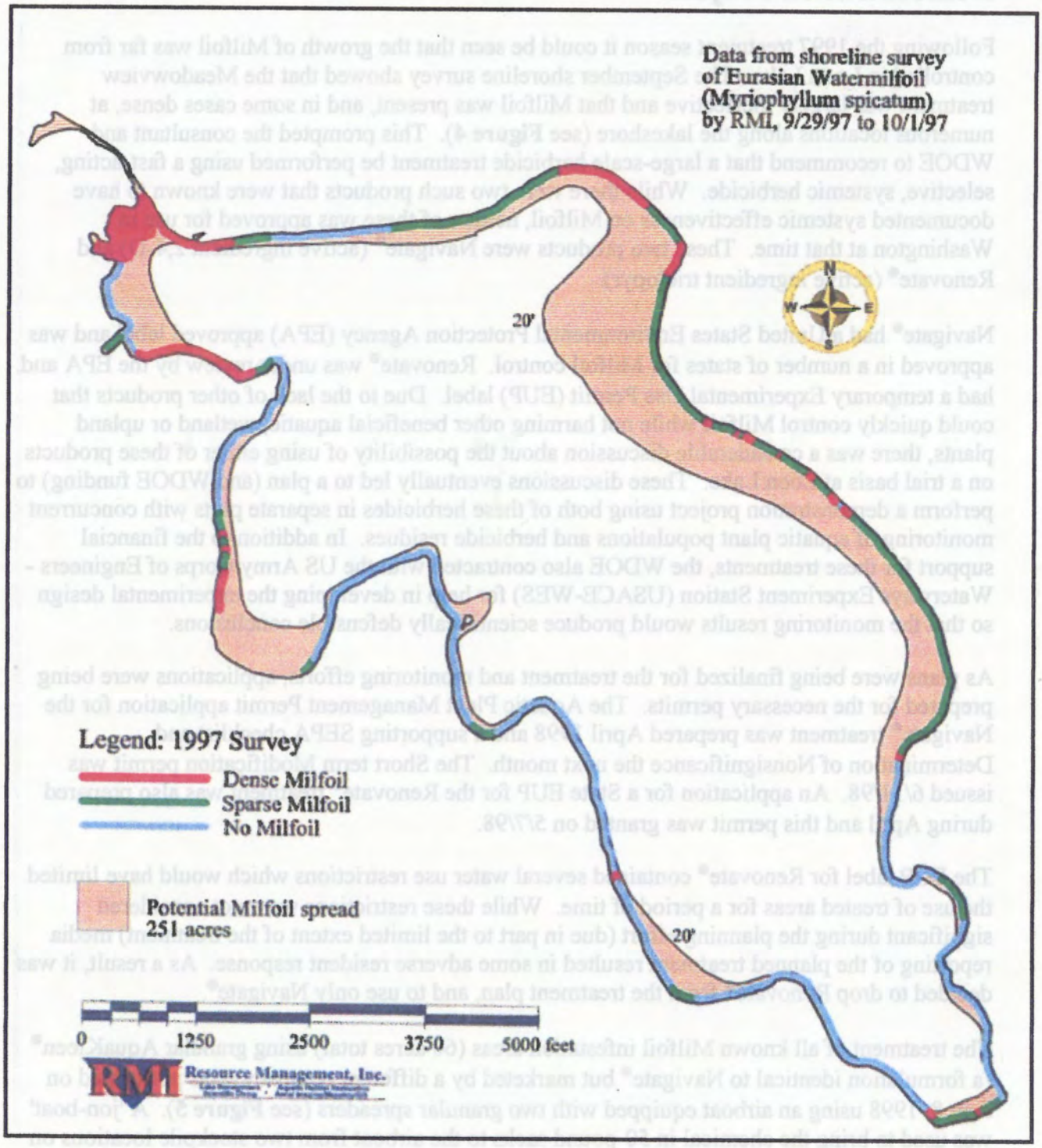

Figure 4. Map of Loon Lake showing Milfoil areas September 1997.

Figure 5. Airboat equipped to apply granular herbicide and supply boat on Loon Lake during demonstration project treatment July 1998 (photo courtesy SCNWCB).

An important part of the Demonstration Project was the performance of an aquatic plant study by WDOE staff. This effort was to provide information about the effectiveness of the herbicide in controlling Milfoil and the impacts of this chemical on non-target native vegetation. This study involved the development of sampling methodologies and protocols for the observation, collection and processing of plant samples by Dr. John Madsen and Dr. Kurt Getsinger, of USACE-WES. Further, the study included both the determination of biomass of collected samples and the frequency of plant occurrence before and after the treatment. The methods and results of this study are descried in Parsons, et al. (1999). The overall conclusion of this study was that the herbicide 2,4-D effectively reduced the biomass and frequency of Milfoil in the treatment plots without any significant impact to the native aquatic vegetation (see also Aquatic Plant Characterization section, below).

Another monitoring aspect of the Demonstration Project was to have lake resident volunteers collect water samples which would be sent to a USACE laboratory for 2,4-D analysis. This effort was to provide information about the length of time the herbicide remained in the water after application and its movement out of an application area into untreated waters. As with the aquatic plant study, Dr.'s Madsen and Getsinger prepared sampling methodologies and protocols

for the collection and processing of the samples. The sampling schedule was to collect water before the treatment and at 1, 3, 7, 14, 21 and 28 days after the treatment. Sample sites included within each of the four largest treatment areas, and 50- and 100-meters outside of each of these areas. Sampled depths were one-third and two-thirds of the total depth at each site.

It was unfortunate that some of the collected samples, including the entire 28-day set, were lost during shipment to the laboratory. As a result, it was not possible to determine a statistically valid herbicide decay rate or to show consistency in how the herbicide moved out from the treated areas. However, several conclusions were drawn from the data, as described by Lamb (2000). Perhaps the most important conclusion was that by seven days after the treatment, 2,4-D was below the analytical detection limit of 0.005 mg/L in all samples. Further, the level of 2,4-D appeared to peak in the treated areas within the first day after application at 1.0 to 1.6 mg/L. Outside of the treatment areas, 2,4-D levels ranged between 0.055 and 0.50 mg/L one day after treatment and averaged about 0.4 mg/L three days post-treatment.

A limited sediment testing program was also included in the Demonstration Project. This was done in the Meadowview treatment area. It appears from the data collected that there was some accumulation of 2,4-D in the top two to four centimeters of organic silt sediment. The highest concentration measured was 21.8 mg/L in the one-day post-treatment sample and 2,4-D was generally less than 5 mg/L in the two day through 17-day samples. There was no 2,4-D detected in samples collected 71 days after the treatment (Lamb, 2000).

1999 and 2000 Milfoil Treatments

Following the success of the Demonstration Project at Loon Lake, there was a push in the State Legislature to approve 2,4-D for other Milfoil control projects. This eventually led to the approval of Engrossed Substitute Senate Bill 5424, a bill relating to aquatic plant management adding new sections to Chapter 90.48 RCW. This Bill allowed a "government entity" seeking to control a "limited infestation" of Milfoil to use 2,4-D to treat that infestation. This use of 2,4-D was limited to infestations which were either recently documented or remained after application of other control measures, and were limited to 20% or less of the lake's littoral zone. In addition, 2,4-D could be used without obtaining a WDOE permit, although a 21-day notice was required to be sent to all lakeshore property owners and four State agencies.

The Loon Lake situation following the 1998 project made it eligible for continuing to use 2,4-D under Senate Bill 5424. Thus, in June 1999, another diver survey was conducted to map the existing Milfoil locations and densities. Following this, agency and resident notices were prepared in anticipation of a July treatment. This was performed by Resource Management, Inc. on July 19, 1999. A total of 32 acres was treated at 100 pounds of product (Navigate®) per acre using an airboat mounted with two cyclone spreaders. This treatment was followed up in August 1999 by a repeat of the diver survey, which again documented a decrease in Milfoil coverage. In fact, the Milfoil growth was becoming increasingly sparse, with few large plants being observed.

The 2000 treatment program initially used the results of the August 1999 survey to plan an early-season 2,4-D treatment. So, on June 20, 2000, following the required notifications and using the same chemical and application equipment as the previous year, 28 acres were treated with AquaKleen® (an identical formulation to Navigate®) at 100 pounds per acre. Following an

August 2000 survey, an additional three acres were treated; these focusing on surviving growth near the Shore Acres Resort on the west side of the lake and on an area of previously undocumented growth also on the west side.

2001 LMD Formed but No Herbicide Treatment Performed

The year 2001 was a pivotal year for Loon Lake Milfoil control with the completion in late 2000 of the Lake Management District formation process initiated in 1998. This process involved the preparation of a petition by the lake residents, and presentation of this petition to the local governing body (the Stevens County Commissioners) with a request to form a local taxing authority under title 36 RCW, Chapter 36.61. This legislation had been used effectively in several western Washington jurisdictions, but only one other lake group (the Little Pend Oreille Lakes Association, also in Stevens County) had attempted this in eastern Washington, and that one was not completed. The LMD was to be "managed" by the County but had to have a finite lake management purpose and cost; by statute the LMD could exist for a maximum of 10 years. (This law is now changed to allow unlimited lifetime for LMDs.) To form a LMD, the local citizens had to develop not only the finite project but also had to establish the tax rate and district boundaries and hold a series of hearings to solicit input from the proposed constituents. The Loon Lake LMD proponents (basically members of the LLPOA) designed the initial LMD project to be a three-year Milfoil control process focusing on surveys and 2,4-D treatments. The final approval of the LMD by the County guaranteed that funds would be available for this work.

Planning was underway for the 2001 2,4-D treatment at Loon Lake when the Ninth US Circuit Court reached a verdict in the so-called Talent Irrigation case. This verdict was to have profound implications on the use of aquatic herbicides in nine western states (including Washington, Oregon and California) and Guam. The Talent case involved an accidental release of irrigation water being treated with herbicide into a fish-bearing stream and the resultant toxicity of the chemical to large numbers of fish. The Circuit Court Judge found that the use of herbicides in "public" waters, even though this was permitted by State and EPA regulations, constituted a discharge of pollutants and therefore a National Pollutant Discharge Elimination System (NPDES) permit was required for every treatment to "waters of the State". This effectively superceded any existing aquatic herbicide permit processes in the nine western states under the jurisdiction of the 9th Circuits Court. While aquatic treatments in Washington were not prohibited, the applicators and the lake groups that decided to go ahead with chemical treatments were aware that they were taking on sole responsibility for any lawsuits that might ensue. Due to this perceived, potential liability, the Stevens County Commissioners decided not to perform the planned, LMD-funded 2,4-D treatment which would have treated 28 acres (Winterowd, 2003).

The WDOE developed NPDES permits for all aquatic pesticide applications in Washington including a permit for the control of noxious weeds. Under an agreement reached between WDOE and the Washington Department of Agriculture (WSDA), a State-wide application was prepared to cover treatments to listed noxious weeds. The NPDES permit was issued to WSDA by WDOE and WSDA then provides coverage to cooperators who agree to operate under their NPDES permit. This permit again allowed aquatic herbicide treatments for Milfoil control to be performed in Washington and the Loon Lake residents elected to resume 2,4-D applications.

2002 and 2003 Milfoil Treatments

The 2002 Milfoil treatment was again performed using granular 2,4-D. This year an airboat with two cyclone spreaders was used along with a 'jon boat' which had a compressor and hose to direct the herbicide into tight areas (around docks etc.). A pontoon boat was used to ferry chemical to the treatment boats. Because there was no treatment in 2001, a total of 67 acres was treated in 2002, using AquaKleen® at 100 pounds per acre.

In 2003, a total of 56.5 acres was treated, 36.5 of these using granular 2,4-D (AquaKleen®, at 100 pounds per acre) and 20 acres using the liquid formulation DMA 4®, at five gallons per acre. The liquid was used on a trial basis due to observations of decreased efficacy of the granular in other lake applications. The granular product was applied from a 'jon boat' equipped with two cyclone spreaders and a pontoon boat equipped with a granular blower. The liquid herbicide was applied from a boat-mounted 50-gallon spray tank through a boom and weighted hoses. The areas treated in 2003 are shown on **Figure 10**, in the **Aquatic Plant Characterization** section below.

PROBLEM STATEMENT

Lake User Groups

The primary lake "user group" active in the determination of the problem statement and management goals for this IAVMP was the lake residents; represented by the Board of Directors of the Loon Lake Property Owners Association (LLPOA) and the Advisory Committee of the Lake Management District (LMD) of Loon Lake. The LLPOA represents the diverse interests of the lake residents, and has shown an active concern for protecting the lake. The LMD is a special purpose district administered by the Stevens County Commissioners with oversight from the Advisory Committee (which consists of appointed lake residents, the County Noxious Weed Control Board Coordinator and a Commissioner). The LMD is primarily responsible for lake management work focusing on the Milfoil control efforts.

It is primarily through the LMD Steering Committee that information exchange related to this IAVMP was accomplished. Prior to the formation of the LMD, however, the LLPOA provided the primary vehicle for informing the residents about proposed treatment work; this in the form of meetings and mailings to over 700 members. Resident participation in LLPOA Annual Meetings and special hearings over the past eight years indicates that the LLPOA is supportive of the lake protection issues its Board has become involved with (see newsletter articles included in **Appendix A**). The LMD was voted into existence as a local taxing entity by about an 80% margin of the voting residents, which also indicated a high level of support. The voting to renew the LMD for a five year period, which was completed in November 2003, passed with about 98% voting in favor and better than 50% of those eligible to vote casting ballots.

Citizen and Agency Input

Public Meeting

In order to provide a formal opportunity for residents and management agencies to provide specific input into the development of this IAVMP and on-going aquatic plant controls, a public meeting was held on October 13, 2003. A special notice about this meeting was mailed to all residents on September 26 (see copy in **Appendix B**) and an article about the planning process was published in the local newspaper, the Loon Lake Times, in the September 2003 issue (see copy in **Appendix A**). During this meeting a summary of lake water quality and Milfoil controls performed to date was presented by Dave Lamb, the consultant hired by the LMD to author the Plan. Mr. Lamb also described the IAVMP process and the information that would be included in the report, focusing on the development of a Problem Statement and Management Goals. Finally, participant questions were answered. The meeting notices, agenda, Project Summary handout, sign-in sheet and meeting notes are presented in **Appendix B**.

The key result of the public meeting was that the attendees reaffirmed their interest in continuing to work to control Milfoil growth to avoid the loss of the "environmental quality" and beneficial uses that Loon Lake provides. Further, it was acknowledged that Milfoil is the only plant that presents a significant threat to the lake although other plants do present some hindrance to the lake residents. While the goal of the initial treatments was to completely eliminate Milfoil from the lake, the complete eradication of Milfoil is now seen as an unrealistic goal.

Resident Questionnaires

In addition to the public meeting notice, a questionnaire was mailed out to all LLPOA members. This questionnaire was designed to solicit input from interested people regarding their impressions of the current status of water quality and the effects of aquatic plants in Loon Lake. The questionnaire also addressed the perceived usability of the lake and the so-called "beneficial uses" that people make of the lake. The questionnaire and the tabulated responses are included in **Appendix B**.

Those reviewing the 110 questionnaire responses were impressed by the high proportion of people that took the time to provide comments in addition to answering the "multiple-choice" questions. These comments were reviewed and tallied and are summarized below; comments relating to water quality which are not directly pertinent to this IAVMP will be discussed by the LMD Steering Committee and considered for future action as appropriate.

Of those responding to the questionnaire, 84 indicated that the water quality in the lake was good (three of these said fair to good) while 26 indicated it was fair (one of these said fair to poor). No responders thought the water quality was poor. Of the comments received regarding the "most important factor about water quality", the most frequent response (25 questionnaires) was water clarity. Other important factors (indicated by ten or more responses) were: clean water for swimming (15), support for a healthy ecosystem (12), pollutant / contaminant free (11), clean for wildlife, fish or pets (11), weed free (10) and clean for drinking / human health and safety (10). Other factors which were indicated four or less times were: clean / safe for recreation generally

(4), clean for boating (3), no / low algae (2), aesthetics (2), sediment free (i.e. sandy bottom) (2), property values (2), minimal development (1), no / low color, odor or taste (1), no / low e-coli bacteria (1), healthy wetlands (1) and lake level maintenance (1).

Regarding the effects of aquatic plants on the usability of the lake, 54 questionnaires indicated that there was a "significant effect", 48 indicated a "moderate" effect and 6 a "low" effect. Additional comments received regarding the most important factor about aquatic plants primarily referred to the need for control (56 responses). These included 26 responses regarding general (non-specific) plant controls, 28 regarding control of noxious / harmful plants and 4 responses regarding control of plants in dock and swimming areas. However, there were also 20 responses that referred to the benefits of native aquatic vegetation including support for a healthy ecosystem (4) and water quality (1). Other "most important factors" listed (four or less responses each) were: interference with recreation generally (4), wildlife habitat (3), fear of spreading (2), maintenance of wetlands (2), effects on sediment accumulation (1) and that funds invested for aquatic plant control go for a good cause (1).

Regarding the "overall usability" of the lake, 92 responders indicated "good" (four of these said fair to good) and 17 indicated "fair". No responders indicated that the usability of the lake was "poor". The most frequently indicated comment about "overall usability" was water quality / clarity (26 responses). An additional 18 comments were received regarding keeping the lake open to all users and uses (fishing, swimming etc). Other comments that were received ten times or less were: boat numbers / speed (9), crowding (8), weed free (6), health / beauty of the lake (5), sediment / turbidity (4), fish / wildlife protection (4), lake access / having a cabin (3), lake stewardship (2), control of development (2), lake level (1), having an IAVMP (1), property values (1), continuing improvement (1) and long-term health of the lake (1).

The four primary lake use options that were given in the questionnaire were fishing, swimming, boating and wildlife observation. Of these options, 106 questionnaires indicated swimming, 105 indicated boating, 89 for fishing and 84 for wildlife observation. Other uses that were written in were relaxation (2) and photography (1).

Space was also given in the questionnaire for final comments or questions. Final comments received reflected those stated above for the most part so only the three most common will be reiterated here. The most frequent comment was for the need to control Milfoil in the lake (13 comments). The second most frequent, however, was for control of personal watercraft use (8 responses). The third most common final comments (5 each) were regarding maintenance of the lake level and control of accumulation of organic muck sediments.

The overall conclusion that has been drawn from these questionnaire responses is that while the overall lake quality and usability are good, the Milfoil (and aquatic vegetation in general) is seen as a threat that should be controlled. It is further seen that aquatic vegetation control(s) must be accomplished in an environmentally sensitive manner with respect to the maintenance of all beneficial uses and a healthy lake ecosystem. This, in fact, is what was hoped for by the LMD Steering Committee as an important justification for preparing this IAVMP.

Agency Questionnaires

The IAVMP questionnaires provided to the lake residents were also sent to representatives of the four agencies with primary jurisdiction over the lake area: the Stevens County Noxious Weed Control Board (SCNWCB), the Washington State departments of Fish and Wildlife (WDFW), Ecology (WDOE) and Natural Resources (WDNR). Completed questionnaires were received from SCNWCB Coordinator Sue Winterowd, WDFW Biologist Curt Vail and WDOE Lake Specialist Nancy Weller. The responses provided in the completed agency questionnaires are included in the summary table **Appendix B**.

The SCNWCB questionnaire indicated that the overall water quality of the lake was good with clarity being the most important factor. Aquatic plants were indicated as having a significant effect on the usability of the lake with important factors being the necessity of plants for wildlife habitat and overall ecosystem health, and the problems caused by non-native invasive plants. The present non-native plant situation was indicated as being relatively stable such that property owners and lake users were generally unaware of problems caused by these plants. In addition to the Eurasian Milfoil, the shoreline invasive species purple loosestrife, garden loosestrife and yellow flag iris, while currently impacting only small portions of the shoreline do have the potential to create significant alterations in shoreline habitat. The SCNWCB questionnaire indicated that the overall usability of the lake as fair with the high number of lake users being the most important factor in the usability. The final comment provided by the SCNWCB was that the LLPOA and LMD deserve many thanks for their efforts getting the Milfoil control program up and running and continuing. The progress made on Milfoil control to date is also due to overall resident awareness both of the need for noxious weed controls but also with respect to the health of the lake system generally.

The WDFW questionnaire indicated that the overall water quality of the lake was good with a good nutrient balance that provided for fish growth and health (with no significant algal blooms) and adequate native aquatic vegetation for desirable fish species being listed as important factors about good water quality. Aquatic vegetation was indicated to have little effect on the usability of Loon Lake with availability for fish habitat being the most important factor indicated. The overall usability of the lake was indicated as good with the fishery being the most important factor. A final comment provided by WDFW was that Eurasian Milfoil is a concern regarding fish habitat (spawning, rearing etc) which should be addressed whenever possible.

The WDOE questionnaire contained few responses, due to Ms. Weller's lack of familiarity with Loon Lake. However, the most important factor about aquatic plants, in general, was indicated that they be native and non-noxious.

Letters of Support

Letters of support for the IAVMP and proposed Milfoil control treatments were received from both the LLPOA & the Loon Lake Sewer District. Both groups offered their support for both the planning process and the Milfoil control work (see **Appendix B**).

Problem Categories

Discussions about the ongoing growth of Milfoil and its control have been held by the LLPOA Board over the past six years and by the LMD Steering Committee since its formation in 2000. The recent IAVMP public meeting was held and the questionnaire sent out for the purpose of providing information on the current levels of infestation and soliciting input from the residents about possible management actions. From these it can be seen that Loon Lake is currently experiencing a level of growth that must be controlled. Based on the recent experience with Milfoil in the lake, most residents are aware of the potential of this plant to create significant impacts to the lake environment. The current and potential problem categories which do or could result from these impacts are listed below. All of the residents who spoke at the public meeting and the majority of those who completed questionnaires were united in their desire to prevent these problems.

- current and potential hindrance to swimming because of excessive plant growth,
- potential hindrance to boating and water skiing,
- current and potential degradation of fishing and fish habitat,
- potential reduction in aesthetic appeal of the lake,
- potential decrease in property values.

Problem Statement

The Problem Statement developed for this Plan is that Loon Lake is host to an infestation of Milfoil which if not controlled has the potential to significantly impact (degrade) the human, fisheries and wildlife uses of the lake. Eurasian watermilfoil is one of the worst aquatic plant pests in North America. Like native aquatic milfoils, it has feather-like underwater leaves and emergent flower spikes. Usually, leaf shape and size can distinguish *M. spicatum* from other milfoil species; however this plant is a variable species that can hybridize with other milfoils, making it difficult to identify without chemical or DNA analysis. Every effort should be made to prevent the spread of this plant (WDOE 2001d).

WATERSHED and LAKE CHARACTERISTICS

The overall quality of lakes is closely related to the quality of the water flowing into them, including the quality of surface streams, overland runoff and groundwater. The quality of the inflows is a function of the quality of the watershed, both near shore and distant. There are human factors involved in lake and watershed quality, as well as other factors, such as the introduction of invasive, non-native aquatic plants.

In order to fully understand the lake system, with its uses and problems, and the opportunities for its protection and management, the watershed and waterbody must be described. The following discussion summarizes the available information on Loon Lake.

Watershed

Watershed Physical Features

The Loon Lake watershed occupies only 14.1 square miles, of which 12% is the lake itself (Dion et al. 1976). Land use within this watershed, as described by Dion et al., is 4 % residential suburban, 13% agricultural and 71% forest or "unproductive". There are approximately 700 lakeshore homes and two resorts located on the lake (Bortleson et al. 1974), all of which utilized septic systems prior to 1986 when the wastewater collection and treatment system was installed. **Figure 8** shows the lake and watershed in 2000.

The watershed also includes three important wetland areas that abut the lakeshore along the west side of the lake. These wetlands have been the focus of considerable attention by the LLPOA (in particular the Watershed Advisory Committee) because the proper functioning of these areas is tied to both the quality and quantity of the water in the lake (Shawl, 2003). The three wetland areas are indicated on the beneficial use area map (**Figure 11**). The McVay Meadow wetland includes approximately 100 acres contiguous with the lake and another 60 acres (approximately) that follows the stream channel to the southwest. The State of Washington owns 10 acres along the lake boundary of this area; essentially from the WDFW public access north to the northwest canal. The Anderson Meadow wetland is approximately 70 acres in size and like the McVay Meadow, surrounds one of the intermittent tributaries to the lake. The Pearson Meadow occupies approximately 80 acres surrounding an inlet stream. The lakeside boundary of this wetland was recently purchased by the Loon Lake Land Conservancy and is currently undergoing a number of restoration efforts (Shawl, 2003). The beneficial functions of these three wetland areas include filtering of waters flowing into the lake from the forested uplands and in the absorption of winter and springtime runoff with release of this water to the lake during the summer dry period.

The Loon Lake wetlands have been determined to be Category 1 or 2 wetlands (Merker, 2000). The classification of these areas in terms of their vegetation, soils and hydrologic regime (i.e. frequency of flooding) has not been formally accomplished. However, communication with Mr. Merker, who is the WDOE Wetland Habitat Biologist for the Eastern Regional Office, indicated that the Loon Lake wetlands are most likely primarily "Palustrine persistent emergent marsh" according to the Cowardin et al. (1976) system. Palustrine refers to non-tidal, fresh water areas with water depths of less than six feet (two meters) at low water. Typically, this class of wetlands contain a vast array of grasslike plants such as cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), sedges (*Carex* spp.) and true grasses. Smaller areas around the upland periphery of the primary wetlands may also fall into the classification "Palustrine scrub-shrub" or Palustrine forested" if the dominant vegetation is woody and less or greater than 20 feet (6 meters) tall, respectively.

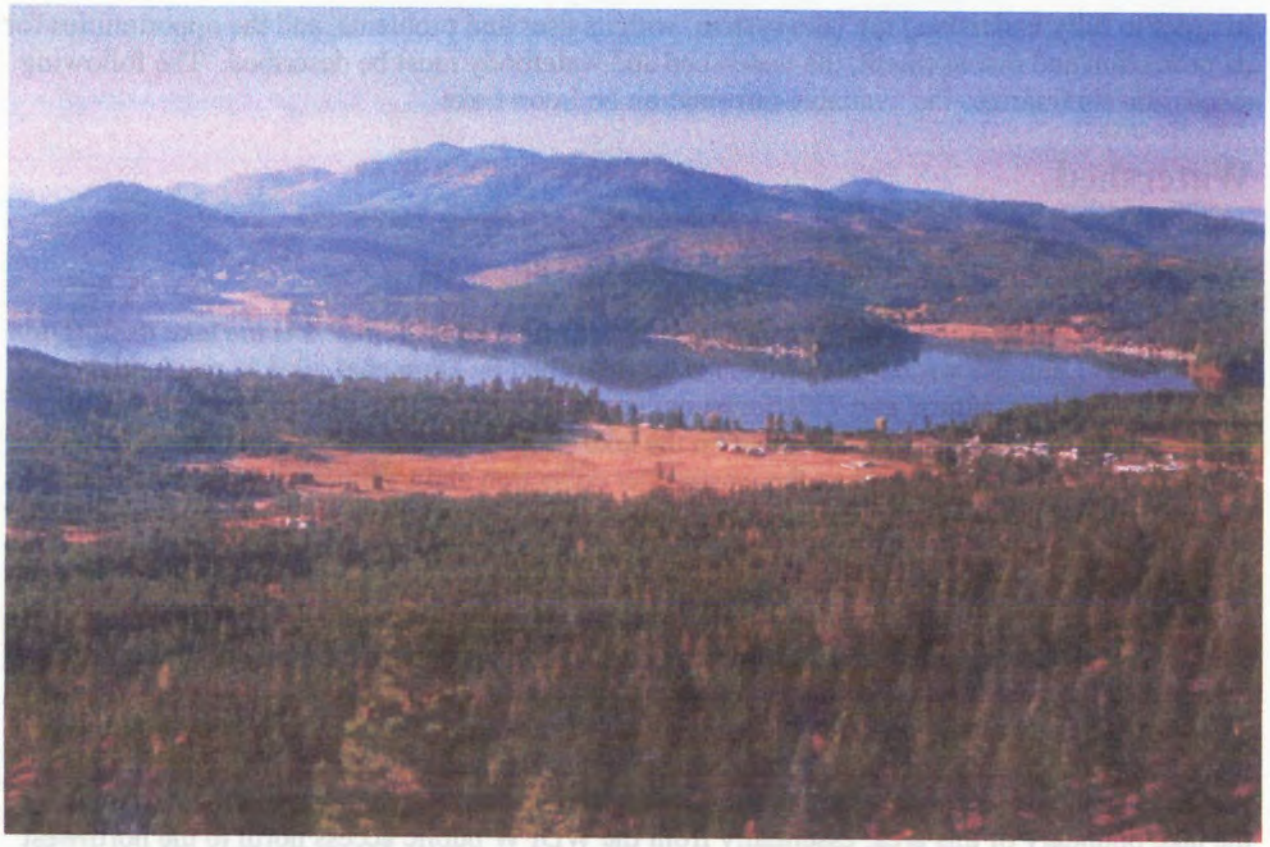

Figure 6. Loon Lake seen from the northeast, September 2000. (photo courtesy Dave Lamb).

Lake

Physical Features.

Loon Lake has an adjudicated surface elevation of 2,381.25 feet. This surface elevation (lake level) is controlled by gates on the outlet, located at the northwest corner of the lake. At full pool, the lake occupies 1,130 acres, with a mean depth of 46 feet and a volume of 51,500 acre-feet (Bortleson et al. 1974). As indicated on **Figure 1**, the maximum depth is over 100 feet. The lake shoreline is 7.9 miles long and the average lake bottom slope is 5.4 % (Dion et al. 1976).

Inflow, Outflow and Water Budget.

No information was found describing the quality or quantity of surface waters influent to Loon Lake but the surface inflows indicated in **Figure 1** are all intermittent (Dion et al. 1976). No information on lake outflow was found, with the exception of lake surface elevation and gate opening/closing records maintained by the Loon Lake Sewer District. The lake was adjudicated in 1950 at 2,381.25 feet above sea level, and current lake level management primarily focuses on monitoring a lake staff gauge until the level reaches the adjudicated level. Typically, the outlet

gate(s) are open from mid-April through mid June during which time up to 20,000 gallons per minute can be discharged to Sheep Creek and, ultimately, the Colville River (Davis 2003).

It is the general consensus of the lake residents that the lake is predominantly spring fed, but there is no information available on groundwater inflows or outflows for the lake. As a result, no formal water budget has been developed. As indicated by Davis (2003), the lake typically drops 22 - 23 inches following the closure of the outlet gates while the potential evaporation rate is thought to be closer to 30 inches during the same period. This would indicate that there is some amount of recharge from groundwater. A study on the groundwater resources of Water Resource Inventory Area (WRIA) 59 is underway at the time of this writing and this work may ultimately shed some light on the subsurface hydrology of Loon Lake.

Water Quality.

Although Loon Lake water quality has been studied by various researchers over the past 30 years, no consistent long-term monitoring has been conducted. A summary of the findings of various reports follows. It is worthy of note that both the science of lake studies and the technical capabilities of analytical equipment changed significantly during this period. There was also notable differences in detail between the quoted studies (i.e. number of depths sampled at each site and parameters analyzed for). These differences affected the conclusions drawn from these studies to some extent.

On September 10 and 11, 1969 a bacteriological and limnological survey was conducted by the State Water Pollution Control Commission (the predecessor of WDOE) on Loon, Deer and Diamond Lakes, to obtain basic water quality data (Lee 1969). For this study dissolved oxygen and temperature measurements were made at one-foot depth intervals to 50 feet at the deepest part of each lake. This allowed the determination of the depth to the thermocline (under summer stratification this is the boundary between warm surface waters and cooler deep waters). Conductivity and pH values were determined at selected depths above and below the thermocline and Secchi disk visibility was used as an index for primary production (i.e. algae growth). Water samples for nutrient (nitrogen and phosphorus compounds) were collected

The results of the 1969 study were that there was a well-developed thermocline in Loon Lake at a depth of approximately 30 feet and the Secchi disk reading of 27 feet indicated low levels of algae and other suspended material. The highest recorded temperature was 19.2 °C (67 °F) at the surface and the lowest was 2.6 °C (37 °F) at the 50-foot depth. There was little decline in oxygen concentrations below the thermocline which also indicates low levels of primary productivity of algae. Conductivity was 179 µmhos/cm, at the 2 and 33-foot depths, and 193 µmhos/cm at the 46-foot depth. The range in pH was only 8.2 to 8.4 through the depths sampled. Nutrient analyses were also indicated as presenting a low potential for production of algae: nitrate (NO_3) was 0.02 to 0.05 mg/L in filtered samples, nitrite (NO_2) and ammonia (NH_3) were below detection, total phosphorus was 0.05 to 0.13 mg/L in filtered samples and dissolved phosphorus (PO_4) was 0.019 to 0.048 mg/L in filtered samples. Bacteriological data was stated as indicating a high level of water quality, although the results from Loon Lake were the highest of the three lakes studied: 120 to 130 total coliform bacteria per 100 mL of sample.

During 1971 and 1972, Bishop (1973) expanded on the previous study of Loon, Deer and Diamond Lakes. This study determined depth profiles of temperature, dissolved oxygen, specific conductance (conductivity referenced to a 25° C standard temperature) and pH from surface to bottom at two lake sites. Turbidity and color were measured at selected depths at the two sites and Secchi disk transparency was measured at each site. Water samples for phytoplankton (algae) enumeration were taken at the three-foot depth and samples for nutrient analyses were taken at the three and 50-foot depths.

The results of Bishop's work indicated that all three lakes were in the early stages of eutrophication (tending toward having high levels of productivity). The appearance of blue-green algae and elevated nitrate concentrations in late August and September in Loon Lake indicated that water quality problems might be expected in future years. A recommendation was made that nutrient sources should be documented so that a nutrient budget could be determined for each lake.

The four temperature profiles measured at Loon Lake showed the development of thermal stratification. The thermocline occurred from approximately 20 to 30 feet from June 16 and August 19, 1971, and had dropped to between 30 and 40 feet by September 16. The highest recorded temperature from this study was 24.2 °C (76 °F) at the surface on 7/22 and the lowest was 5.7 °C (42 °F) at the 55-foot depth on 6/16. Concentrations of dissolved oxygen were greater than 8.0 mg/L from the surface to the 40-foot depth on all sampling dates but dropped to below 1.0 mg/L from the 40- to 60-foot depths. Secchi disk transparencies ranged from a high of 25 feet in August to a low of 19 feet in September. Specific conductance ranged from 150 and 205 μmhos/cm with the highest value being from the 45-foot depth on September 16 and the lowest from the three-foot depth on August 4. The pH ranged from 7.1, at the three-foot depth on September 16, to 8.2 at the three-foot depth on August 19. Turbidity was 1 JTU at all dates and depths. Color ranges from 5 units on July 22 (three-foot depth) to12 units on August 4 (both three and 50-foot depths).

Nitrate nitrogen results ranged from a high of 0.25 mg/L on May 19 to low below the analytical detection limit on August 4 and September 16, 1971. There was no consistent difference during this period between nitrate concentrations at the three-foot depth and at the 50-foot depth. Dissolved phosphorus was below detection in all samples except the July 22 and August 4 sample dates, when concentrations were 0.01 to 0.02 mg/L. Total phosphorus ranged from a high of 0.06 mg/L on September 16 to below detection on June 16.

Water samples for algal enumeration were taken in May, June, August and September 1971 as part of Bishop's study. The greatest number of algae cells was found in May and the least in September. Diatoms were the most prevalent throughout this period with green algae being numerous in May and June and blue-green forms being noted in August and September.

A third study on Loon, Deer and Diamond Lakes was performed during the 1978 growing season (Singleton et al. 1980). This study included bi-weekly sampling of two lake sites with samples collected, or *in-situ* analyses performed, at three-meter (approximately 10 foot) depth intervals from the surface to bottom. The report for this study also made comparisons between 1978 and 1971 data.

The results of the 1978 work indicated that all three lakes were "mesotrophic" (having medium levels of productivity); each having nutrient and chlorophyll *a* concentrations below criteria for eutrophic waters. All three lakes experienced some degree of "hypolimnetic anoxia" (oxygen concentrations below one mg/L in the deeper waters) and Loon experienced the most severe condition with the bottom nine meters (30 feet) being devoid of oxygen from August through October. Loon Lake also had the lowest average Secchi disk depths of the three lakes and was the only lake to exhibit a significant decrease in water clarity (compared to the 1971 study). Average nutrient concentrations and the extent of hypolimnetic anoxia appeared unchanged from conditions seen by bishop (1973), however. The 1978 algal numbers in Loon appeared to be significantly increased from 1971 levels. The species composition appeared to shift from domination by diatoms (Bacillariophyta) to domination by the blue-green algae (Cyanophyta). However, it was stated that these apparent differences might be a result of differing collection techniques between the two studies.

Singleton et al. (1980) found that thermal stratification was already becoming established by the first sampling in mid-May 1978 and a distinct metalimnion (thermocline) was present by early July. Cooling air temperatures brought about de-stratification starting in late August and by mid-November the lake had turned over and water temperatures were essentially the same from surface to bottom. Maximum recorded temperature was 22.5 °C (73 °F) at the surface on 6/28 while the lowest recorded temperature was 6.0 °C (43 °F) at the 18 - 21 meter (59 - 69-foot) depths on 5/15. Dissolved oxygen at Loon Lake was at or near 100% saturation (a temperature-dependent condition) in the "epilimnion" (above the thermocline) through this study period. Hypolimnetic anoxia was also present during the latter part of the growing season. The highest dissolved oxygen concentration recorded was 12.4 mg/L at the six meter (20-foot) depth on 5/15 and the lowest was 0.1 mg/L near the bottom on 10/31. The pH levels averaged about 8.0 overall and ranged from a high of 8.6 at the nine meter (30-foot) depth on 7/18 to a low of 7.2 at the 18 - 21 meter (59 - 69-foot) depths on 8/29. Conductivity ranged between 202 and 121 µmhos/cm with both extremes occurring on 8/29 (the 202 was from the epilimnion at Site 2 while the 121 was in the hypolimnion at Site 1). The average of all Secchi disk transparency measurements from this study was 5.3 meters (17.4 feet) with the greatest being 7.0 meters (23.0 feet) on 6/7 and the least being 3.7 meters (12.1 feet) on 11/14. Turbidity values were all between 1.0 and 3.0 NTU with the average of all data being 1.2 NTU.

The average of the total inorganic nitrogen concentrations (that is nitrate + nitrite + ammonia) was less than 0.01 mg/L. The highest nitrate concentration measured was 0.04 mg/L in the hypolimnion on 6/7 and 8/29) while most nitrate results were below detection (<0.01 mg/L). Total and Dissolved phosphorus were also mostly below detection (<0.01 mg/L); the highest dissolved value found was 0.07 mg/L in the hypolimnion on 10/31 and the highest total value was 0.09 at that same time and depth.

Since 1978, the only water quality monitoring results found for Loon Lake are those performed by the Loon Lake Sewer District for the LLPOA. Data from one site (the deepest area) for the period May 1996 - July 1999, focusing on the parameters temperature, dissolved oxygen, pH, ammonia, nitrate, nitrite and total phosphorus, was provided by the LLPOA. This data was reviewed and appears to fall within the ranges of values reported by Singleton et al (1980) with some exceptions. Since no information on the methods used was available, no further comparisons with past data were attempted.

Water Rights

A search of the WDOE's Water Rights Applications Tracking System made on November 3, 2003 indicated that there are 384 Certificates, Permits or Claims for surface water from Loon Lake (see selected fields from the WDOE report in **Appendix D**). While the current validity or use of these listed water rights is not indicated on this report, the purposes listed included 'domestic single family' (DS, 109 listed rights), 'domestic general' (DG, 206), 'domestic multiple family' (DM, 6), 'irrigation' (IR, 21). An additional 48 listed rights indicated various combinations of these, plus 'fire' (FR) and 'stock watering' (SR). Six of the water rights did not list any use.

Starting with the 2001 demonstration Project treatment, all landowners have been notified of planned herbicide applications and, to date, there has been only one landowner who requested an alternative source of water during a treatment. It should be noted that the Stevens County PUD #1 maintains a public water system around the lake so many of the listed domestic water rights from the lake are probably not used for this purpose.

Fish, Wildlife and Bird Usage

Information on fish, wildlife and bird usage of Loon Lake was obtained through communications with various lake residents and WDFW personnel.

Loon Lake is home to a typical range of fish species, both warmwater (spiny rays) and coldwater (salmonids), as indicated in **Table 1**. Loon is most well known for its salmonid fishery, with Kokanee (Silver trout) and Rainbow trout being the primary sought-after species (Vail, 2003). Loon Lake also has a stable population of Mackinaw (lake trout) which are slow growing but can get quite large (the largest Mackinaw caught out of Loon was 30 pounds (Crass, 2003). The WDFW reportedly stocked Loon Lake with Mackinaw during the early 1990's but the State's Mackinaw program has been discontinued.

Table 1. Resident fish species in Loon Lake, Stevens County, reported by lake resident Lehman Crass.

Resident Fish Species		
Bass, Largemouth	Crappie	Trout, brown
Bass, Smallmouth	Perch, Yellow	Trout, Lake (Mackinaw)
Bluegill	Sunfish	Trout, Rainbow
Catfish (Bullhead)	Tench	Trout, Silver (Kokanee)
Crustaceans		
Crayfish		

The Loon Lake Kokanee and Rainbow populations are regularly supplemented by hatchery stocking and the lake residents (through the LLPOA) have maintained an active net pen for rearing both Kokanee and Rainbow trout since 1998. **Table 2** indicates the numbers and sizes

(in units of number per pound) and the source hatchery of fish that were stocked directly into Loon Lake by WDFW for the period 1999 - 2003. **Table 3** shows the numbers and sizes of fish that were placed in the net pens, when they were delivered and what size they were when they were released into the lake proper. For reference, fish sized less than one per pound are referred to as brood stock, fish sized four to 10 per pound are "catchable", 50 to 80 per pound are "fingerlings" and 200 to 500 per pound are "fry".

Regional staff of WDFW were interviewed regarding the quality of the Loon Lake fishery and the effects of past 2,4-D treatments on the fishery. Both John Whalen, Regional Fisheries Manager, and Curt Vail, Fishery Biologist, indicated that the fishery was "good" and there had been no reported adverse effects of the 2,4-D directly on any fish species. The current fisheries management priority is on the planting of rainbow trout and the control of Milfoil does not have any negative effects on this program. Mr. Vail did indicate that control of Milfoil infestations would be expected to benefit Kokanee, by keeping their shoreline spawning area free of dense plant growth, and the warmwater predators (bass) by keeping their native cover vegetation in tact. Mr. Vail also indicated that a good hydroacoustic survey of Loon Lake is needed to have a better understanding of warmwater fish populations, including preditor:prey ratios and habitat utilization.

Birds, waterfowl and wildlife seen in the Loon Lake area have been documented by a number of lake residents. **Table 4** presents a listing of commonly seen species, some of these being resident and others migratory or temporary residents of the lake area.

Table 2. Salmonid fishes stocked into Loon Lake by WDFW, 1999 - 2003.

Species	Date released	Number	Size (#/pound)	Source Hatchery
Rainbow	Mar-99	15,104	5.6	Ford
Kokanee	Jun-99	158,604	479	Spokane
Rainbow	Mar-00	15,526	5.5	Ford
Rainbow	Apr-00	9,954	4.2	Ford
Kokanee	Jun-00	375,500	285	Spokane
Rainbow	Apr-01	25,791	4.9	Ford
Kokanee	Jun-01	350,000	233	Spokane
Rainbow	Apr-02	22,084	4.8	Ford
Kokanee	Jun-02	350,211	218.3	Spokane
Rainbow	Mar-03	13,440	4.8	Ford
Rainbow	Apr-03	11,698	4.8	Ford
Kokanee	Apr-03	255	10.2	Ford
Kokanee	Jun-03	150,271	226.2	Spokane
Rainbow	Nov-03	900	0.3	Spokane

Table 3. Summary of fish stocked into Loon Lake from resident operated net pens through October 2003.

Species	Date received	Number	Size (#/pound)	Source Hatchery	Date released	Number	Size (#/pound)
Rainbow	5/29/98	15,000	58	Colville	10/15/98	9,184	7
Rainbow	5/29/99	15,000	66	Colville	10/20/99	11,273	8
Rainbow	5/30/00	12,000	93	Colville	10/9/00	9,358	4
Rainbow	11/1/00	12,000	20	Moses Lake	2/12/01	11,200	5
Rainbow	6/15/01	14,942	69	Spokane	9/12/01	12,761	5
Kokanee	10/31/01	12,744	75	Ford	6/1/02	12,712	16
Rainbow	6/7/02	15,000	58	Spokane	10/13/02	13,562	9
Kokanee	11/1/02	14,175	53	Ford	5/26/03	14,132	16
Rainbow	5/28/03	12,512	68	Colville	10/7/03	9,830	11
Rainbow	10/14/03	15,005	22	Spokane	n/a	n/a	n/a

Rare, Threatened or Endangered Species.

Following communication with representatives of the Natural Heritage Program at the Washington Department of Natural Resources, it appears that there are no rare, threatened or endangered plant species in the Loon Lake vicinity (see letter in **Appendix D**). Information on rare, threatened or endangered animal species was obtained from the Priority Habitats and Species Program of the WDFW. This information included a habitats and species map as well as descriptions of the occurrence of species of concern. The map is not included with this IAVMP report due to the fact that species involved are found locally in low numbers and are vulnerable to human disturbance. The Habitats and Species report listing some details of the priority habitats and species listed for the Loon Lake area is included in **Appendix D**.

Priority habitats found in the Loon Lake area are the wetlands and riparian zones. The entire lake shoreline and two of the three significant wetland areas located along the western shoreline are listed as priority areas. The only priority fish species listed was rainbow trout which are resident to Sheep Creek, the Loon Lake outlet. There are no anadromous fish listed.

There were two bird species (common loon and red-necked grebe) and one mammal (northwest white-tailed deer) listed in the Priority Habitats and Species listing information. Documented occurrences were listed as "Regular Concentration" for the loon and deer, or "Breeding Occurrence" (i.e. a nest) for the grebe. There were two birds listed on the Wildlife Heritage Point list - bald eagle and red-necked grebe; both with Breeding Occurrences.

It is worthy of note that Loon Lake residents G. Gumm and D. Poleschook compiled a document describing recreational threats to nesting waterbird habitat. This report (Poleschook & Gumm, 2002, see copy in **Appendix D**) provides data on the number of observed red-necked grebe nest sites associated with the three west-side wetland areas during the period 1985 - 1999 compared with 2000 - 2001 which indicates considerable decline. The authors of that report point to an

increase in high-speed boating, water skiing and personal watercraft use in close proximity to these wetland areas as the reason for the apparent decline.

Table 4. Bird and mammal species observed on or near Loon Lake, Washington by lake residents Ginger Gumm, Daniel Poleschook, Jr., and others during 1993 to 2003.

Resident and Nesting Birds		
blackbird, Brewer's	goldeneye, common	osprey
blackbird, red-winged	goldfinch, American	owl, barred
blackbird, yellow-headed	goose, Canada	phalarope, Wilson's
bluebird, western	grebe, pied-billed	pheasant, ring-necked
chickadee, black-capped	grebe, red-necked	quail, California
chickadee, mountain	grosbeak, evening	rail, Virginia
coot, American	gull, ring-billed	raven, common
cormorant, double-crested	hawk, red-tailed	robin, American
cowbird, brown-headed	heron, great blue	sandpiper, spotted
crow, American	junco, dark-eyed	snipe, common
dove, mourning	kestrel, American	sora
dove, rock	killdeer	sparrow, song
duck, muscovy	kingbird, eastern	swallow, tree
duck, ring-necked	kingfisher, belted	swallow, violet-green
duck, ruddy	hummingbird, black-chinned	swift, Vaux's
duck, wood	hummingbird, calliope	teal, cinnamon
eagle, bald	hummingbird, rufous	teal, green-winged
finch, Cassin's	magpie, black-billed	turkey, wild
finch, house	mallard	woodpecker, downy
flicker, northern	meadowlark, western	wren, house
gadwall	nighthawk, common	wren, marsh
goldeneye, Barrow's	nuthatch, red-breasted	
Migratory and Irruptive Birds		
canvasback	loon, Pacific	siskin, pine
grebe, eared	merganser, common	scaup, lesser
grebe, horned	merganser, red-breasted	swan, trumpeter
grebe, red-necked	pintail, northern	waxwing, cedar
grebe, western	redhead	wigeon, American
loon, common	redpoll, common	
Mammals		
beaver	coyote	lion, mountain*
bear, black*	deer, white-tailed	muskrat
Reptiles / Amphibians		
turtle		

AQUATIC PLANT CHARACTERIZATION

1994 Steven County Aquatic Weed Survey

Study results from the 1994 Stevens County Aquatic Weed Survey project (Resource Management, Inc. 1994) for Loon Lake included the species list shown in **Table 5**. Observations made during this survey indicated that the northern shoreline of the lake had a gravel and sand bottom with well established populations of native aquatic plants. The plant communities there were dominated by Muskgrass (*Chara* sp.), Pondweed (*Potamogeton* spp.), Common Waterweed (*Elodea canadensis*), and Bladderwort (*Utricularia vulgaris*) in the near-shore areas with moderate growth of Muskgrass, Water-Nymph (*Najas flexilis*) and Tapegrass (*Valisnaria americana*) at greater depths (see **Figure 7**). The Eastern shoreline had a very dense band of Muskgrass and other species from the shore to a considerable distance offshore, much of this growing in heavy marl sediments. Deeper areas along the eastern shoreline contained distinct beds of Pondweeds and native Milfoils (*Myriophyllum* spp.). The Southern and Western shorelines, which drop off quickly to deep water, had few submersed species, primarily Muskgrass. The northwestern corner of the lake, in the area of the WDFW Public Access, was similar to the eastern shoreline with marl sediments and was dominated by Muskgrass with occasional Pondweeds. The aquatic plant populations in some parts of the lake were seen by the project consultant to be "excessive to the point of presenting a weed problem to lake users" (Resource Management, Inc. 1994). Specific locations of weed problems were not indicated in the project report, however.

Table 5. Aquatic plant species list for Loon Lake, from 1994 Stevens County Aquatic Weed Survey.

Scientific Name	Common Name
Bidens beckii	Water marigold
Brasenis schreberi	Water shield
Elodea canadensis	Common waterweed
Lythrum	Purple loosestrife
Myriophyllum sibericum	Northern milfoil
Najas flexilis	Common niad
Potamogeton amplifolius	Large leaf pondweed
Potamogeton richardsonii	Richardson's pondweed
Potamogeton zosteriformis	Eel grass
Vallisneria americana	Water celery

1998 Demonstration Project Survey

The 1999 WDOE monitoring study (Parsons et al. 2001, see copy in **Appendix D**), which documented the effects of the 1998 Demonstration Project 2,4-D treatment, produced the species list found in **Table 6**. This work was a considerably more detailed look at plant species. The

species list was developed from biomass sampling and a "Line-intercept" plant frequency analysis; each of these being performed in selected treated and untreated areas in the lake.

Plant Biomass

The biomass samples were collected using SCUBA methods (see **Figure 8**) with sample plots being placed along a floating rope laid out from the shore through the littoral zone (Parsons et al. 1999, see **Figure 9**). A total of 24 aquatic plant species were found in the biomass samples. Plant distribution was found to be very patchy with several samples containing no measurable plant matter and other samples with up to seven different species. Total biomass ranged from 0.1 to 1,396.4 grams per square meter (g/m^2) dry weight, with an average of 37 g/m^2. The most commonly collected plant was Robbins' pondweed which was found in 48% of the biomass samples. The top three plant species and their respective biomass collected from 2,4-D treated plots in June 1998 were: Robbins pondweed (86.57 g/m^2), Large-leaf pondweed (7.44 g/m^2) and Milfoil (6.58 g/m^2). Dominant species in August 1998 were: Robbins' pondweed (59.84 g/m^2), Large-leaf pondweed (20.20 g/m^2) and Water marigold (8.37 g/m^2). In June 1999 the predominant plants in the treated plots were: Robbins' pondweed (43.98 g/m^2), Elodea (17.46 g/m^2) and Large-leaf pondweed (10.91 g/m^2). There were 45 total samples collected on each of the above dates.

The results from the untreated plots showed considerably more variation between the three sample dates. In June 1998 the top three species in terms of biomass were: Elodea (29.63 g/m^2), Robbins' pondweed (21.20 g/m^2) and Large-leaf pondweed (12.03 g/m^2). In August 1998, untreated plots the top three were: Large-leaf pondweed (35.73 g/m^2), Richardson's pondweed (31.14 g/m^2) and Water marigold (20.81 g/m^2). Finally, the June 1999 sampling results were: Robbins's pondweed (29.62 g/m^2), Elodea (23.47 g/m^2) and Large-leaf pondweed (11.39 g/m^2).

Plant Frequency

The plant frequency data was collected by snorkeling along the floating rope used for the biomass sampling and noting the presence of all plants that crossed the vertical plane between the line and the lake bottom. This is referred to as a "line-intercept" method. The predominant plants seen in this data varied somewhat from the predominant plants seen in the discrete biomass samples. From the June 1998 survey of treated plots, the top three plant species were: Large-leaf pondweed, Northern milfoil and Chara. From the August 1998 treated plots Large-leaf pondweed was the most frequently seen with Robbins' pondweed second and Chara and Northern milfoil tied for third. In June 1999 in the treated plots the most frequent was Large-lead pondweed, with Robbins' pondweed and Chara tied for second and Bladderwort and Sago pondweed tied for third. In the untreated plots in June 1998, Chara was the most frequently documented with Large-leaf pondweed second and Northern milfoil third. In august this was Chara first, Northern milfoil third and Large-leaf pondweed third. And, finally, in June 1999 the top three species in the untreated plots were Large-leaf pondweed, then Chara, then Flat-stem pondweed third.

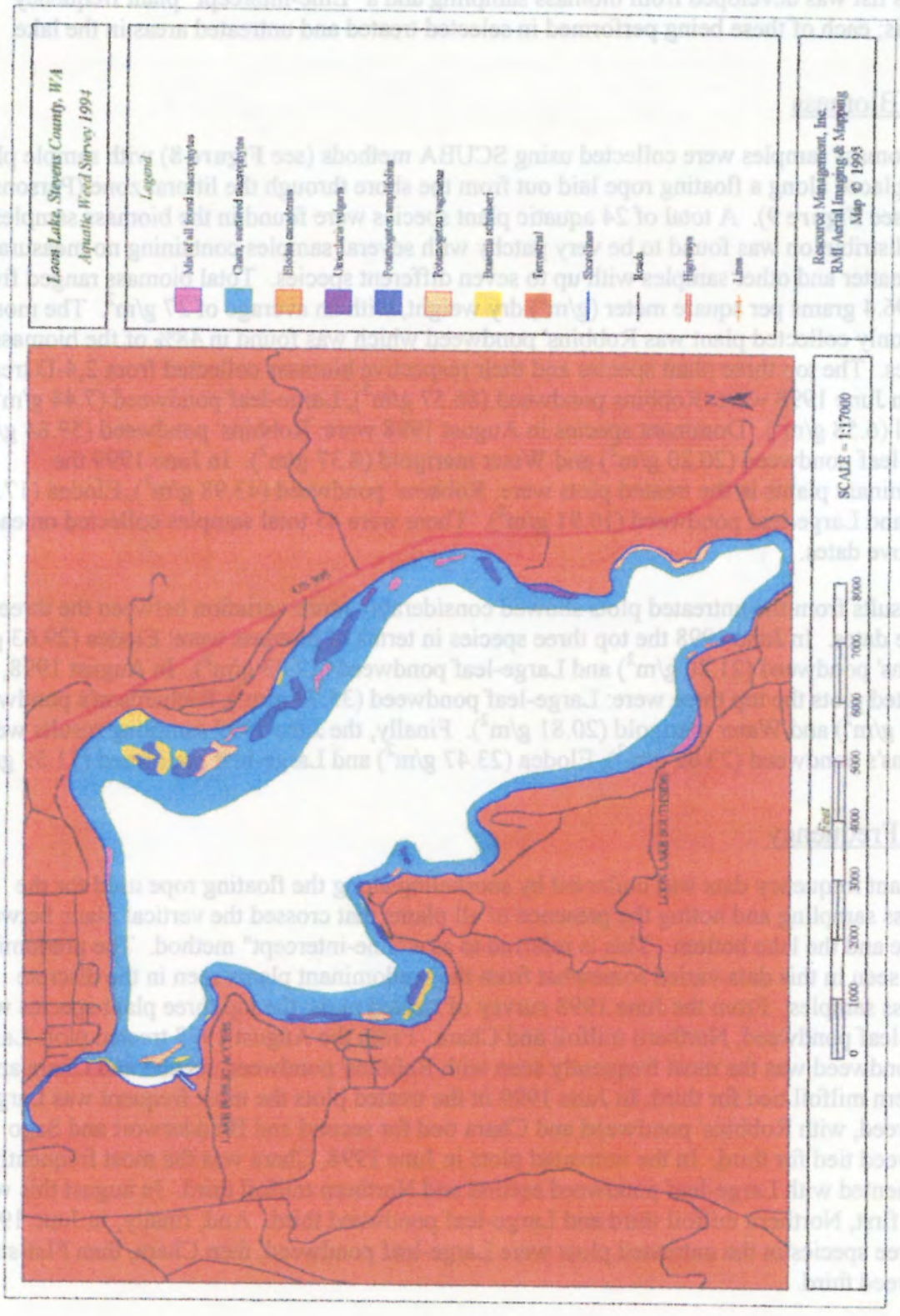

Figure 7. Map of Loon Lake showing aquatic vegetation seen during the 1994 Stevens County Aquatic Weed Survey.

Table 6. Aquatic plant species list for Loon Lake, from 1998 2,4-D treatment monitoring effort (retyped from Parsons et al. 2001).

Scientific Name	Common Name	Growth form*	Plant Type**
Brasneia schreberi Gmel.	Watershield	f	d
Ceratophyllum demersum L.	Coontail	s	d
Chara sp.	Muskwort, Muskgrass	s	macroalgae
Eleocharis sp.	Spikerush	s	m
Eleocharis palustrus (L.) R & S	Common spikerush	e	m
Elodea canadensis	Common elodea, waterweed	s	m
Fontinalaceae	Aquatic moss	s	moss
Heteranthera dubia (Jacq) MacM.	Water star-grass	s	m
Megalodonota beckii Greene	Water marigold	s	d
Myriophyllum sibiricum Kom.	Northern watermilfoil	s	d
Myriophyllum spicatum L.	Eurasian watermilfoil	s	d
Najas flexilis (Willd.) R & S	Common niad	s	m
Nitella sp.	Stonewort	s	macroalgae
Nuphas polysepala Engelm.	Spadderdock, Yellow water lily	f	d
Nymphaea odorata Ait.	Fragrant waterlily	f	d
Polygonium amphibium L.	Water smartweed	f	d
Potamogeton amplifolius Tucker.	Large-leaf pondweed	s	m
Potamogeton gramineus L.	Grass-leaved pondweed	s	m
Potamogeton illinoensis Morong.	Illinois pondweed	s	m
Potamogeton natans L.	Floating leaf pondweed	s	m
Potamogeton pectinatus L.	Sago pondweed	s	m
Potamogeton praelongis Wulf.	Whitestem pondweed	s	m
Potamogeton richardsonii (Ben.)	Richardson's pondweed	s	m
Potamogeton robbinsii Oakes.	Robbins' pondweed	s	m
Potamogeton sp.	Thin leaved pondweed	s	m
Potamogeton zosteriformis Fern.	Flat-stem pondweed	s	m
Ranunculus aquatilis L.	Water buttercup	s	d
Scirpus sp.	Bulrush	e	m
Utricularia vulgaris L.	Bladderwort	s	d
Vallisnaria americana Michx.	Water celery	s	m

* Growth forms are indicated by 'e' emergent, 'f' floating, and 's' submersed.
** Plant type is defined as 'm; monocot and 'd' dicot.

Figure 8. Photograph of WDOE Staff and diver conducting aquatic plant sample collection at Loon Lake (Photo courtesy of WDOE).

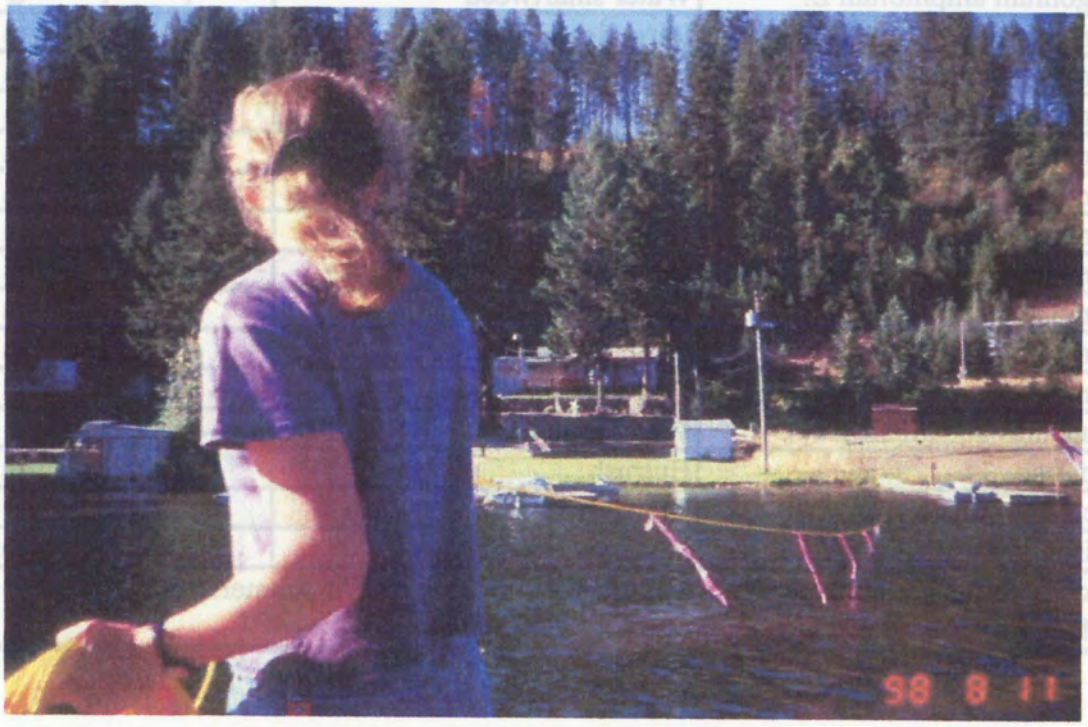

Figure 9. Photograph of WDOE staff setting up aquatic plant sampling transect at Loon Lake (Photo courtesy WDOE).

Current Milfoil Mapping

In June 2003 Aquatic Biologist divers with AquaTechnex performed a Milfoil survey of Loon Lake in anticipation of 2,4-D treatments planned for later that summer. Upon identification of Milfoil, technicians in a survey boat recorded the location and relative density of the Milfoil using Global Positioning System (GPS) equipment. This recorded data was then downloaded into Geographic Information System (GIS) software to generate a map showing the Milfoil locations. The area recommended for treatment was determined from this survey and mapping process. The June 2003 Milfoil treatment map is shown in **Figure 10**. While not stated in the AquaTechnex report, the treatment area map is assumed to include all Milfoil seen during the survey, irrespective of the plant density. The total area treated (including granular and liquid 2,4-D areas) in July 2003 was 55 acres.

During August 2003 the AquaTechnex Biologists revisited the lake to assess the effectiveness of the July treatments. They used a two foot by two foot "site tube" mounted on a pontoon boat for this re-survey. The resultant report indicated that greater than 95% of the Milfoil present prior to the July treatment was removed, although two locations where Milfoil survived in treated areas were recommended for re-treatment. The secondary treatment of these two areas was performed in September using granular 2,4-D.

AquaTechnex recommends a mid-to late spring survey for 2004 to redefine infestation locations and re-map subsequent treatment areas. Thus, the distribution of Milfoil in Loon Lake at the time of this writing is not known.

Other Listed Noxious Weeds Associated with the Lake

There are two plant species found at Loon Lake which are associated with the shoreline and are of concern due to their noxious weed status. These, Purple Loosestrife (*Lythrum salicaria*) and Garden Loosestrife (*Lysimachia vulgaris*) are fairly recent additions to the lakeside plant community and are found in very limited areas. Both of these species grow in similar habitats as shown in **Figure 11**. Both of these plants are currently being managed by the SCNWCB and / or the WDFW through annual inspections and spot herbicide applications. **Figure 12** shows Sue Winterowd of the SCNWCB inspecting the wetland shoreline north of the WDFW boat launch where plants of both Garden and Purple Loosestrife were found growing on a derelict loon nesting platform which became beached in this area.

Figure 10. Milfoil treatment area map generated from diver survey data collected June 2003 (from AquaTechnex 2003).

Figure 11. Garden Loosestrife (yellow flower at left after spraying with herbicide and marker dye) and Purple Loosestrife (pink flower at right) in the Sunset Bay area of Loon Lake, 8/00.

Figure 12. Photograph of SCNWCB staff member inspecting wetland shoreline for Garden and Purple Loosestrife (photo courtesy SCNWCB).

BENEFICIAL USES

The current beneficial uses of Loon Lake were identified from the questionnaire responses and from discussions with the LMD Steering Committee. **Figure 13** indicates the known beneficial use areas around Loon Lake. In order of priority the beneficial uses are:

- Swimming,
- Boating and motorized water sports,
- Fishing,
- Wildlife Observation,
- Aesthetics, and
- Fish, waterfowl and wildlife habitat

Swimming, boating, fishing, aesthetics and fish habitat are beneficial uses that are important in all areas of the lake, especially along the developed shorelines. All neighborhood access points are indicated on **Figure 13**; these being Meadowview, Morgan Park, Sunset Bay, Lake Shore Homes and Shore Acres Estates. Public access points are also indicated; these being the WDFW boat launch, Granite Point Resort and Shore Acres Resort. The WDFW access is a year-round, day-use only area which receives moderately heavy usage throughout the summer months. Both resorts have day and overnight use facilities including cabins, modest restaurant, swimming beaches and limited boat moorage.

Motorized boat sports, (skiing and high speed personal watercraft) are limited to the open water areas since all shoreline areas have reduced speed or "no-wake" zones per County ordinance (Stevens County Water Safety Ordinance, #1-1989, as amended 5/13/91 and 5/22/95).

The wetland areas shown on **Figure 13** and described above in the Watershed section are considered as significant amenities and considerable local efforts over approximately 10 years have been put to the protection of these areas. Not only do these wetlands support important plant and animal species, the lake residents have a keen awareness of their function in the support of the water quality in the lake. Milfoil control activities that have potential to adversely effect the wetlands would not be approved by the LLPOA.

Wildlife use of the lake is somewhat limited to the undeveloped shoreline areas, which are primarily present adjacent to the three wetland areas; McVay Meadow, Anderson Meadow and Pearson Meadow, as shown on **Figure 13**. The shallow water area at the northeast corner of the lake is also an important wildlife area. Major roads leading to the Loon Lake areas are shown on **Figure 13**; these being US Highway 395 which runs along the east side of the lake and WA Highway 292 which runs along the north side. The "town" of Loon Lake, where most local services are found, is also located on the north side of the lake - at the intersection of US 395 and WA 292.

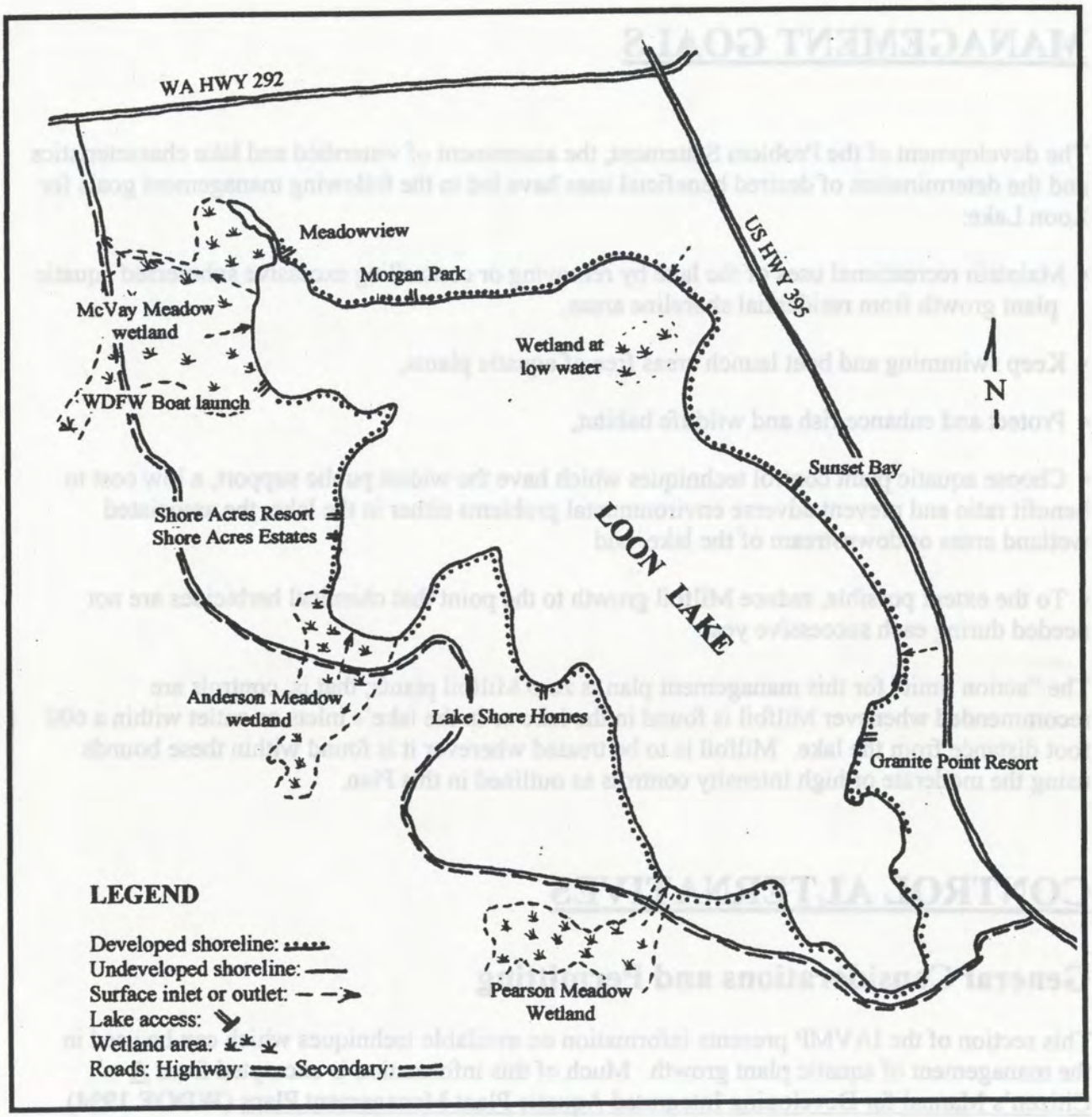

Figure 13. Beneficial use areas, significant wetlands and nearby highway access to Loon Lake.

MANAGEMENT GOALS

The development of the Problem Statement, the assessment of watershed and lake characteristics and the determination of desired beneficial uses have led to the following management goals for Loon Lake:

- Maintain recreational uses of the lake by removing or controlling excessive submersed aquatic plant growth from residential shoreline areas,
- Keep swimming and boat launch areas free of aquatic plants,
- Protect and enhance fish and wildlife habitat,
- Choose aquatic plant control techniques which have the widest public support, a low cost to benefit ratio and prevent adverse environmental problems either in the lake, the associated wetland areas or downstream of the lake, and
- To the extent possible, reduce Milfoil growth to the point that chemical herbicides are not needed during each successive year.

The "action limit" for this management plan is zero Milfoil plants; that is, controls are recommended whenever Milfoil is found in the lake or in the lake's inlets or outlet within a 600 foot distance from the lake. Milfoil is to be treated wherever it is found within these bounds using the moderate or high intensity controls as outlined in this Plan.

CONTROL ALTERNATIVES

General Considerations and Permitting

This section of the IAVMP presents information on available techniques which can be used in the management of aquatic plant growth. Much of this information is excerpted from A Citizen's Manual for Developing Integrated Aquatic Plant Management Plans (**WDOE 1994**) and the Supplemental Environmental Impact Statements for the Department of Ecology's Aquatic Plant Management Program (**WDOE 2001c, 2003**). Additional information on new and developing control technologies is also presented where it appears to be appropriate in the near future (two to five years). While all possible techniques are addressed here, only those which are specifically applicable to Loon Lake, the developed Problem Statement and the Management Goals are discussed in detail. Following the review of appropriate techniques, an "Action Plan" has been developed which is presented in the next main section of this Management Plan.

•• Note: essentially all aquatic plant control activities require a permit from one or more State agencies. All manual, mechanical, and physical techniques described herein require issuance of a WDFW Hydraulic Project Approval. Application of chemicals to State waters to control algae

or aquatic plants must be covered under a National Pollutant Discharge Elimination System (NPDES) permit. A NPDES permit has been issued to the Washington Department of Agriculture for control of State-listed noxious weeds and individual treatments must request coverage under this permit and certain monitoring must be performed. Dredging may require a permit from the US Army Corps of Engineers. Permit guidance in the "Aquatic Plants and Fish" pamphlet (WDFW 1998) was developed in recognition of the importance of controlling aquatic noxious and nuisance weeds, the need to protect the aquatic resource and to facilitate the approval process for HPA projects. This guidance does not include efforts related to the NPDES permit.

Submersed Plant Controls

The No-Action Alternative

The focus of this IAVMP is on the plant species which has been shown to negatively affect the beneficial uses in Loon Lake -- Milfoil. Based on the public opinion that there is a problem with aquatic plants, this Plan has investigated options for controlling or eliminating this problem. In order to maintain a perspective on the costs and benefits of various plant control options, the costs and benefits of the "no-action" alternative also must be kept in mind.

If organized action is not taken against noxious submersed plant growth, there is a potential that the problem will get worse. Therefore, the "no-action" alternative is not acceptable due to the potential impact to the beneficial uses of the lake and potential negative environmental impacts (i.e. fish habitat degradation). The impact of continued, excessive submersed plant growth on fish habitat could include effects on water quality, on fish themselves and on fish food organisms. Impacts on water quality include pronounced stratification of temperature due to interception of solar radiation and reduction in circulation, as well as changes in chemical factors such as dissolved oxygen, pH and alkalinity due to daily cycles of photosynthesis and respiration. Perhaps a more significant impact to water quality can result from the rapid dieoff of dense plant beds which can happen on a seasonal basis. Excessive aquatic plant growth in a shallow lake system can directly contribute to elevated water temperatures.

The reduction in oxygen levels can have direct negative effects on fish and fish food organisms. Low oxygen also causes the production of hydrogen sulfide and ammonia, both of which can also have toxic effects on fish and fish food.

Maintenance of dense beds of submersed plants can also foster the growth of mosquitoes and possibly other nuisance organisms.

Advantages of No-Action alternative:

- no treatment cost

Disadvantages of No-Action alternative:

- lake quality will decline,

- recreational opportunities will decline,
- fish and wildlife habitat will be reduced or impaired,
- property values will decline.

Appropriateness for Loon Lake:

- The No-action alternative is not appropriate due to the degradation that uncontrolled Milfoil growth will cause and the desire of the lake residents to protect the identified beneficial uses described herein.

Currently Available Techniques - Preventive

Watershed Controls

The preventative techniques which may have utility in Loon Lake's Milfoil control efforts focus on the control of inputs of the growth nutrient phosphorus. These techniques include both structural and non-structural (Best Management Practice) options which generally work to prevent erosion and sediment generation by controlling surface runoff.

Advantages of Watershed controls (in general):

- reduce nutrient loading at their sources,
- provides shade and lowers stream temperatures
- reduces streambank erosion and sedimentation in lake,
- reduces toxic chemicals and other pollutants in streams and the lake,
- provide benefits over wider area than the lake.

Disadvantages of Watershed controls (in general):

- may require changes in land use
- may require construction or modification of facilities, purchasing of property and hiring of maintenance personnel,
- may require regulatory support and personnel

Costs of Watershed Controls:

- vary greatly (not determined)

Appropriateness for Loon Lake:

- Watershed controls are appropriate for water quality protection at Loon Lake but would not be expected to effect the growth of Milfoil in either the short or long term. This is due in part to the fact that Milfoil draws nutrients out of the sediments (as opposed to the water column) and also the apparent fact that Milfoil can grow well in low nutrient (oligotrophic) as well as high nutrient (euthrophic) lakes. Therefore watershed controls are not recommended for inclusion in the Integrated Treatment Action Plan.

In-Lake Nutrient Controls

The primary focus of many of the lake management alternatives is the reduction in nutrients (primarily phosphorus) as a means of limiting algae and aquatic plant growth. This is a valid approach and should be considered, especially for long term reduction in productivity. It is, however, beyond the scope of this IAVMP to evaluate the technical merit or costs of these nutrient-focused alternatives. Several recommended techniques will be discussed herein, however, because they also control or remove the actual aquatic plant growth.

Public Awareness and Involvement Program

The understanding and involvement of lake and watershed residents and lake users will be necessary if the process of nutrient, algae and aquatic plant growth controls is to succeed. Therefore a public education and awareness program is strongly recommended. Such a program would focus on, and promote, lake stewardship but would also keep the lake "community" informed about measures that are to be, and have been, performed in and around the lake. Especially important will be evaluation of control program effectiveness and program "adjustments" over time. Through newsletters, public meetings, exhibits at fairs and local media coverage (to name a few) information on the lake should be disseminated and opportunities given for reply from the community. The LLPOA and LMD already have performed well at keeping the lake residents informed about lake management activities. These efforts could be expanded to also address new residents (i.e. through realty companies) and especially non-resident lake users.

Some subjects which can interest lake residents and users are: simplified algae and aquatic weed information, sources of, and solutions to, nutrient enrichment, shoreline stabilization and revegetation, options for lawn fertilizer use, pet waste management, non-phosphate detergent use, and discouraging bird and waterfowl feeding. Training to teach plant identification can be very pertinent as well.

Whenever possible, the lake community should be directly included in information collection and synthesis as part of the public involvement program. This can include citizen representatives performing monitoring (data collection) efforts.

<u>Advantages of a Public Awareness and Involvement Program</u>:

- provides education and public awareness,
- provides opportunity to gather consensus and public support,

- provides opportunity to involve the lake residents and users in the lake management process.

Disadvantages of a Public Awareness and Involvement Program:

- requires committed organization to implement and provide continuity.

Costs of a Public Education and Awareness Program:

- $2,000 to $4,000 per year.

Appropriateness for Loon Lake:

- An ongoing Public Awareness and Involvement Program is very appropriate for Loon Lake and is recommended to be included in the Integrated Treatment Action Plan described below.

Currently Available Techniques - Physical Control

These techniques include manual or mechanical efforts that can remove, cover, shade or dry out all or part of problem plant growth.

Hand Removal

Removal of submerged vegetation by hand digging or pulling is an intensive but generally small-scale management option. This method involves removing the entire plant (leaves, stems and roots) by hand or with a hand-held gardening tool, collecting the plant materials in a storage bag for transport and disposal on shore. In water depth greater than about three feet, the use of SCUBA divers is typically needed to effectively manage a location.

The effectiveness of plant removal depends on sediment type, visibility (water clarity), plant type, and thoroughness in removing the entire plant. Based upon these variables, the level of plant control will may from one month to multi-year management.

Advantages of Hand Removal:

- immediate clearing of the water column,
- highly selective technique, in that individual plants are removed,
- can be implemented in sensitive area where disruption must be kept to a minimum,
- effective in aggressive control of sparse or small infestations in the lake, around docks or in swim areas.

Disadvantages of Hand Removal:

- technique is time consuming and labor intensive,

- visibility may become obscured by the disturbance of sediments during harvesting thus delaying plant removal or missing smaller plants,
- potential for spreading Milfoil due to release of plant fragments,
- management can be costly in deeper water, especially when divers are used,
- control may only be short-term or seasonal; based on location and surrounding infestations.

Costs of Hand Removal:

- no cost if performed by volunteers,
- $800 - $1,600 per day for two divers and a support boat & operator,
- typical coverage from 400 to 2,000 square feet per day.

Appropriateness for Loon Lake:

- Hand removal of Milfoil is appropriate for Loon Lake considering the current level (and distribution) of the infestation and the stated lake management goals. Therefore, hand removal is included in the Integrated Treatment Action Plan described below.

Bottom Barrier Installation

Bottom barriers are highly effective in the small to moderate scale control of aquatic vegetation. The barriers are typically synthetic (geo-textile) fabrics, or burlap, but a variety of other materials have been used including sand-gravel, polyethylene, polypropylene, synthetic rubber, fiberglass screens and nylon film. These materials cover the lake sediments and existing plants and prevent further growth. By covering the lake bottom that the plants emerge from, all plants are effectively prevented from growing in those areas. Washington State typically allows the use of burlap when covering native plant areas and burlap or synthetic material when covering noxious weed areas. These barriers are typically 100% effective in the installed areas initially and installation can be conducted at any depth with the assistance of divers and a support vessel for deeper installations. Bottom conditions do not typically impede most barrier installations, but logs and debris are typically cleared from the area. Duration of control is dependent upon type of material used, application techniques, sediment deposition and permit (WDFW Hydraulic Project approval) requirements.

Since gases are produced in the sediments under the barrier, the barrier must be attached or weighted to the bottom and allow these gasses to pass through it. Over time, these barriers can lose effectiveness if sediment builds up on them, providing a substrate for plants to root. Yearly maintenance by a dive team can prolong the effectiveness of this technique indefinitely (except with burlap which will decompose and must be replaced to maintain effectiveness).

Bottom barriers are expensive when used on a large scale. In addition, there can be environmental impacts if large areas of a lake bottom are covered with these materials. Bottom barriers are most applicable for individual properties and are recommended for around docks.

Bottom barriers may not work well in swimming areas when placed over soft sediments, however. If swimmers walk on them, they tend to push the mats into the sediment.

As indicated above, bottom barriers were used during the initial Milfoil control work in 1997. These were not considered to be completely effective for a number of reasons. Because of the height of the Milfoil in some areas off Meadowview, it was observed that considerable Milfoil fragments were released during the process of rolling out the sheets of barrier material. In spite of efforts to overlap the barrier sheets when large areas were covered, Milfoil and other plants were observed to grow up through these joining areas. Even though the materials used were supposed to allow gas to pass through them, there were many areas of the larger sheets of material that developed bubbles underneath them which off the bottom and in shallow areas these hindered boat passage and became snagged on boat propellers. After less than a year in place, Milfoil and other plants were observed to root through the material and become established on top of the barriers. Finally, when it came time for the barriers to be removed (a task taken on primarily by the lake residents), the attached plants and algae made them a significant nuisance to remove and be disposed of. While the removal and disposal would not have been necessary if burlap had been used, the available width of burlap would make the coverage of large areas more difficult. It is for these reasons that bottom barriers are not supported by the LMD Steering Committee.

Advantages of Bottom Barriers:

- no toxic chemicals are placed in the water,
- provides immediate removal of nuisance plant conditions upon placement,
- easily applied to small, confined areas around docks, moorage's or beaches,
- they are hidden from view (in deeper waters),
- effective in isolated management practices, especially in Milfoil control
- some materials are reusable.

Disadvantages of Bottom Barriers:

- potentially high material cost for synthetic products,
- labor intensive and high costs for utilizing divers,
- limited durability of certain materials,
- not species specific,
- potential permit restrictions on location of barrier (spawning areas), type of material, type of plants attempting to control and length of time barrier will be allowed in place,

- gas accumulation under barrier can cause barrier to be lifted hindering boat passage or swimmers,
- periodic maintenance needed to remove sediment build up and secure placement,
- may need to be removed after two years to allow native vegetation to re-establish.

Costs of Bottom Barriers:

- $0.35 to $0.85 per square foot for materials (burlap or geo-textile),
- $0.35 to $0.60 per square foot for labor to place barriers,
- $0.30 to $0.50 per square foot for labor to remove barrier.

Appropriateness for Loon Lake:

- Bottom barriers are not considered appropriate of use at Loon Lake at this time due to the extent of the infestation, the stated management goals and past difficulties with barriers..

Water Column Dyes

This technique involves the addition of dark colored dyes to the lake to suppress aquatic growth by shading plants or algae from sunlight. These can be blue or a blend of blue and yellow to absorb key portions of the visible light spectrum needed by submersed plant and algae growth. Dyes are most effective at depths of two feet and greater. Use of this technique is limited to lakes or ponds which have minimal dilution with clear water and no outflow.

Advantages of Water Column Dyes:

- treatment could control both aquatic plants and algae,
- no water use restrictions; treated water will not harm fish, waterfowl, pets or wildlife,
- no special equipment or applicator certification required.

Disadvantages of Water Column Dyes:

- not species specific (can effect all plants and algae),
- not effective when plants or algae are near surface,
- dilution from inflowing creeks would necessitate frequent reapplication,
- dyes may not be allowed due to outflow and domestic water rights.

Costs for Water Column Dyes:

- $12.00 to $15.00 per acre foot for materials.

Appropriateness for Loon Lake:

- Water column dyes are not appropriate for use at Loon Lake due to their lack of target specificity and their limited expected efficacy in large lakes.

Sediment Removal

Removal of lake sediments can provide a nutrient and plant control option in lakes and ponds. Stormwater drainage, surface runoff, stream inputs and erosion can all contribute to the build up of sediments in lakes. These sediments represent a pool of nutrients which can stimulate the growth of aquatic plants and algae. In shallow lakes the establishment of significant aquatic plant populations can result in accelerated accumulation of sediments and filling of the lake. The purposes of sediment removal, therefore, are to remove nutrients and aquatic plants and to deepen shallow areas so that future plant growth is reduced (both by reducing nutrient availability and by increasing the water depth and thus shading).

Sediment removal operations can be conducted using a variety of mechanical equipment from backhoes and drag lines which dig the sediment from the shore to floating barge hydraulic systems that remove a slurry of sediment and water and pump it to a settling pond on-shore. A significant consideration with sediment removal is the disposal of removed sediments and water. Lakes act as sinks for not only nutrients but also potentially toxic materials. Sediment testing is often required prior to establishing an appropriate sediment disposal plan. The water contained in the removed sediment is often substantial as well, which adds to the challenge.

Advantages of Sediment Removal:

- effective in removing existing plants and nutrient rich sediments,
- increases the depth of the system and reduces the areas available for plant growth,
- site specific management.

Disadvantages of Sediment Removal:

- operation costs are typically expensive and labor intensive,
- problems with equipment access and location for disposal,
- potential for turbidity release and short-term impacts to water quality,
- not species specific,
- potential permitting requirements,
- may remove beneficial habitat.

Costs for Sediment Removal:

- $200,000 to $400,000 for design, inspection, environmental monitoring,
- $0.15 to $0.80 per cubic foot for hydraulic dredge,
- disposal costs not possible to estimate; would be significant.

Appropriateness for Loon Lake:

- Sediment removal is not considered appropriate for Milfoil control at Loon Lake due to the lack of target specificity, the need for sediment disposal areas and the high cost.

Water Level Drawdown

Drawdown (or pump down) of the lake water levels, especially during the winter months, can have a dramatic impact on some aquatic weed problems. This methodology is possible where there is a water control structure which will allow lakes or reservoirs to be drained. Alternatively, high capacity pumps must be used to draw water levels down.

Drawdowns will expose the lake sediments to loss of water and, depending on location, on freezing. Freezing in particular can have a dramatic impact on aquatic plants that have no over-wintering structure like seeds, turions, tubers or winter buds. The impact on the root crowns of prolonged exposure to sub-zero temperatures is often fatal. As the lake is refilled regrowth from these crowns either does not occur or is severely stunted. There can also be a reduction in some other types of problematic vegetation using this technology if the drawdown is prolonged. The loss of water, and concurrent compaction that can result from drawdown can also be a benefit as it can slow the colonization and growth of some rooted plants.

This technique is not one that can claim eradication normally, and plants will survive in portions of the lake where water remains over the sediments. If the drawdown can extend to the deep edge of the plant communities it is obviously more effective than shallower drawdown that only expose near-shore areas.

Drawdown can have minimal cost if an outlet control structure of sufficient height is in place. This is not the case in the Loon Lake. Given the lake size, bottom topography and expected groundwater inflows, it is unlikely that the lake could be drawn down more than three to four feet without pumping and pumping would likely be impractical. Finally, this technique can negatively impact the fish and wildlife habitat in the lake and would have obvious implications for water rights users.

Advantages of Drawdown:

- no addition of toxic chemicals to the water,
- useful for repair and maintenance of shoreline features.

Disadvantages of Drawdown:

- likely adverse environmental impacts,

- temporary loss of recreation,
- low probability of success given lake morphology and levels of inflows (capacity to refill lake after drawdown).

Costs of Drawdown:

- not determined.

Appropriateness for Loon Lake:

- Drawdown is not considered appropriate for Loon Lake due to the lack of target specificity, the significant impacts that this would have to the lake biota (and potentially water quality), the potential difficulty in refilling the lake to ensure recreation uses will be available and the costs of pumping. In addition, the fact that the lake surface elevation is formally adjudicated may mean that a court-supported exception to the adjudicated level may have to be obtained.

Currently Available Techniques - Mechanical Control

Hand Cutting

This technique involves cutting of plants below the water surface, but roots are not generally removed. Tools used in cutting include scythes, thin cables, rakes or other specialized devices that can be pulled through the weed beds by boat or from shore. One popular device consists of two single-sided stainless steel blades forming a "V" shape which are connected to a four foot handle and tied to a rope.

Advantages of Hand Cutting:

- immediate removal of nuisance submerged plant growth,
- costs are minimal,
- can be performed throughout the season as needed.

Disadvantages of Hand Cutting:

- labor intensive and time consuming,
- generally not species specific,
- visibility may become impaired by turbidity generated by cutting,
- short-term plant control as the root system is not removed; cutting is typically needed multiple times each season,
- may be difficult to contain and remove plant fragments.

Costs of Hand Cutting:

- cutting devices range from $50 to $800,
- no labor cost if performed by volunteers,

Appropriateness for Loon Lake:

- Hand cutting is not considered appropriate for Loon Lake Milfoil control due to the likelihood that plant fragments would be released, thus spreading the infestation, and the difficulty in cutting Milfoil in the many rocky areas of the lakes' shoreline.

Mechanical Harvesting

An extension of the hand cutting discussed above involves the use of larger equipment that can cut or mow aquatic plants below the water surface. Barge mounted weed cutters, for instance, will cut the stems of submerged vegetation over large areas, with that vegetation typically floating off or being collected by the operator with some other implement. Aquatic weed harvesters are an improved version of a large weed cutter. These systems cut, collect and transport the vegetation for disposal on shore. A typical weed harvesting system will consist of the harvester and a shore station for unloading the harvested vegetation into a transport system for disposal.

Aquatic harvesters have a number of cutting blades located on the harvesting head and a conveyor system behind the knives that collects the plants and deposits them on a barge. There is typically a storage conveyor system that the plants fall onto when cut that facilitates unloading the machine at the shore station. The shore station equipment is usually either a shore conveyor that mates to the harvester and lifts the cut plants into a dump truck or other transport system, or a trailer conveyor that performs the same function as well as transports the harvester from lake to lake. Harvesting systems normally cut the plants from five to seven feet below the surface and can harvest up to two acres per day depending on the distances to off-loading sites.

Aquatic plant harvesters work well at cutting the plants and removing the bulk of the plant material from the lake. They do allow some plant fragments to escape, however, and they do not necessarily inhibit the continued growth of the cut plants. Harvesting is not species specific (unless used in single species dominated areas) aquatic plant harvesters remove significant amounts of young fish and invertebrates during harvesting operations. Harvesters should not be used on lakes that are infested with Milfoil in the pioneering or early colonization stages since additional fragments will accelerate the spread of the plant.

Advantages of Mechanical Harvesting:

- no chemicals added to lake,
- immediate removal of plants and contained nutrients,
- limited interference with use of the water body,

- minimal bottom disturbance,
- reduction in sediment accumulation by removing organic matter which normally decays and adds to the bottom sediments
- harvested plants can be used as compost.

Disadvantages of Mechanical Harvesting:

- slow process (two acres per day under ideal operating conditions), dependent on availability of off-loading sites,
- labor and equipment intensive; must involve cutting and collection of plant material,
- typically requires repeat cutting for full season control,
- creates plant fragments which have potential to spread and establish in other portions of the lake (especially a concern with exotic species),
- non-selective and can be detrimental to non-target plants and animals
- high capital costs for machine purchase or use by management consultant

Costs of Mechanical Harvesting:

- $600 to $900 per acre for contract commercial aquatic plant harvesters,
- $100,000 to $180,000 for harvester/off-loader purchase,
- cost of disposal not determined.

Appropriateness for Loon Lake:

- Mechanical harvesting is not considered appropriate for Loon Lake because of the need for regular, repeat cuttings, the difficulty in cutting effectively in the rocky shoreline areas, potential fragment spreading, potential for unintentional removal of fish and fowl and the cost.

Rotovation

Rotovation, or underwater cultivation, is a newer concept in mechanical aquatic plant management. It can provide for longer term control of some aquatic plants (than with harvesting) and it can remove plants to greater depths than conventional harvesters (approximately 12 feet versus five to seven feet) can. Rotovators are basically underwater rototillers which churn the bottom sediments to a depth of up to 12 inches. This action dislodges plants and root crowns. Typical rotovation will provide one to three years of acceptable weed control.

Dislodged plants must be collected as they float to the surface. As with plant cutting or harvesting, rotovation should not be considered in lake or river systems where plants are in the pioneering stages of an infestation and/or spread by fragmentation. Rotovation would not be expected to control non-rooted plants such as Coontail (*Ceratophyllum demersum*).

Advantages of Rotovation:

- removes entire plant including roots,
- longer effectiveness than with harvesting,
- plant density becomes reduced after successive treatments.

Disadvantages of Rotovation:

- does not collect plants or fragments which are uprooted,
- temporarily destroys bottom habitat and potentially fish spawning areas,
- causes turbidity and potential release of nutrients,

Costs of Rotovation:

- $1,000 to $2,000 per acre for contract commercial operator.

Appropriateness for Loon Lake:

- Rotovation is not considered appropriate for Loon Lake due to the lack of target specificity, the potential that this will significantly spread the problem through fragment generation and the difficulty in using this technique in rocky shoreline areas.

Diver directed suction removal

Diver suction removal has been used since the 1970's as an improvement to hand removal of sparse colonies of Milfoil. The technique utilizes a small barge or boat carrying portable pumps with suction hoses that are directed by SCUBA divers. Divers dislodge the plant tissue and root system from the sediments and basically vacuum up the plant material which is carried back to the barge. On the barge, plant parts are sieved out and retained for land disposal while water and sediment materials are allowed to drop back into the lake.

Diver suction removal can be highly effective under the appropriate conditions. Efficiency of removal is dependent on sediment condition, plant size and density, and underwater visibility. It is best used for localized infestations of low plant density where fragmentation must be minimized. This technique is also selective in that divers can target a single species in a mixed population area.

An environmental concern with diver suction removal is that of turbidity and nutrient release from disturbed sediments. This is primarily applicable with light, organic sediments that often

accumulate in heavy weed bed areas. However, the divers typically do not let the suction intake come near the sediments, rather they pull the target plants up out of the sediment and direct the plant into the suction intake. While sediment curtains can be used to minimize the drift of re-suspended sediment materials and also escaped plant fragments, there is no practical way of controlling nutrient release. Placement of sediment curtains is also time consuming and, thus, costly.

Advantages of Diver Suction Removal:

- species selective and site-specific control,
- minimal disruption of sediments and surrounding habitat with non-rooted plants,
- minimal release of plant fragments,
- no depth constraints, effective near obstacles,
- effective in covering large areas with light plant growth.

Disadvantages of Diver Suction Removal:

- labor intensive and expensive,
- may not be appropriate control method in dense plant beds,
- potential release of nutrients and sediments, potential short-term increased turbidity,
- may not work well in gravelly or rocky areas due to the difficulty in pulling up all root fragments

Costs of Diver Suction removal:

- $1,000 to $2,000 a day for two divers and support boat,
- typical coverage from 0.25 to 1.0 acres per day.

Appropriateness for Loon Lake:

- Diver operated suction removal has some applicability at Loon Lake and this is therefore included in the Integrated Treatment Action Plan described below. However, due to the expected cost of this type of treatment it is considered only as a backup technique.

Currently Available Techniques - Biological Control

The biological control of aquatic plant problems focuses on the selection of organisms that have an impact on the growth of a target plant. By stocking a lake with these organisms, or "agents", the population of the target plant can be reduced. Biological control is not an exact science at this time. There have been a number of dramatic success stories with the control of aquatic

weeds using some organisms. There have also been some undesirable effects from their use. The majority of the tools in this field are in the experimental or review stage at this time.

Biological control agents are generally of two types. There are general agents like grass carp that will consume most aquatic vegetation. As such, they are of limited use when trying to target specific plants. The second type of "biocontrol" agent are those that are target-specific for problematic species. Many of these agents focus on exotic plants that have been introduced to this country. Research typically starts in the region of the world where these plants are from, and focuses on the organisms that keep it in check there. Once identified, these organisms are brought through a quarantine protocol into this country where further research is conducted to determine if there is operational potential for control. At this time there are no biological control agents available in Washington State which are effective against Milfoil other than grass carp (see the Developing techniques section, below for discussion of the Milfoil weevil).

Grass Carp

Grass carp (or White Amur) are plant consuming fish native to China and Siberia. There are many aquatic plants that these fish will eat, but they have definite feeding preferences and will generally eat the plants they prefer first. Stocking rates are dependent on climate, water temperature, type and extent of plant species and other site-specific conditions. The recommended maximum stocking rate in Washington is 25 fish per acre (**Bonar et al. 1996**) and the typical stocking rate is nine fish per acre (**Hamel 2002**). A study of grass carp usage in Washington has indicated that in most cases grass carp either have little effect or will eat all submersed plants.

Periodic restocking is generally necessary to replace fish lost to predation or disease and to maintain the number of young, actively growing (and thus actively eating) fish. Only triploid (sterile) fish can be planted in Washington and by permit only. Grass carp must be imported by approved suppliers and be certified to be disease and Zebra mussel free and sterile. Inlets and outlet screens must be installed in the lake and be approved by WDFW biologists prior to stocking.

Water quality is seen to generally improve after introduction of grass carp; with the elimination of large mats of vegetation, bottom dissolved oxygen levels generally increase from levels lethal to fish and pH generally decreases with decreases in photosynthesis (**WDFW 1990**). However, water turbidity increases have also been documented due to grass carp stirring up bottom sediments. Effectiveness of grass carp in controlling aquatic weeds depends on feeding preferences and metabolism which vary from region to region. Some plant species which appear to be preferred include pondweed species, Coontail and Elodea. Plant control effectiveness is site specific and significant control of vegetation may not be apparent until two to four years following introduction.

<u>Advantages of Grass Carp</u>:

- non-toxic
- long-term effectiveness

Disadvantages of Grass Carp:

- may not control the Milfoil that is problematic in Loon Lake,
- may alter composition of plant community without decreasing overall biomass,
- may decimate submersed aquatic plants and result in worse algae problems, and disruption of native fish habitat,
- inlet and outlet screens must be constructed and must allow passage of native salmonid fishes,
- carp foraging may cause turbidity and foster algal growth through re-suspension of sediment materials.

Costs of Grass Carp:

- $10.00 to $15.00 per fish (plus delivery),
- typical stocking rates are 9 to 15 fish per acre,
- inlet / outlet screen costs not determined.

Appropriateness for Loon Lake:

- Grass carp are not considered appropriate for use in Loon Lake due to their uncontrollable nature, lack of target specificity and, thus, potential adverse effects on the native plant populations and fish habitat in the lake.

Currently Available Techniques - Chemical Control

Chemical herbicides are one of the leading methods of controlling, and in some cases, eliminating, noxious aquatic plant growth. The herbicides which are approved for aquatic use by the US EPA are well reviewed and considered compatible with the aquatic environment when used according to label directions. In addition to the review and regulation provided by the EPA, the Washington Department of Ecology completed an Environmental Impact Statement (EIS) in 1992 for the aquatic plant management program which allows for the introduction of a number of compounds into state waters. This EIS was recently updated by WDOE and information contained in the Supplemental EIS documents (**WDOE 2001c, 2003**) have been used in the preparation of this IAVMP. Note that the application of chemicals for aquatic pest control can only be performed by a licensed pesticide applicator with an aquatics endorsement.

There are two general types of aquatic herbicides in use; referred to as "contact" and "systemic" products. Contact herbicides kill susceptible plant leaves and stems, generally leaving roots and some reproductive structures alive and capable of regrowth. As such, a contact herbicide is generally considered a maintenance tool, one that can provide relief from aquatic plant problems, but not something that can eliminate the problem from the lake system. Systemic herbicides are

absorbed and carried throughout the plants thereby making them capable of killing the entire plant.

The contact herbicides approved for use in Washington State are Endothall and Diquat. The three systemic herbicides registered and approved for use in Washington are Fluridone, 2,4-D and Glyphosate. Glyphosate is not appropriate for control of submersed plants and will not be discussed in this IAVMP.

The WDOE is currently reviewing an additional herbicide for future use in state waters. Triclopyr is a systemic herbicide which is effective in selectively controlling some emergent and submersed aquatic plants. This product is described below in the Developing Techniques section.

Diquat

Diquat dibromide is a fast acting, broad spectrum contact herbicide and algaecide found in the product Reward® which is manufactured by Syngenta (formerly Zeneca Ag Products, Inc). A Reward® label is included in **Appendix C**. The WDOE completed in 2002 a formal Risk Assessment and Final Supplemental EIS for Diquat (**WDOE 2002**) which has additional information on this chemical.

Diquat is effective on a variety of submersed plants, including Milfoil, and also some types of filamentous algae. Diquat's mode of action is to generate "reactive oxygen radicals" which disrupt photosynthesis. Diquat kills plants rapidly so depletion of oxygen and release of nutrients from plant decay is a potential problem. As with all contact herbicides, plant roots are not affected and repeated applications may be needed for complete season control.

Contrary to this general efficacy, Diquat was reported to have been used in Hayden Lake, ID with some apparent systemic effect. In this case, Reward® was applied by a diver or a "drop hose" to the lower third of plants in dense Milfoil beds. The diver used a wand and nozzle connected to a pressure tank onboard a nearby support boat to treat one acre while the boat treatment involved holding the wand and nozzle down into the water while traveling across a two-acre bed. Follow-up diver inspection of these treatment areas one year later found only occasional Milfoil sprigs (new plants) in the diver-treated area and approximately one-half acre of live plants in the boat treatment area (**Daniel 2002**)

Diquat has slight toxicity to most animals and freshwater fish. It is slightly to highly toxic to aquatic invertebrates. It is for this reason that Diquat was not permitted by WDOE for use in Washington State waters from 1992 to 2003. The effectiveness of Diquat on target plants such as Eurasian watermilfoil is found to be heightened through the use of tank mixes with copper containing products (which are not currently approved for use in Washington).

Water use restrictions which would be in force with Diquat applications for Milfoil control (two gallons Reward per surface acre) are three days for drinking, one day for livestock drinking, three days for irrigation to turf and ornamental and five days for irrigation to food crops. There is no restriction for fishing or swimming in treated water (**Syngenta 2003**).

Advantages of Diquat:

- effective against many plant species,
- rapid action,
- no fishing or swimming restriction,
- inexpensive.

Disadvantages of Diquat:

- persistent, especially in sediments,
- water use restrictions in place,
- potentially toxic to aquatic organisms,
- repeat applications needed to maintain control
- rapid action may cause oxygen depletion and rapid release of nutrients into water

Costs of Diquat:

- $300.00 per acre applied

Appropriateness for Loon Lake:

- Reward (Diquat) is considered appropriate for use at Loon Lake. However, due to the lack of systemic action and the lack of target specificity this chemical is not the preferred product.

Endothall

Endothall is a contact herbicide available in the CerexAgri, Inc. products Aquathol K® (a liquid formulation), Aquathol Super K® (a granular formulation), and Hydrothol 191® (both liquid and granular formulations). A product label for Aquathol K® is included in **Appendix C** as an example of an endothall-containing product.

Endothall compounds are used primarily for short term (one season) control of a variety of aquatic plants (and algae in the case of Hydrothol 191®). The mode of action of Endothall is not fully understood although the hypotheses indicate that this chemical disrupts biochemical processes at the cellular level (**WDOE 2001c**). Target plants for Aquathol K® and Aquathol Super K® include Milfoil (**CerexAgri 2003**). Duration of control with Endothall products is dependent upon target species, contact efficiency, lake conditions and regrowth from unaffected root masses. Endothall application has been reported to result in systemic action on Milfoil in some cases (Hamel, 2003)

Use of Endothall involves several water use restrictions and it can be toxic to fish although there is a wide margin of safety between allowed application rates and rates that are toxic. At

application rates needed to control Milfoil (2.0 to 4.0 ppm) the water use restrictions are: do not use fish from treated areas for food for three days and do not use water from treated areas for watering livestock, preparing agricultural sprays for food crops, for irrigation or for domestic purposes for seven to 14 days after application. There is no swimming restriction for Endothall products. Fish toxicity is not a factor, according to the product labels, at doses below 100 ppm (**CerexAgri 2003**).

Advantages of Endothall:

- fast acting injury to plant tissue which is typically apparent in one to two weeks,
- little or no off-target drift impacts,
- spot treatments possible.

Disadvantages of Endothall:

- only provides temporary reductions in plant growth,
- non-target plant impacts are difficult to mitigate as this is a fairly broad spectrum herbicide,
- water use restrictions in place,
- rapid action may cause oxygen depletion and rapid release of nutrients into water.

Costs of Endothall:

-$650.00 per acre applied

Appropriateness for Loon Lake:

- Endothall products are not considered appropriate for use at Loon Lake due to the lack of systemic action and the lack of target specificity.

2,4-D

2,4-D is a fast-acting systemic herbicide with two formulations approved for freshwater applications in Washington State. The two formulations are the butoxyethyl ester (BEE) formulation found in the granular products Aqua-Kleen® (produced by Rhone Poulenc and marketed by CerexAgri) and Navigate® (marketed by Applied Biochemists); and the dimethylamine (DMA) formulation found in the liquid product DMA4® IVM, produced by Dow AgroSciences LLC. Product labels for Aqua-Kleen® and DMA4® are included in **Appendix C**.

The mode of action of this chemical is primarily as a stimulant of plant elongation and cell division (**WDOE 2001c**). 2,4-D is a post-emergent herbicide that is primarily used to control watermilfoil and water stargrass. Typical submersed monocot plants (i.e. the pondweeds) are not susceptible to 2,4-D so this product can be used for selective plant control.

2,4-D can be effectively used in spot-treatment programs in lakes or ponds. Effectiveness of the treatment is dependent upon the timing of the application and density of the target plant community. Two treatments may be required when targeting dense communities. Susceptible plants will begin to show signs of injury one to two weeks after treatment, followed by plant breakdown and death.

There is no fishing or swimming restriction associated with the use of 2,4-D although the WDOE recommends "that due to risk of dermal contact, a swimming advisory shall be posted advising swimmers to wait 24 hours before reentering directly treated areas to allow time for granules to disperse" (**WDOE 2001c**). 2,4-D cannot be used in waters used for irrigation, agricultural sprays, watering dairy animals or domestic water supplies (**Dow Agrosciences 2001**). Loon Lake landowner permission must be obtained for treatments to take place in waters used for irrigation, dairy animals or domestic water supplies. The recent risk assessment prepared for WDOE as part of the 2001 Final Supplemental Environmental Impact Statement for the aquatic plant management program (**WDOE 2001c**) indicated that "no significant adverse impacts on fish, free swimming invertebrates or benthic invertebrates" should be expected from 2,4-D (either formulation) applications at appropriate label rates. Additional toxicity information from this risk assessment is included in **Appendix C** following the Aqua-Kleen and DMA4 labels.

Advantages of 2,4-D:

- fast-acting systemic herbicide which is effective in removing selected plants with little or no impact on certain non-target plants at labeled rates,
- applications conducted easily with granular or liquid material in a large or small scale applications,
- treated waters can be used for swimming,
- no fish consumption restrictions.

Disadvantages of 2,4-D:

- application must be conducted 0.5 miles or greater from active drinking/domestic water withdrawals (unless approved by WDOE),
- treatment windows apply to areas were Endangered Species Act (ESA) listed salmonids occupy (according to WDFW specifications),
- public perception (equating this with DDT or Agent Orange?)

Costs of 2.4-D:

- $600 per acre granular formulation applied, target dose 2 ppm.
- $300 per acre liquid formulation applied, target dose 2 ppm.

Appropriateness for Loon Lake:

- 2,4-D (either of the listed formulations) is appropriate for use in Loon Lake due to the specificity for the target species, the rapid systemic action and dissipation of the herbicide, the demonstrated efficacy in Loon and the general acceptance of this chemical based on past uses. This is the preferred treatment method as described in the Integrated Treatment Action Plan, below.

Fluridone

Fluridone is available in the SePRO Corporation products Sonar AS® (a liquid formulation), Sonar SRP® (a slow release pellet formulation), Sonar Q (a pellet formulation) and Sonar PR® (a "precision release" pellet formulation). Fluridone is also available in the Griffin LLC liquid product Avast®. Product labels for Sonar AS® and Sonar PR® are included in **Appendix C** as examples of fluridone products.

Fluridone can show good control of submersed and emergent plants, including Milfoil, where there is little water movement and an extended time for the treatment. It is most applicable to whole-lake or isolated bay treatments where dilution can be minimized. Because of the eight- to ten-week recommended contact period, treatments should take place in early spring or fall.

Fluridone interferes with the synthesis of RNA, proteins and carotenoid pigments and thereby affects photosynthesis (**WDOE 2001c**). Use of fluridone does not pose a threat to human health or to fish and wildlife when used according to the label (**SePRO 2002, 2002b**). While there is a short term (seven to 30 days) precaution when using treated waters for irrigation, there are no other water use restrictions when using the liquid formulation of fluridone.

Advantages of Fluridone:

- systemic herbicide, will kill entire target plant,
- variety of plants are susceptible, based on treatment rates and program design,
- species specificity with correct application rates,
- non-toxic to humans, pets, fish and wildlife,
- no water use restrictions for fishing, swimming or livestock/pet consumption.

Disadvantages of Fluridone:

- long exposure period required in order to effectively control plants (many times requiring multiple application or minimizing water movement),
- potential for drift from application area, requires whole lake or enclosed area treatments,
- high cost.

Costs of Fluridone:

- Sonar AS: $650 per acre applied*
- Sonar PR: $800 per acre applied*
- Sonar Q: $700 per acre applied*

* (assuming 8 foot average depth in treatment area and three-20 ppb applications)

Appropriateness for Loon Lake:

- Fluridone products are not considered appropriate for use in Loon Lake at this time due to the limited but spread out extent of the infestation (i.e. the need for spot treatments) and the cost.

Copper Compounds

There are currently two products containing copper that may be used for control of aquatic weeds although copper compounds are not currently allowed in Washington State. They are: Nautique®, manufactured by SePRO Corporation, and Komeen®, manufactured by Griffen. These are both "chelated" or complexed compounds.

Although copper is an essential element for plant growth, high concentrations of copper will inhibit photosynthesis and result in death of plants and algae. Chelated copper complexes where developed to maintain concentrations of the copper ion in water column over a longer period of time. The extended exposure of the copper ion in solution provided improved control plants and algae. Copper products for aquatic weed control are applied by subsurface injection. Effectiveness of applications is enhanced by warm temperatures and sunlight. These conditions stimulate copper uptake by plant cells and increase the rate at which the plants will be controlled.

Given the known toxicity of copper compounds to aquatic life, primarily fish, and given the recent Endangered Species Act listings of several salmonid species in Washington State waters, the WDOE made a policy decision in March 2000 to disallow the use of copper in salmon-bearing waters.

Advantages of Copper:

- relatively low cost treatments,
- no water use restrictions,
- provide effective and rapid control of algae blooms.

Disadvantages of Copper:

- acts as contact herbicide therefore does not kill plant roots,
- not allowed for use in waters discharging to or occupied by salmonid species (requirement of WDOE, not part of EPA label),

- remains bound to sediments and organic over a long period of time,
- limited to treatments in hard water lakes and ponds,
- may require extensive water testing and monitoring in systems with outflow.

Costs of Copper:

- $730 per acre for Nautique®, applied (water depth of 8 feet and target dose of 0.8 ppm).

Appropriateness for Loon Lake:

- Copper compounds are not considered to be appropriate for use in Loon Lake due to their lack of systemic actions, the WDOE restriction on their use and potential environmental concerns over accumulation.

Developing Techniques

There are a number of techniques which are under investigation as possible plant control agents; these being primarily biological agents. These include plant pathogens, herbivorous insects, competitive plants and plant growth regulators. The research with these agents has focused primarily on their effect on noxious submersed plants such as Eurasian watermilfoil and Hydrilla

Triclopyr

This is a systemic herbicide produced by SePRO Corporation. EPA registration was completed in 2003 for the product Renovate® which is a water soluble triethylamine salt formulation containing three pounds of triclopyr acid equivalent per gallon (see product label in **Appendix C**). Triclopyr has been registered by WSDA and it is expected to be approved for use by WDOE by spring/summer 2004 (**Hamel 2004**). As a result, there has been relatively little experience with this product on Milfoil in Washington. (Note that Renovate was proposed for use in the 1998 Milfoil control trial at Loon Lake but this was abandoned due to concerns over water use restrictions.)

Triclopyr is a product that has been tested extensively and found to be effective on broad-leafed (dicotyledonous) plants such as Milfoil. This product is specific for this type of plant and can be used in habitat recovery programs focusing on selective removal of these plant pests. It will not affect plant species in the monocot family, which is the majority of native aquatic and wetland plant types. Renovate® is a liquid product with a contact time requirement of 24 to 48 hours so it has applicability in spot treatments. Susceptible submersed plants exhibit epanasty (bending and twisting of plant tissue) in 6 - 12 hours after treatment. Treated plants begin to sink slowly three to five days after treatment and one to three weeks later plants should be well below the surface, often near the bottom.

Photodegradation is the major route of triclopyr degradation in aquatic environments. The first order half-life for Renovate® is 0.5 - 3.0 days. No accumulation occurs on sediment and no bioconcentration is believed to occur in sport fish or bottom feeding species. Toxicity testing on

fish and other non-target organisms performed by or for the manufacturer has indicated that Renovate® has a low toxicity potential (**SePRO Corporation 2003**).

Renovate® has been used locally under an Experimental Use Permit, particularly in Diamond Lake and in the Pend Oreille River. The observed efficacy of this product was very good in a 1.5 acre bay in Diamond Lake but was poor in a six acre bay above Albeni Falls Dam (this latter most likely due to dilution by the flow in the river). Water use restrictions may be a factor in the use of Renovate®; information on this is listed on the product label (see **Appendix C**).

Advantages of Triclopyr:

- selective for broad leafed plants,
- short contact time needed,
- systemic action so entire plant is killed.

Disadvantages of Triclopyr:

- Long period of water use restriction for irrigation,
- higher cost.

Costs of Triclopyr:

- $1,700 per acre, applied (water depth of 8 feet and target dose of 1.5 ppm).

Appropriateness for Loon Lake:

- Renovate® (triclopyr) would be appropriate for use in Loon Lake, if it were fully labeled, due to its short contact time requirement. The current cost of this chemical is substantially higher than the preferred 2,4-D. Triclopyr should be re-evaluated for use at Loon when it does become labeled.

Milfoil Weevils

A potential biological control agent that has received considerable research attention in several northwest, northeast and mid-western States, including Washington, is the aquatic weevil *Euhrychiopsis lecontei.* This organism has been associated with declines of Milfoil in the United States (e.g. Illinois, Minnesota, Vermont, and Wisconsin). Researchers in Vermont found that this weevil can negatively impact Milfoil by suppressing the plant's growth and reducing its buoyancy (**Creed and Sheldon 1995**).

The following description is excerpted from University of Minnesota, Department of Fish and Wildlife website (http://www.fw.umn.edu/research/Milfoil/Milfoilbc.html):

The Milfoil weevil is native to North America and is a specialist herbivore of watermilfoil. Adult weevils live submersed and lay eggs on Milfoil meristems. The larvae eat the meristem and bore

down through the stem, consuming the cortex, and then pupate (metamorphose) lower on the stem. Development from egg to adult occurs in 18-30 days at summer temperatures. The consumption of meristem and stem mining by larvae are the two main effects of weevils on the plant and this damage can suppress plant growth, reduce root biomass and carbohydrate stores and cause the plant to sink from the water column. Although the weevil has been quite effective at some sites, it has not been effective at other sites. Currently, we cannot predict when, where and how the weevils will or will not be effective. The aim of our work is to improve our understanding so we can predict effects and appropriate circumstances for use of biocontrol.

In Washington State, the Milfoil weevil is present primarily in eastern Washington (including Fan and Sacheen Lakes) and occurs on both Milfoil and northern watermilfoil (*M. sibiricum*), which is native to the State (**Tamayo et. al. 1999**). During the summer of 1999, researchers from the University of Washington determined the abundance of the Milfoil weevil in 11 lakes in Washington. They found that weevil abundance ranged from undetectable levels to 0.3 weevils (adults and larvae) per stem. Fan Lake, Pend Oreille County had the greatest density per stem at 0.6 weevils (adults, larvae and eggs per stem) although the weevils there were present on northern watermilfoil not Milfoil. These abundance results are well below the recommendations made by other researchers in Minnesota, Ohio, Vermont, and Wisconsin of having at least 1.5 - 2.0 weevils per stem in order to control Milfoil.

To date, there have not been any documented declines of Milfoil in Washington State that can be attributed to the milfoil weevil, although Creed & Sheldon speculated that declines of Eurasian watermilfoil in Lake Osoyoos and the Okanogan River may have been caused by the Milfoil weevil. In Minnesota, Cenaiko Lake is the only lake in that state that has had a Eurasian watermilfoil crash due to the weevil; other weevil lakes are yet to show declines in Eurasian watermilfoil.

The WDOE is currently involved in culturing milfoil weevils for use in experimental treatments on Milfoil control. At the time of this writing there were still a number of factors related to the growth and survival of the weevil and their efficacy in causing declines in Milfoil growth that need to be better understood before this organism can be seen to be an effective option.

Advantages of weevils:

- non-toxic
- potential long-term effectiveness

Disadvantages of weevils:

- Weevils may not control Milfoil in lakes with populations of native watermilfoil,
- Weevil densities may be reduced below effective levels due to predation by sunfish and other environmental factors.

Costs of Milfoil weevils:

- Milfoil weevils currently cost $1 each from commercial producers.

Appropriateness for Loon Lake:

- Milfoil weevils are not currently appropriate for use in Loon Lake. This technique should be re-evaluated when more is known about their growth and effect on Milfoil.

INTEGRATED TREATMENT ACTION PLAN

Overview

Integrated Aquatic Vegetation Management Plans (IAVMPs) are designed to be site specific based on the type of plant problem present and the needs of the water users. An IAVMP reviews all control options available and selects the best mix to apply to the problem over time. An IAVMP is not a one-year management tool; it evolves as conditions in the lake or river system change. For example, if a lake has a major Eurasian watermilfoil infestation, the first years of the program may focus on that problem and select tools to target that plant. In later years, there may still be problematic weed growth, but it could be from native plant communities or from different aquatic weed species. Different tools might be considered in these cases and applied. The management plan should have both short-term and a long-term strategies.

Control Intensity

The current aquatic plant problem at Loon Lake is related to the ongoing growth of Eurasian watermilfoil. Specific problem areas are the littoral zones (i.e. areas with a typical depth of less than 20 feet). As a result, preventative and high intensity controls are recommended for the short term and preventative and low intensity controls are recommended for the long term. These controls (detailed in the Recommended Control Strategy section below) are:

• **Short Term (2004 - 2009)**: Institute Education / Awareness Program, continue 2,4-D applications for Milfoil control (or diver directed suction removal if herbicide option is not available).

• **Long Term** Continue Public Awareness and Involvement Program, institute and continue locally funded Milfoil control maintenance activities focusing on non-chemical methods.

Recommended Control Strategies

The management of aquatic plants at Loon Lake must work within the limitations of what is feasible based on the physical, chemical and biological state of the lake, financial resources and the political and regulatory environment.

Public Awareness and Involvement Program

The Loon Lake residents have indicated their concern for the protection of the beneficial uses of "their" lake and also their willingness to be involved in lake management efforts at various levels. As a result, it is highly recommended that residents be given as many options as possible

to continue and/or increase their involvement. These options should include training in aquatic vegetation identification, Milfoil survey and removal techniques, involvement in actual survey and removal efforts and also involvement in monitoring and data collection. More specifically, volunteers will be needed for participation in diver removal efforts and boat operators will likely be needed for both the diver removal work and surveying efforts. It is expected that most property owners around the lake will likely have the greatest interest in their own shoreline area so individual or small group efforts with this local focus should be fostered. Much of the property owner participation is also expected to be simply attendance at meetings and training sessions so these sessions should be made as interesting and focused as possible to maintain or expand this level of participation as well.

The Public awareness program should be addressed to the general public as well as the lake residents. This could take the form of information signs and brochures placed at public access points, articles written for publication in newspapers of wider local distribution (the Spokane Spokesman Review and Colville Statesman Examiner, for instance, in addition to the Loon Lake Times and Chewelah Independent). Programs brought to the schools can also have a great impact on public awareness.

Annual Surveillance and Mapping

The annual Milfoil surveillance efforts performed at Loon Lake since 1998 should be continued in perpetuity. This program includes one or two divers and a manned support boat to perform tows through the entire littoral zone. However, it is not effective for divers to be towed in between residence docks or in water less than four feet deep. Therefore, snorkeling or observations made from boats or the shore should also be performed to supplement the diver work.

The preferred schedule for the annual surveillance work is early in the growing season, typically during June. This timing will usually allow the surveyors to see the Milfoil at a time when it is actively growing; the particular green color of the leaves and reddish stems are fairly distinctive and noticeable. This time is also usually early enough to allow planning for treatments that same growing season (i.e. in July). In years that control treatments are performed it may be advantageous to perform a post-treatment survey during August or September to determine treatment efficacy. However, these late season surveys are generally not appropriate for planning the next season's treatments due to the fact that Milfoil will continue to fragment and become established to some extent during the fall, winter and early spring months.

Past surveys have included the use of Global Positioning System (GPS) equipment to help document the locations of the Milfoil infestations, either individual plants or dense patches of plants. The GPS data is typically imported into a Geographic Information System computer program and Milfoil distribution map prepared. It is recommended that GPS / GIS mapping be performed as a regular component of the annual surveillance. The GIS map produced and an explanatory report should be prepared and provided to the Loon residents as part of the Education / Awareness program.

Herbicide Applications

Based on past Milfoil control efforts at Loon and other local lakes, as well as the information presented in the CONTROL ALTERNATIVES section of this Plan, it appears that spot applications of fast-acting herbicide combined with diver surveys, present the greatest opportunity to break the current Milfoil growth cycle and meet the Management Goals stated above. It should be noted, however, that these Goals also indicate that it is desirable that Milfoil control does not involve chemical applications every year.

2,4-D has been used for Milfoil control since 1998 in Loon Lake with good success and this is the preferred product. There have been no adverse impacts noted due to 2,4- D use in Loon or other local lakes; this agrees with the conclusions stated in the WDOE Risk Assessment information included in **Appendix C**. However, as described in the Lake Management History section of this report, the areas treated after the initial Demonstration Project have not declined appreciably through 2003. This may be due in part because the treatments performed under the provisions of Enhanced Substitute Senate Bill 5424 limited 2,4-D applications to not more than 20% of the lake's littoral area and there was no treatment performed in 2001 due to the Talent Irrigation court case. The results of the past herbicide treatments point to the potential benefit of further integrating the Milfoil control efforts by using herbicide products other than 2,4-D. In particular, the contact product Reward® (active ingredient diquat), and the systemic product Renovate® (active ingredient triclopyr), should be considered if 2,4-D effectiveness is seen to decline.

The 2,4-D treatments performed to date in Loon Lake used primarily a granular formulation of the chemical. The application rate was 100 pounds per acre, the maximum allowed for this plant by the product label. Water monitoring of herbicide residues performed in other area lakes (primarily Sacheen Lake in Pend Oreille County), however, seems to indicate that the target concentration of 2,4-D (2 ppm) was not achieved by the 100 pounds per acre application rate (**Lamb 2003**). This might be the result of sediment absorption of the chemical, when the granules fall to the lake bottom in sparsely infested areas. In any event, it appears that the liquid formulation of 2,4-D (which was used in one 20 acre area of Loon in 2003) might have a greater efficacy because it is immediately mixed through the water column and perhaps more completely available for absorption by the Milfoil.

Due to the need for the herbicide treatments to be performed by experienced and State licensed (and insured) personnel, it will be necessary for the LMD to contract with a lake management contractor for this work. Due to the expected annual treatment cost, it will be necessary to advertise for Statements of Qualification / Proposals. It is acknowledged that at the time of this writing, there are only two firms in Washington that are set up to perform and integrate the survey and treatment work. For this reason, and because of the cost and effort involved in going through a competitive bid process, this is recommended to be undertaken on an infrequent basis (i.e. every three to five years). In order to ensure that a true competitive process is followed, it is recommended that a public notice be placed in a newspaper of fairly wide distribution, at a minimum, the Spokane Spokesman Review. The Statement of Qualifications / Proposal solicitation process should begin as early in the winter as possible (October or November) so that it can be completed and a contractor Agreement finalized well before the following survey / treatment season (i.e. before April). It is recommended that the LMD obtain the assistance of the

Stevens County Noxious Weed Control Board in reviewing submitted proposals. It is further recommended that any monitoring that is desired or required relative to the Milfoil treatments should be conducted by the LMD with oversight by a qualified water quality or lake management specialist, or by a qualified, independent lake management specialist.

It should be reiterated that there are water use restrictions indicated on the herbicide labels that the lake residents and users must be made aware of. While public and resident notifications will be described in the NPDES permit, the following are applicable to the use of 2,4-D in aquatic systems:

"Unless an approved assay indicates the 2,4-D concentration is 100 ppb (0.1 ppm) or less ... do not use water from treated areas for irrigating plants or mixing sprays for agriculture 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)."

There are no fishing or swimming restrictions stated on the product labels but, as noted in the 2,4-D section above, the WDOE recommends that "due to risk of dermal contact, a swimming advisory shall be posted advising swimmers to wait 24 hours before reentering directly treated areas to allow time for the chemical to disperse".

Diver Operated Suction Removal

The other impact that the Talent Irrigation case has had on this planning effort in that there is an apparent need for a secondary, or backup treatment program. While the WSDA has received a state-wide permit to cover herbicide treatments of noxious weeds, there is still a need for a back-up treatment option because of lake resident opinion that treatments should not always rely on a chemical addition to the lake. This back-up method is recommended to be diver operated suction removal. The costs of substituting suction removal for 2,4-D are substantially higher (see below) and it is recommended that a minimum of 40 days of suction dredging be performed per season (assuming one suction unit operating). Disposal of collected Milfoil should be arranged for at locations well away from the lake by the LMD.

If diver operated suction removal of Milfoil is undertaken it will involve a considerable effort that will span much of the summer. Therefore, it is recommended that a qualified, experienced contractor be hired to manage and implement this work, including providing and operating / maintaining one or more boat-mounted suction units. It is not expected that water monitoring will be required or necessary in conjunction with this Milfoil control measure but if it is this should be preformed by the LMD with appropriate oversight and local labor if possible.

Diver Hand Removal

Diver hand removal is recommended to be performed in conjunction with diver directed suction removal in areas of sparse Milfoil infestation. An effort of five to ten days per season is recommended, based on levels of Milfoil infestation. This work could be contracted out (included in herbicide application or diver suction removal contracts for ease of administration)

or performed with local labor, if available. If this work is done with local labor, there should be a designated manager who will coordinate and direct this effort following the results of the herbicide or diver suction work. It is not expected that water monitoring will be needed for this effort.

Expected Environmental Impacts of Recommended Control Strategy

The recommended Milfoil control efforts are expected to have no significant negative environmental impact on the lake environment, including the wetlands, groundwater or adjacent upland areas. This assumes that all in-lake treatment work will be performed following currently accepted protocols and regulatory requirements.

The herbicides recommended are very target-specific, especially the 2,4-D and triclopyr. This limits the potential impact to beneficial vegetation. The recommended herbicides have been thoroughly tested to determine their potential impact to fish, birds, animals (wildlife and pets) and to humans. At the label-described application , no effects to fish, birds, animals or humans is expected. The use of pre-treatment diver inspections allows for precise placement of herbicides and thus a control on the amount of chemical that is used at any one time. The use of systemic products further limits the amount of chemical used because susceptible target plants do not re-grow if they receive a lethal dose of the chemical. Finally, each of the recommended herbicides has a limited life in the lake; these chemicals are broken down into harmless compounds by sunlight and microbial action.

Impacts from diver suction removal of Milfoil are minimized because the divers direct the suction to individual target plants, avoiding other vegetation. While some sediment materials can be picked up with the suctioning and released with excess water near the lake surface, these materials generally settle fairly quickly back to the lake bottom and do not leave a long-term plume of turbidity. Re-suspension of sediment is also minimized by the fact that the divers actually lift the Milfoil root wad up to the suction intake as opposed to placing the intake into the sediments to collect the Milfoil roots. Due to the typically high cost of diver suction removal, this is seldom used for large-scale Milfoil control, thus minimizing the aerial extent of the intrusion into the aquatic habitat. Diver hand removal of Milfoil, as well, is not used for large-scale Milfoil removal thereby minimizing lake habitat disruption.

The wetland areas are not expected to be impacted by Milfoil control treatments because the treatments are focused on the lake and there are few opportunities for potentially degrading 'elements' (either chemicals or human disruption) to move into the wetlands. As indicated herein, the Loon Lake wetlands are vegetated primarily by grasses and grass-like plants which are not susceptible to either 2,4-D or triclopyr.

Monitoring and Evaluation

Continued monitoring of aquatic plant populations and lake quality will be necessary to help guide the implementation of desired control measures and to evaluate the effectiveness of these measures. Monitoring should focus on an annual submersed plant survey and periodic sampling/analysis of basic water quality parameters. The following is a recommended program which should become an integral part of the submersed plant control program. Estimated costs associated with this work are provided in the Costs section below.

In addition to the monitoring of conditions in the lake, an annual evaluation of this IAVMP is recommended. This evaluation should include a review of the monitoring results and discussion of possible changes in the methods to be implemented. The discussion should involve participation of all interested groups including LMD Steering Committee, (includes County Weed Board representative), WDFW, WDOE and any other affected parties. Changes in the plan could be desired following changes in funding availability, regulatory changes, new or revised treatment techniques or other factors.

Aquatic Plant Surveillance and Mapping

This should include diver inspection of the lake's littoral area through boat tows (parallel to shore) and snorkeling / surface inspections (in between docks and in shallow areas). The combination of diver and non-diver methods is necessary to expedite the complete coverage of the littoral areas. Information on Milfoil presence and relative density should be collected and a map should be prepared (preferably using GPS / GIS technology due to its greater accuracy) and to build a historical record of conditions and responses. This survey should be performed at least once a year after plants have come up in the early summer (June). Secondary surveys performed late in the summer could provide additional information on the short-term effectiveness of treatments.

It is also recommended that surveys be performed periodically (every three to five years) to document the presence of native aquatic plant species. This work should follow methods described in Parsons et al. 1999. This effort is important to document the on-going health of the native species and the continued lack of adverse effects of the 2,4-D treatments.

If GPS / GIS mapping is desired (or required) for this surveillance, it will be necessary to contract with a consultant firm that has this capability, in addition to having experienced diver staff who can identify the range of plant species present. Again, due to the expected annual cost of this work, a competitive solicitation process will be necessary. It is recommended that this surveillance and mapping work be included in the solicitation for a treatment contractor but made an option so that applicator/diver only firms may respond as well as surveillance/mapping only firms. This will at least make the most of the cost of the public notices.

Herbicide Treatment Monitoring

Herbicide residue analysis of surface water (lake and stream) samples are only required, currently, for control projects funded by WDOE. For these efforts the monmitoring results are reported to the US EPA as part of the NPDES permit compliance. However, monitoring of herbicide residues in the lake is highly recommended to be able to respond to concerns expressed by residents or visitors about the usability of the water or potential non-target impacts of the herbicide.

The minimum recommended program for this is to collect four depth-composited samples following each treatment. The first two samples should be collected the day after treatment, one sample from within a treated area and one sample outside (within 200 feet of) that treated area. Two additional samples should be collected from the same two locations four days after treatment. All samples would be submitted to an accredited laboratory for analysis on the day of collection. If more than one area is treated at the same time, the minimum sampling should be conducted at the largest treatment area.

All samples should be composites of the water column at the sampling location. This requires the use of a device that can determine the depth at a location and also a device that can be lowered into the water to collect samples at desired depths. Separate samples should be collected from the lower, middle and upper third of the water column and equal volumes of each placed in bottles provided by the analytical laboratory

Sampling and analytical methods used will conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136 or to the latest revision of the *Standard Methods for Examining Water and Wastewater* (APHA). In addition, sampling shall be performed by, or with oversight by, a qualified water quality specialist. Volunteer involvement in sampling and monitoring is encouraged and volunteer training is an important aspect of a public awareness program. Water sampling and analysis equipment must be made available; this should be discussed with Sewer District since they have performed monitoring work in the past and a cooperative effort should be investigated.

Water Quality Monitoring

Water quality monitoring of selected parameters is recommended as an annual effort at Loon Lake. This monitoring should be performed by citizen volunteers with oversight by a qualified water quality specialist. The recommended sampling and data collection frequency is five times a year: May, June, July, August and September. In each of these months samples should be collected from above and below the thermocline at two sites (Sites 1 and 2 as described by singleton et al. 1980) for laboratory analysis of total phosphorus, ortho phosphorus, nitrate + nitrite nitrogen and ammonia. In addition, field data should be collected at regular intervals (i.e. every two meters) from the surface to the bottom of the same sites for temperature, dissolved oxygen, pH and conductivity (specific conductance). The Secchi Disk transparency should be determined at each site. Water samples should be collected using a Kemmerer type sampler in bottles supplied by an analytical laboratory. Field data can be collected using a properly calibrated Hydrolab unit or another direct reading unit(s) which allow reading the parameter "in situ", that is, in place (without having to collect a sample and bring it to the surface to analyze).

Note if financial constraints place a limit on the water monitoring effort, the preferred plan would be to do the recommended monitoring at one site only and Site 2, which is over the deepest area of the lake, would be the most representative of the whole lake.

Project Costs

The estimated annual cost, in 2003 dollars, for the recommended integrated aquatic plant control strategy would have the following components.

TASK	ESTIMATED COST*
• Planning/Coordination/Administration (PER YEAR)	$1,000
• Education / Awareness Effort (PER YEAR)	$2,000
• Milfoil Surveillance and Mapping (PER YEAR)	$5,000
• Native Aquatic Vegetation Surveillance (EVERY FIFTH YEAR)	$6,500
• Water Quality Monitoring (PER YEAR)	$4,500
• 2,4-D Treatment (PER YEAR)	$25,000
(35 acres treated @ $400 per acre applied + permitting + monitoring)	
• Diver Directed Suction Removal (PER YEAR) **OPTION**	$54,000
(40 days equipment rental + labor + permitting)	
• Diver Hand Removal (PER YEAR) **OPTION**	$12,000
(10 days for two divers and support boat with operator)	

* Before applicable taxes.

Local Funding Strategy

Funding can be a limiting factor in an organization's ability to effectively manage noxious aquatic weeds or other water quality problems. The fact that the Loon Lake LMD is in existence and well supported by the local taxpayers should ensure that Milfoil controls funding is available for the foreseeable future. Since the LMD law has recently changed to allow permanent lake management districts, it may be of value to investigate this for Loon Lake. Adoption of the Milfoil control work by the Loon Lake Sewer District should also be investigated.

In addition, there are also grants available from WDOE's Freshwater Aquatic Weed Management Fund, although this fund is not a long-term source and Loon Lake has probably already received more than their share of these funds (**Hamel 2002**). There is some anticipation that the US Army Corps of Engineers, Milfoil Control Funds may be reestablished for use in Washington State in coming years. If this does occur, it could provide another source of funding for the Milfoil control program elements recommended at Loon Lake.

Figure 14. Sunset at Loon Lake (photo courtesy of Jim and Judy Richardson).

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APPENDIX A: Loon Lake Property Owners Association Newsletters *

* Not included in digital file of this document.

LOON LAKE PROPERTY OWNERS ASSOCIATION

FALL NEWSLETTER 2003

President's Message

by Jim Rudisill

What a glorious summer! I'm sure you enjoyed it as I did. It's hard to believe it's almost over. We discussed at our general membership meeting the need to keep everyone informed and up to date on issues pertaining to Loon Lake. Therefore, we are publishing a fall edition of our newsletter.

There are a few things I would like to mention. Foremost is our continuing struggle with Stevens County over protection of our lake environment. The Board of County Commissioners seems to be trying every available means to circumvent their moral and legal responsibilities. More articles follow that explain the details, but it looks like issues are going to be decided in the courts and not at the bargaining table.

On behalf of the Executive Board of the Loon Lake Property Owners Association, I would like to thank those Association members who donate their time and money to our various causes and activities. We had a great response to our yearly membership drive; and when we felt the need to ask for additional donations to the Loon Lake Defense Fund, many members showed their generosity.

Thanks to the folks at Granite Point Resort for their support and help with the fish pen operation.

Thanks to all the volunteers who helped with the yard sale, pancake breakfast, and dock demolition.

Thanks to our anonymous donor with his/her matching funds offer.

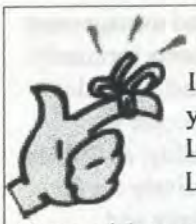
Thanks to the Loon Association for their support.

Thanks to all the letter writers and those who make their presence known at county meetings.

Thanks to Bruce Erickson, our legal advisor and representative.

And thanks to the Executive Board and committee members for their tireless devotion and commitment to the preservation of Loon Lake.

Always remember, the Property Owners Association was created to preserve our lake environment, and this is what we are all striving for.



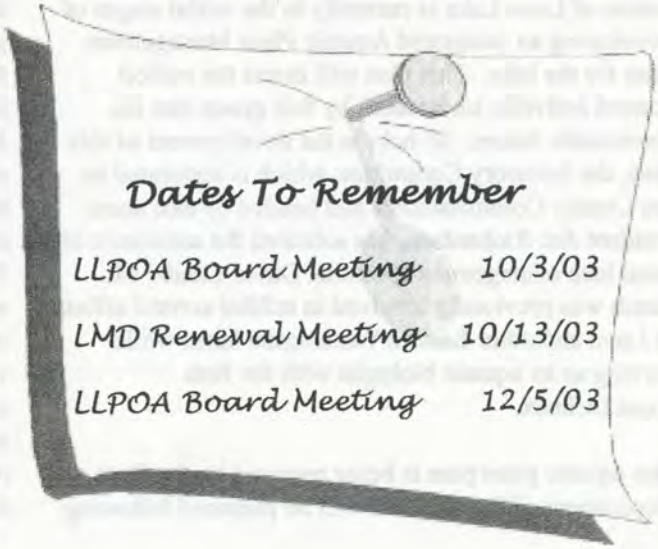
Dues Reminder

If you haven't paid your dues yet this year, checks should be make payable to LLPOA and mailed to PO Box 165, Loon Lake, WA 99148.

If you wish to make a donation, checks should be made payble to Loon Lake Defense Fund (LLDF) and mailed to the same address.

Newsletter Advertising: A Future Possibility

Since several of you have contacted us regarding advertising in the LLPOA newsletter, the Board is investigating the possibility of accepting advertising for upcoming newsletters. If you are interested in placing an ad in a future edition, please contact Judy Richardson, 233-8401.



Time To Renew the Lake Management District

by Jim Richardson
Advisory Committee Chairman

It has been three years since the first Lake Management District was passed, and it is time for us to decide if we wish to continue to control the Eurasian milfoil. The past three years have shown that we can control milfoil if we are willing to continue with treatment. Achieving complete eradication will probably never happen, but the density of our milfoil is far less than it used to be. It is just like spraying your lawn for dandelions. You're never going to get rid of them all. By continuing the LMD, we should be able to keep the milfoil in our lake under control. The advisory committee to the County Board of Commissioners feels that it is reasonable to continue the LMD for another five years. The committee recommended the rate be the same as the present, which is approximately $1.20 per lake front foot and $36 for secondary dwellings with lake access, with a maximum of $200 for private property and a $500 maximum for resorts and semi-public property per year with *NO increases* for the next five years. A maximum of $43,500 will be collected each year for five years, for a total of $217,500. This money can only be spent to control Eurasian milfoil.

As part of our treatment program for milfoil, the State of Washington Department of Ecology is now requiring that a five-year Integrated Aquatic Vegetation Management Plan be drawn up. This plan requires some detailed lake management history, a problem statement, and input from lake users groups. It also requires an outline of the lake's watershed and lake characteristics. This plan will require some professional help in drafting the plan. The committee has recommended to the County Commissioners that Mr. Dave Lamb be hired to draw up the plan (See his article below). This plan is necessary to be able to continue to treat the milfoil.

If we, the lake property owners, do not continue to control Eurasian milfoil, our lake, in a few short years, could look like parts of the Pend Oreille River. It is perhaps the most badly infested water in Eastern Washington.

You will be receiving your ballots in the mail in the next fews weeks. Vote ***"YES"*** to continue to control the Eurasian milfoil. If you have questions, please call me at 233-8401.

Lake Management District to Prepare Aquatic Plant Plan

by David Lamb
Lake Management Specialist

The Lake Management District (LMD) Advisory Committee of Loon Lake is currently in the initial stages of developing an Integrated Aquatic Plant Management Plan for the lake. This plan will direct the milfoil control activities undertaken by this group into the foreseeable future. To help in the development of this plan, the Advisory Committee, which is appointed by the County Commissioners and headed by east shore resident Jim Richardson, has solicited the assistance of local lake management specialist David Lamb. Mr. Lamb was previously involved in milfoil control efforts at Loon and other Eastern Washington lakes while serving as an aquatic biologist with the firm AquaTechnex.

The aquatic plant plan is being required by the State Department of Ecology and will be prepared following their guidelines. Components of this plan include development of a "problem statement" and management goals, which are formulated by the lake users (primarily the residents) through a public meeting and a questionnaire. The questionnaire will ask about people's feelings about the lake's quality and usability, as well as observed problems. The meeting is tentatively set for the week of October 5, and the questionnaire and meeting agenda are to be mailed out by September 26. The plan will also include descriptions of the lake and watershed characteristics as well as a history of lake management efforts. The results of recent aquatic vegetation surveys will be summarized and all available aquatic plant control techniques will be formally evaluated to determine their applicability to Loon Lake. All of these basic plan components will then be "boiled down" to come up with a recommended integrated

Continued on Page 3

Aquatic Plant Plan

Continued from Page 2

treatment action plan. Following approval by state and local agencies that have jurisdiction over the lake, the plan will be used to guide efforts to control milfoil (and/or other problem plants).

The aquatic plant plan, to be most effective, must involve as many lake users as possible during its preparation. For this reason, the LMD Advisory Committee is asking people to come to the informational meeting in October to hear about the options and voice their comments. It is very important, as well, to complete and return the questionnaire in order to provide a basis for the problem statement and management goals.

Watershed Committee Update

by Jim Davies
Member, Watershed Committee

The issues of land usage designation and population density are currently under consideration by the Loon Lake Watershed Sub Area Citizens Advisory Committee. This is the most difficult of all recommendations that the Committee must consider. There are four positions relative to this matter within the Committee. Eleven members (52%) believe that lands outside the already built and platted areas should be designated as either "Forestry" or "Agricultural" with a maximum population density of 20 acres per dwelling unit. Five (24%) are not sure what the designations and densities should be and require more data before they can make an informed decision. Three members (14%) believe that the designations and densities should be set at the maximum that best available science shows to be possible or based on the specifics of the site under consideration. One member (5%) prefers to have no land usage designations and no restriction on population density. Critical areas (wetlands) and Loon Lake Town areas were not included in these deliberations.

It is unlikely that the Committee will reach unanimous agreement on these matters. Some members believe that the scientific data that has so far been considered is flawed or incomplete and perhaps even prejudiced. Since the Board of County Commissioners (BOCC) did not fund the Committee to engage the help of professional scientists and the Committee was unable to find any other funding, no other sources of "best available science" specific to the watershed are available. A County effort is now being mounted to bring together a Technical Assistance Committee (TAC), but even the Commissioners are pessimistic in their appraisal of its probable success, much less its timeliness.

In any case, the land usage designations and population densities that the Committee ultimately recommends to the BOCC must be consistent with (either equal to or greater in severity of restriction) those specified in the County's Comprehensive Plan (still a work in process). If not, there is no reason for developing a Sub Area Plan. Perhaps even more importantly, those recommendations must comply with the State's Growth Management Act, which requires that the rural character of an area must be protected by containing or controlling rural development, reducing the inappropriate conversion of undeveloped land into sprawling, low density development and protecting critical areas (i.e., surface and ground water resources.)

This writer disagrees with the 5% position. The Committee cannot recommend that there be no designations on land use or no restrictions on population density. That would clearly be in violation of the Growth Management Act and probably not consistent with the County Comprehensive Plan, both of which are, or will be, the law of the land. Advocating such a position, however, is every person's right. The "best available science" and "site specific" position (14%) is logical, even attractive; but it is impractical. The way in which counties contain and control population densities and land usage is through "going in position" policies. If every parcel of land were to go through a site-specific or best-available-science study to qualify it for development at some proposed density or some proposed use, the workload at the county level would be insurmountable; and the cost to developers unreasonable. This type of regulatory language also leads to inequality in developmental freedom and enforcement.

Regarding the 24% who are unsure and need more data, I am convinced that the scientific advice given to the Committee thus far is from reputable sources and is above reproach. I would rather that advice included a risk assessment of several alternative approaches so that we (the Committee) could select among them in order to resolve our basic differences. But, it is what is available. Even though this writer is within the group

Continued on Page 4

Watershed Committee Update

Continued from Page 3

that would propose the 20-acre minimum on density, I understand the desire for more data. I am, however, willing to go along with the 20-acre minimum, even though I feel that it is probably too small.

I am convinced that even today there is not enough water in the watershed to satisfy the needs of natural users (evaporation/transpiration/lake level and water quality maintenance), and human consumption (adjudicated spillage/home use/irrigation), much less support the kind of growth that a 20-acre minimum could foster. Every new home, yard, road, driveway and walkway, the eventual widening of Highway 395, etc., through the proliferation of hard surfaces and the elimination of shade, will speed runoff and lessen the watershed's absorption capability. I do not trust the efficacy of mitigation techniques in the long run. I am fearful that currently conceivable events such as forest fire, mismanagement of forested/agricultural areas, or dramatic weather change would cripple the watershed's ability to support even those present users.

Stay tuned.

Little Loon Lake Wetland

by Bill Shawl

The Little Loon Lake wetland is located at the very south end of the lake (Cedar Beau Bay area). Actually, it cannot be seen from the lake because it is hidden by the railroad and the Larson Beach Road overpass. It is in a heavy snow area because of its location just below the summit of Loon Lake pass. It is about 11 acres in size and is surrounded by timber located on a very steep slope. This wetland stores a lot of water which is needed for the lake environment.

The wetland and surrounding property is owned by Stanton McDaniel, who has been attempting to develop several home sites in the area. He has also attempted to log off part of the timber but was stopped due to complaints from residents in Cedar Beau Bay addition.

Mr. McDaniel has applied for a Manufactured Home Placement Permit that would place this structure in a space between the eastern boundary of Cedar Beau Bay addition and the railroad right-of-way. This area is a wetland buffer which has been filled in by Mr. McDaniel and/or the previous owner. It is outside of the Loon Lake Sewer District. It is not an appropriate home site.

The Association has taken a position opposed to this permit for several reasons:

1. The area is, or was, a part of the Little Loon Lake wetland, the water absorbent qualities of which are critical to the lake environment. Certainly a drain field and additional hardscape in that area would be a threat to the lake water quality and quantity.

2. This area is frequently flooded during spring runoff, and the location of the manufactured home is adjacent to the flood control siphon.

3. Mr. McDaniel owns a 7.9-acre parcel of land in the area, of which this home site is a part. He has more appropriate locations for a home.

We are keeping close watch on this permit and are prepared to take legal action to protect the wetland should that be necessary.

New Publisher for Newsletter

We are pleased to announce that Kathy Buchanan from Lake Shore Homes has so generously offered to be our new newsletter publisher. She comes to us with enthusiasm and expertise, and we are so happy to have the opportunity to tap into it.

Thanks, Kathy, and also thanks to Sunshine Millhorn, who continues to do her great job as proofreader.

Governor Intervenes in Loon Lake Case

by Bill Shawl
Chair, Legal Committee

The establishment of a county Critical Areas Ordinance that provides protection for wetlands has become much more contentious in recent weeks. Stevens County Board of County Commissioners (BOCC) has enacted two versions of a Critical Areas Ordinance, one in 2001 and another in 2003. The old one was successfully appealed by Jeanie Wagenman and Larson Beach Neighbors as being non-compliant with the Growth Management Act. After about sixteen months of citizen participation on a new CAO, the BOCC passed a 2003 ordinance. Now they had two ordinances. Jeanie Wagenman and LBN appealed the new CAO as being inadequate to protect wetlands.

On July 23, 2003, Governor Gary Locke directed the Department of Ecology to intervene in the case filed by Jeanie and LBN. The Attorney General's Office will represent DOE in the Hearing Board appeal. The Governor stated in his letter, "This motion to intervene is needed for two reasons. First, to ensure compliance with the Growth Management Act, and second, the county ordinance as adopted would result in many important wetlands becoming unprotected in Stevens County."

The reaction of the Stevens County BOCC to this action by the state has been one of defiance. On September 9, 2003, on the advice of Deputy District Attorney Lloyd Nickel, the BOCC modified the old 2001 CAO (which they know is non-compliant) and inserted language which eliminated all wetland buffers that might have provided some protection and substituted "no harm done" language in place of buffers. This was done without notification to the public regarding this language change. The BOCC also enacted an 18-page new CAO on that date. How this action moves the County toward compliance with the Growth Management Act is anyone's guess. The Loon Lake Property Owners Association will be supporting efforts to have this action declared invalid.

Kasbar Case Moves Forward

by Bill Shawl
Chair, Legal Committee

The lawsuit filed by the Association against developer Brian Kasbar back in the year 2000 is still being actively pursued. Due to several legal moves by the opposition to get the case sidetracked or dismissed, we have thus far been unable to have the case heard on its merits. The case is Loon Lake Property Owners, Loon Lake Defense fund and Larson Beach Neighbors vs Brian and Laura Kasbar and Stevens County, Superior Court Case No. 00-2-00447-6.

The case is a civil action under the Land Use Petition Act that seeks to set aside and return to the County an approval of a Sub-Division Proposal which creates 15 residential lots on approximately 22 acres abutting the shoreline of Loon Lake. Our attorney, Bruce Erickson, filed a motion in Stevens County Superior Court requesting that the case be continued as a Pending Case. Judge Kristensen has signed the order authorizing the continuance. It is the intent of the Association to pursue this case and not let it drop for lack of action on our part. The issue of wetland destruction in that area of the lake is too important to overlook.

LLPOA/LLDF Officers

President	Jim Rudisill	482-2935
Vice President	Dan Gann	233-9343
Secretary	Brian Veale	233-8933
Treasurer	Bob Morozzo	233-8674

Directors & Committee Chairs

Judy Richardson
Walter Davis
Red Crass
Bill Shawl
Jim Richardson
Tom Williams
Steve Nepean

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LOON LAKE PROPERTY OWNERS ASSOCIATION

SPRING NEWSLETTER

2002

PRESIDENT'S MESSAGE

Greetings everyone. I trust everyone had an enjoyable year. On behalf of the Executive Boards of both the LLPOA and LLDF, I thank you for supporting our efforts on your behalf. Much has been accomplished, but there is still much to do. Once again your elected board members and appointed committee members have done an outstanding job. Due to their tireless devotion to the protection of our lake environment, we continue to move forward. I applaud their efforts. We are fortunate to have them.

With the generous snowpack in the mountains and the spring rainfall, we should maintain an adequate lake level this summer. But don't get complacent. We still need to work to protect our remaining wetlands and watershed.

Our fish pen operation was another success the past year. It just keeps getting better. The fishing is excellent and will only improve. Thanks to Granite Point for their help.

As you all know, we were unable to treat milfoil last year. The Federal courts placed a ban on all aquatic herbicides. A new permitting process is in the works and we plan on resuming treatments this summer.

We have gained significant ground with the county in our efforts to protect our remaining watershed. It's a slow process. The County Commissioners realize we won't go away until all the issues are addressed and legally resolved. Therefore, they are now more willing than ever to work together on these issues. We have a good legal strategy and it is paying off. A special thanks to our attorney, Bruce Erickson.

Milfoil treatment and fish pen operations are funded for a few more years now. Most of the revenue from dues and fundraisers goes to pay our legal fees, but the Defense Fund still runs in the red. If you truly believe in what the LLDF is doing to protect our lake, perhaps you could see your way to send an extra donation with your dues to the LLDF. Your donation is tax deductible and greatly appreciated.

Again, thanks for your continued support, and I look forward to seeing you at the annual meeting on June 28th, 2002 at the Loon Lake Elementary.

Jim Rudisill
President, LLPOA,LLDF

Have A Safe Summer!

URGENT LOON LAKE PLAN NEEDS YOU

Deadline April 30th

The Board of County Commissioners has announced the creation of a Loon Lake Watershed Sub-Area Plan Citizens Advisory Committee. This committee will comply with the new GMA compliant Public Participation Plan recently passed by the BOCC. We urge everyone to apply for membership and to serve on this important committee.

The old Loon Lake Sub-Area Comprehensive Plan and Zoning Map, developed back in 1991 must be rewritten in accordance with the requirements of the state Growth Management Act. This will be a land use plan for the entire Loon Lake watershed and will guide county land use decisions over the next twenty years. Decisions regarding such things as sub-area boundaries, lot sizes, plans for sewer and utilities installations, etc. will be made. We need citizen input to make sure that this document represents your ideas and dreams for the future of Loon Lake. Do not let the future of the lake be determined by those who place self- interest above the needs of the lake. **Applications for the new Loon Lake Sub-area Committee are being accepted with the deadline being April 30th**. Everyone who sends a letter of application will be accepted on the committee and the old committee members should re-apply.

There will be a meeting at Loon Lake on May 7, 2002, for applicants to gather that want to be on the sub-area committee. They will be discussing by-laws, etc.

Letters of application should be sent to Stevens County Planning Department, 215 S. Oak St., Courthouse Annex, Colville, WA 99114.

LLPOA AND LLDF

2001/2002 OFFICERS

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VICE PRESIDENT - DAN GANN - 233-9343
SECRETARY - BRIAN VEALE - 233-8933
TREASURER - ROBERT MOROZZO - 233-8674

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JIM RICHARDSON - 233-8401
TOM WILLIAMS - 233-2483 or 467-6733
STEVE NEPEAN - 233-2833 or 928-4318

PROGRESS ON THE LEGAL FRONT

by Bruce H. Erickson, Attorney at Law

At the 2000 annual meeting the membership approved a Growth Management Act (GMA) legal strategy as a tool to protect the lake environment. This strategy called for suit against Stevens County, if necessary, to compel the County to comply with GMA. This is our second year of working with this law. Its use is now proving effective in addressing and protecting Loon Lake's environmental needs.

In September of 2000 the Eastern Washington Growth Management Hearing Board (EWGMHB) granted LLPOA intervention in Wilma v. Stevens County. Wilma had obtained a ruling that the County had failed to prohibit urban growth outside the County's six cities and that the County was out of compliance with GMA. LLPOA sought in subsequent compliance hearings that urban development be banned in the Loon Lake watershed at least temporarily until GMA planning had been completed.

In response, the County in January of 2001 (over our repeated objections) adopted a new set of Subdivision Codes which included a minimum lot size of 2.5 acres in rural areas that included the entire Loon Lake watershed. LLPOA challenged these Codes as inadequate in Wilma. And in a second separate GMA action titled LLPOA v. Stevens County, LLPOA and Larson Beach Neighbors again challenged these Codes, but this time asking for an order of invalidity. Both challenges were successful with the Board ruling that 2.5 acres was too small. More importantly, the Board in LLPOA v. Stevens County in its 10/26/01 decision issued an order of invalidity against the County as to minimum lot size. The practical result of this invalidity order is that no subdivision of land smaller than 20 acres in size can be approved anywhere in the county. As a part of the effort to get invalidity lifted, the County has been working on a countywide Interim Moratorium prohibiting land subdivisions smaller than 10 acres in size. LLPOA has taken the position that an interim lot size should be larger than 10 acres, particularly in the Loon Lake watershed. The purpose of a moratorium is to provide protection or "time out" while the public is allowed to develop the required planning documents. Allowing 10 acre lot sizes in the Loon Lake watershed before we have the scientific evidence as to how much development the watershed can sustain is not acceptable to LLPOA.

On April 16, 2002 the Board of County Commissioners (BOCC) took action to lift the EWGMHB ban on subdivisions less than 20 acres. In a half way effort the BOCC approved a countywide 10 acre Interim Moratorium and at the same time approved a 20 acre Interim Moratorium for the Loon Lake watershed. These moratoria are in effect for a period of only six months, but can be renewed for additional six month periods. This BOCC action at the very least recognized that Loon Lake has special problems that need to be addressed because of thecritical relationship between the lake and its small watershed. Although the effort was two years in the making, the LLPOA Board is appreciative that the BOCC has now formally recognized Loon Lake's special needs.

At this same meeting and again in response to the rulings in LLPOA v. Stevens County, the BOCC attempted to pass an Interim Moratorium which would protect Natural Resource lands. This element of the GMA requires that agricultural, forestry and mineral lands be designated and protected. The purpose of the moratorium would be to freeze development applications in these lands until a citizen developed plan has been passed by the BOCC. They were unwilling to pass this moratorium due to the objections of a large number of opponents who attended the meeting.

Concerning the Loon Lake watershed, the BOCC on April 2nd did approve a LLPOA request that a Loon Lake Sub-Area Plan Citizens Advisory Committee be formed (see article page 1). The ball is now in LLPOA's court as far as developing a plan that will protect the watershed and allow reasonable managed development.

At the writing of this Article no recommendations or decisions on a legal response to the BOCC's recent actions have been made. In the weeks that follow, the ramifications of the latest BOCC actions will be considered with appropriate recommendations.

Concerning specific development projects, Loon Lake Forest Estates (Gary Myers) has just recently reactivated its request for a rezone in the Pearson Meadow area. On 6/6/01 Superior Court Judge Larry Kristianson reversed an earlier rezone approval on procedural grounds. Kasbar's development proposal just south of Shoreacres Resort is currently on hold due in part to a lack of a shoreline development permit. On 6/22/01 Superior Court Judge Rebecca Baker not only reversed a Shoreline Hearing Board's approval of a previously issued permit, but actually ruled it invalid. These projects may or may not have been vested prior to the date of the EWGMHB Invalidity Order. It has been a busy time, but not without successes, for your legal counsel and your Legal Committee. The good news is that the GMA strategy seems to be working and progress is being made toward the long term protection for the lake.

Loon Lake Management District

Written by Jim Richardson,
Advisory Committee, Chair

We plan to treat the milfoil this summer. The State of Washington has finally established permitting for milfoil treatments. The permit will be issued by the Department of Agriculture with little or no cost for the permit. The Department of Agriculture is still working out some of the notification requirements. We conducted a diver survey last fall and have found several new hot spots of milfoil. At this time we are working with the Stevens County Weed Board and applicators in developing our treatment program for the summer. There will be notice prior to any treatment. We will make sure that all treatments will not interfere with any holidays.

LLPOA – Who Are Those Guys Anyway?

Written by Bill and Jan Shawl

The Loon Lake Property Owners Association has been getting quite a bit of "bad press" from those who do not understand what LLPOA is and what it stands for. LLPOA was incorporated in 1979 and was reincorporated in 1997. Its purposes are: "(1) to organize the property owners within and adjacent to the shores of Loon Lake, (2) to protect the lake from environmental degradation, and (3) to provide a forum by which the property owners may assist governmental agencies in better planning the use and resources of the Loon Lake area." Membership is open to any interested property owner in the Loon Lake area. Dues are $20.00 annually. This year there are 452 dues paying members, up from 329 last year. Our Annual General Membership meeting is held the fourth Friday in June. A Board of Directors of five members and Chairs of five standing committees are empowered to act on behalf of the General Membership "as concerns any business necessary for the continuity of purpose of the Association." All meetings of the Board are open to the public and are held on the first Friday of June, July, August, October, December, February and April. LLPOA is a non-profit corporation.

The Association is not anti-development, as many have alleged. This can be easily seen in our actions regarding development proposals. Since 1993, there have been eleven (11) subdivision proposals in the Loon Lake watershed, which would have created 246 lots. LLPOA opposed three of these subdivisions because each endangered wetlands or wetland buffers. One hundred and fifty nine (159) lots were approved by the County during that time. Most are still available for home construction.

Yes, the Association has been and continues to be involved with various governmental agencies to assist them in dealing with Loon Lake issues. We were very involved in the creation of the Loon Lake Sewer District. We were the initiators in getting the Loon Lake Management District formed to fight the milfoil problem. We are involved with the Department of Ecology on several fronts: we work cooperatively with them in maintaining the lake level control dam, we continue to work with them on the milfoil control issue, we did extensive work with them on developing a compliant Shoreline Master Program for Stevens County. We have attempted to work with Stevens County in several areas that relate to our purposes and goals. Our greatest success has been our work with the Stevens County Sheriff's Department, which created the volunteer lake patrol to enforce the laws on our lake.

Loon Lake, a lake of "statewide significance," belongs to the people of the state of Washington. LLPOA volunteers give generously of their time and resources to provide public services for the lake. For the past nine years they have run a very successful lake clean up program both around and in the lake. The Annual Dock Demolition Day removes potentially dangerous floating logs and debris as well as derelict docks from the lake. This year marks the fourth year of the popular Fish Net Pen program sponsored by the Association. The lake fishery has been replenished by about 11,000 carefully nurtured and fed rainbow trout each year. This spring we will release our first net full of Kokanee salmon into the lake. LLPOA volunteers routinely collect water samples twice a year that are sent to the laboratory for analysis. The Association maintains careful records on lake water quality and quantity, which are available to agencies and the public. All of these activities are by people who willingly give of their time and money so that all may enjoy the lake.

The most widely known and most controversial of our activities are in the area of land use planning The Association was involved in the original (passed in 1991) Loon Lake Sub-Area Plan and Zoning Map. Zoning is not popular in Stevens County. We have been involved in several lawsuits against developments, approved by Stevens County, which threaten the lake wetlands. Fortunately, we have been successful in the courts where the laws are being enforced. Most recently, the Association adopted a policy of using the state Growth Management Act, long ignored by Stevens County, as a method of getting protection for the lake. Our involvement in GMA planning has been costly both in terms of time and money. We have been there at every level of the process where public input is allowed. We have successfully carried two appeals to the Eastern Washington Growth Management Hearings Board and we are prepared to make more, if necessary, to protect the lake. We have testified before numerous groups, written letters and proposals, and generally made known the positions of our membership. Recently, it was LLPOA's testimony before the BOCC on the proposed Interim Moratorium, which convinced them to allow the Loon Lake Watershed Committee an opportunity to comment on the issue (even though we knew full well that a large portion of the membership on that Committee do not share our views). If you want to make an impact in a democracy, you must participate, and we are doing just that. Because we use the laws to achieve our goals, those who would like to ignore the laws attack us. We believe that Loon Lake deserves all the protection, which the Growth Management Act allows.

LLPOA does not represent all of the interests of all of the people in the Loon Lake watershed. We have never alleged that we do. We represent the interests of the vast majority of our membership and the goals of our organization. Our Association believes that the goals and objectives we are working toward are worth the efforts expended. We hope that others in the County will join us in the cause of protecting Loon Lake, because in the long run, it is in everyone's best interests.

Pancake Breakfast

The Sixth Annual Pancake Breakfast will be held the **4th of August, from 7:30 to 11:00 a.m.** at the LL Elementary School Cafeteria. We need volunteers and hungry people to attend this event. We hope you all will encourage your friends and neighbors to attend. To volunteer call Jim Rudisill 482-2935. or Judy Richardson 233-8401

Best Available Science

In our efforts to assist Stevens County in complying with the state Growth Management Act, we have become familiar with the term "best available science." The law requires that in making decisions regarding critical areas (such as wetlands) a county must use the best available scientific evidence to guide them. Association Board member Walter Davis has been pushing hard during public meetings to have this concept included in the Critical Areas Ordinance.

WAC (Washington Administrative Code) 365-195-905 establishes criteria for determining which information is the "best available science." It also cites characteristics of a valid scientific process and whether a person is a qualified scientific expert with expertise appropriate to relevant critical areas. These criteria are in the language contained in the ordinance now nearing approval by the BOCC.

It is important that the BAS concept be included in this county ordinance. This concept makes it difficult for local officials to make decisions which ignore the scientific evidence before them. It will also make it easier for us to win appeals of such decisions in the courts.

Dues and Donations

It is that time of year again: the sun is shining, there is over 12 hours of daylight each day, the ice is gone, AND membership dues are payable. An envelope is enclosed to return your $20.00 dues for membership. Please make your check out to the Loon Lake Property Owners Association. Would you also please include your sewer number and the name that the sewer is billed to which will help the treasurer keep the records straight.

This past year has been our best ever with 452 members paying their dues. We encourage those who have not joined the organization to join in the support of our many projects. Please read the article (on page3) LLPOA - WHO ARE THOSE GUYS ANYWAY for a summary of how the organization works. Although the milfoil problem is now being funded through the new Lake Management District, our many other activities need your support.

The Loon Lake Defense Fund was established to receive donations for particular projects undertaken by the Association. Our major projects include: the fish net pen, marine patrol, dock demolition, water level and water quality monitoring, wetland protection and the legal defense fund. You may designate where you would like to have your donation applied, or you may allow the Board of Directors to decide where the money is needed most. Remember the donations to the Loon Lake Defense Fund are tax deductible by the IRS. This year we would like to make a special appeal for donations to the legal defense fund to show our support for that very successful program which is moving us closer to the legal protections the lake deserves under the Growth Management Act.

Be as generous as you can. No amount is too small. All those extra dollars do add up.

Marine Patrol

by Jim Richardson

As we approach another boating season, there are several things we need to be reminded of. The vessel registration expires on June 30, 2002. The 2003 registration decal must be affixed to your vessel by July 1, 2002. There is always confusion and this causes a few boaters problems on the 4th of July holiday when they get stopped for expired registration. **Please renew your registration prior to the first of July.** In Washington state all children under 13 years of age **must** wear a life jacket when in a boat under 19 feet in length. Please see that the kids are jacketed up. The law also requires there be a life jacket of appropriate size in the vessel for everyone aboard and they must be readily accessible. If you have any questions as to the items required aboard, stop one of the sheriffs boats and they will be glad to give your vessel a courtesy safety inspection.

We will miss officer Jim Nolden this year. He has been transferred to Kalispell, Montana and will no longer be with the boating program.

On Loon Lake we are fortunate that we have responsible operators of boats and jet skis. Keep up the good job and we will have a safe and enjoyable summer.

Winter Fish Doing Well

by Red Crass

The 12,700 Kokanee which were put into our fish pen last October appear to have made it through the winter in excellent condition. To date only eight dead fish have been found.

The penned Kokanee have been fed every other day since December when the water temperature dropped below 40 degrees. The pen has been kept free of ice by the use of Granite Point's aerator.

Daily feeding will start soon as they are beginning to show more activity at feeding time. As yet, a release date has not been set although it will be sometime in May.

Boat Parade

The 3rd Annual Boat Parade will begin at **12:45 p.m.** from Cedar Beau Bay on the **4th of July**. Decorate your boat or come as you are. Join the fun parading around the lake together. Last year the Stevens County Boat with the Marine Patrol was a noisy crowd attracter. The surprise attendance by the Stevens County Fire Department, District 1, with their decorated fireboat and water spouting Jet Skis, kept everyone cool!!!!!!!!!!!

9th Annual Dock Demolition

This year on **June 29, 2002, at 9:00 a.m.** everyone interested will meet at the Public Access again for dock demolition. Old docks will be destroyed by a wonderful group of volunteers with the help of Pete Smith and his amazing work saving machine. If you wish to have a dock destroyed, bring it along with your tools to help. If you aren't available to assist, we ask a donation of $2.00 per lineal foot to help with the expenses incurred. A **Potluck will be held at 5:00 p.m.**

Habitat Decline of the Loon Lake Wetlands

Guest Editorial by Daniel Poleschook, Jr. and Virginia R. Gumm, Loon Lake, Washington, March 29, 2002

Loon Lake, Washington has three wetlands that have been used for nesting and breeding habitat for a large number of wildlife species. Sadly, the quality of this habitat is declining at an alarming rate. Our long-term observations lead us to believe that the decline in the quality of Loon Lake wetlands is due to the rapid increase in the recreational activities of high-speed boating, water skiing/tubing, and jet skiing, within and in close proximity to these wetlands. People that enjoy these recreational activities are increasingly utilizing the calmer waters of the Loon Lake embayments where the wetlands are located because of the calmer wave conditions they provide. Often, the recreational traffic becomes heavy and even dangerous, especially to nesting waterbirds, and people in small watercraft. The waves generated are enormous, and the resultant sound levels are very high, when the embayments are heavily utilized. As residents of Loon Lake, we are alarmed at these changes to the wetlands and the rate that they are taking place. The observed recent decline in nest sites of a relevant indicator species, the red-necked grebe, indicates this change is very rapid, and without intervention, this species and likely others will be discouraged from nesting at Loon Lake.

Large amounts of high-speed boating, water skiing/tubing and jet skiing in proximity to wetlands is disruptive to nesting waterbirds because of the large waves and high noise levels that are produced. Wetland nesting species benefit from and actually require some sort of sanctuary. The opposite is produced by large amounts of the above recreational activities near the wetlands. We have witnessed large waves from these activities washing over red-necked grebe nests, dumping the eggs into the water. Red-necked grebe adults and chicks frequently have to dive rapidly to safety from rapidly approaching watercraft. There have been numerous near misses in these encounters. If fatalities have not already occurred from these incidents, it is only a matter of time until there are. The northeast wetland is repeatedly cut across by these recreational activities - at full speed! The overall result: The number of nesting sites of red-necked grebes is now less than one-third the numbers of only a few years ago. A direct correlation appears to exist: Three times the former levels of high speed boating, water skiing/tubing, and jet skiing have resulted in one-third as many nest sites of red-necked grebes.

Many other locations in Washington and other states have adopted wakeless-speed limits for watercraft in and around wetland habitat, with great success. This needs to happen at Loon Lake, and soon. Decline in the numbers of nest sites of red-necked grebes in Loon Lake's three wetlands is the indicator that suggests these wetlands are in trouble. The following table shows how much decline in the number of nesting pairs of red-necked grebes has taken place:

Table of Decline of Nest Sites of Red-necked Grebes in the Loon Lake Wetlands

Loon Lake Wetland	Former (1985-1999) Number of Nest Sites	Recent (2000 & 2001) Number of Nest Sites
Northeast	5 to 7	1
Southwest	2 to 3	0 and 1
Northwest	5 to 7	3 and 4

The most compelling evidence that high-speed boating, water skiing/tubing, and jet skiing are responsible for the decrease in nest sites of the red-necked grebe, is that the decline in the number of red-necked grebe nest sites has taken place during the exact years of dramatically increased levels of these recreational activities within and near the three Loon Lake wetlands. If a species is eradicated from a nesting lake, it is not likely to ever return. We are not advocating that these recreational activities be otherwise limited. We are suggesting these activities need not and should not take place in and near the nesting habitat of the Loon Lake wetlands.

What can you do to help this crisis? The following steps would be beneficial:

1. Inform the Washington Department of Fish and Wildlife, the Washington Department of Ecology and the Stevens County Planning Commission of this problem, and what you feel should be done about it.
2. Educate others about the quietness necessary in the three Loon Lake wetlands.
3. If you enjoy high-speed boating, water skiing/tubing, and/or jet skiing, please be sensitive to the special needs of the

Sale at Centennial Park

The 13th Annual Sale at the Park will be held on **May 4, 2002, from 8:00 a.m. to 4:00 p.m.** The proceeds are to be used for the maintenance of the Park to make Loon Lake a more beautiful place. Items may be donated on May 3rd after 4:00 p.m. (no clothing please, all other items are fine.) For info call Verla Myer 233-2340.

LLPOA Yard Sale

The 4th Annual Yard Sale will be held at the building behind the OLD SCHOOL on **Labor Day weekend.** Again this year we ask that you bring usable, priced items on Friday evening so they are ready to be sold when the sale begins on Saturday morning. To volunteer call Jim Rudisill 482-2935 or Judy Richardson 233-8401.

Road Cleanup

May 18, 2002, is the day set for the spring road cleanup around the lake. Bags will be distributed upon request and road trash will be collected for free dumping at the transfer station from properly marked vehicles. Contact Judy Richardson 233-8401.

Landscaping By the Lake

by Tonie Fitzgerald,
WSU Cooperative Extension in Spokane County

People want to protect the lake they've chosen to live by. The single most important thing you can do is create what's called a buffer zone of plants between your property and the lake itself. Buffer zones do 3 things.

- Buffer zones block or screen out contaminants from getting into the lake. Contaminants are things like fertilizers, weed killers or loose soil particles. Contaminants get carried into lake water when heavy rain or sprinkler irrigation runs off the land surface into the lake.
- Buffer zones reduce the impact of wave action from the lake on the shore itself. The buffer zone will minimize erosion and scouring of the lake edge.
- Buffer zones provide safe habitat for small birds, small mammals and fish that want to live in the lake too. Having more kinds and sizes of plants in the buffer zone means having more kinds of birds and wildlife and a healthier lake environment. Also, the wider the zone, the better it functions.

The plants you want to have in a vegetative buffer zone are native plants that like to live in a wetland area. Trees include alders, aspens, birches, willows and, if there is ample space, cottonwoods. Shrubs include red-twig dogwood, oceanspray, thimbleberry, wild roses and Douglas spirea. Low growing plants include a variety of ferns, sedges and rushes.

People generally like to have an open view of the lake from their house but this isn't what's best for the lake or the wildlife. If you want to have a break in the vegetative buffer zone for some beach area for swimming or boat access, make a path from your property through the buffer zone to a clearing at the edge. Keep some vegetation between the beach area and the yard itself.

Another thing people can do to minimize harm to their lake water is to reduce the size of their lawns. The more lawn you have, the more potential there is for excess fertilizer and/or weed killers to ultimately end up in the lake. Decide how much lawn area you and your family want for recreation and use shrub beds, pathways, and deck areas to reduce the need for watering. Don't have a lawn that reaches all the way to the water's edge. Create a space for that buffer zone that is so important for healthy lakes. In caring for the lawn, use organic or slow release fertilizers that won't dissolve quickly into excess nitrogen. And don't over water lawns. The more water that's applied to your lawn, the more potential there is for pollutants to wash into the lake.

This may seem like a lot of changes for your lake property, but don't feel overwhelmed. Start with a small area and develop it or change it in stages over a few years. Start with a small area for native shrubs and plants down by the water's edge and add to it.

LLPOA Website

In an effort to facilitate communication between the membership, we have established a website. Check it out at http//members.aol.com/deitrahgs/LLPOA.html. Items and comments can be posted on the site's message board or submitted to **JRudi28540@aol.com** for posting. We will make an effort to keep the site up to date and informative.

"GET INVOLVED"
VOLUNTEER AND DONATE!
YOUR HELP MAKES A STRONGER ORGANIZATION!

CALENDAR OF EVENTS

13th ANNUAL SALE in the Park
May 4, 2002 - 8:00 a.m. to 2:00 p.m.
(Donate items May 3rd after 4:00 p.m.)

ROAD CLEANUP
May 18, 2002 - 9:00 a.m.

LOONSDAY - June 1, 2002 - 7:00 a.m.

LLPOA Board Meeting - June 7, 2002 - 7:30 p.m.
at Loon Lake Elementary

LLPOA ANNUAL MEETING - June 28, 2002 - 7:30 p.m.
at Loon Lake Elementary

DOCK DEMOLITION - June 29, 2002 - 9:00 a.m.
at Public Access (**POTLUCK**-5:00 p.m.)

LLPOA Board Meeting - July 5, 2002 - 7:30 p.m.
Loon Lake Elementary

SUMMER FEST - August 2, 3 and 4, 2002.

PANCAKE BREAKFAST - August 4, 2002
7:30 to 11:00 a.m.

YARD SALE-August 31 and Sept. 1, 2002
Please bring marked items evening before-August 30, 2002

Some personal views expressed in the "Newsletter"do not necessarily represent the ideas of all LLPOA members.

A Fun Walk in Loon Lake, Washington

When: Saturday, June 1, 2002 at 7 a.m.

Where: Starting at the Old Schoolhouse in Loon Lake, WA

Timing: This is a FUN walk. Don't feel you have to hurry, just take your time and enjoy!

Awards: Loonsday 2002 T-shirts are available in all sizes. Sweatshirts are available in adult sizes only. Shirts should be picked up after the walk but before 10 a.m. Any shirt not picked up on the day of the race should be claimed *the following Saturday* at the Old Schoolhouse from 11 a.m. to 1 p.m. The phone number for the Old Schoolhouse is 233-2222.

Entry Fees: T-shirts cost $10. Sweatshirts are $16.
Late fee of $5 per entry is charged on forms mailed after May 24.
Extra-extra large sizes cost $2 more than the prices listed above.

General Information: This walk is open to all ages. It is a five mile course beginning and ending at the Old Schoolhouse in Loon Lake. You can walk any or all of the course. The course is well marked. Please keep pets on a leash. We welcome donations and sponsors for this walk. Proceeds from this year's walk will be donated to community projects. The Loon Lake Food Pantry will be sponsoring a breakfast following the walk (great menu—get details at the walk). For questions or additional information concerning Loonsday call 233-2222 and a volunteer will get back to you.

Please detach this portion and keep for your information.

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Entry Form for Loonsday 2002

Last Name _____ **First Name** _____

Address _____ **City** _____ **ST** _____ **Zip** _____

Phone Number _____ **Mail Shirts($4 extra) Y N** **Total Enclosed** _____

T-Shirt Size: Child S(6-8) **($10)** Child M (10-12) **($10)** Child L(14-16) **($10)**

Adult S(32-34) **($10)** Adult M(38-40) **($10)** Adult L (42-44) **($10)** Adult XL(46-48) **($10)** Adult XXL (50-52) **($12)**

Sweatshirt Size: Adult S(32-34) **($16)** Adult M(38-40) **($16)** Adult L(42-44) **($16)** Adult XL(46-48) **($16)** Adult XXL(50-52) **($18)**

Make checks payable to *Loonsday, Loon Lake Loon Association*, PO Box 75, Loon Lake , WA 99148

Waiver: In consideration of acceptance of this entry, I waive all claims for myself and my heirs against officials and sponsors of the Loonsday 2002 Walk, for injury and illness which may directly result from traveling to and from or participating in this event, I also state I am in proper physical condition to participate.

Signature: _____

Signature of Parent or Guardian if Participant is under 18 _____

This entry form may be copied. ***PLEASE ONLY ONE NAME PER FORM.*** Late fee is $5 per form.

Check Out LLPOA's New Web Site
http://members.aol.com/deitrahgs/LLPOA.html

SAVE LOON LAKE

LOON LAKE PROPERTY OWNERS ASSOCIATION
BOX 165, LOON LAKE, WASHINGTON 99148

Bulk Rate
U.S. Postage
PAID
LOON LAKE,
WA 99148
Permit No. 4

LOON LAKE PROPERTY OWNERS ASSOCIATION

SPRING NEWSLETTER
2001

PRESIDENT'S MESSAGE

I would first like to take this opportunity to personally thank the members of both the LLPOA and LLDF boards for their hard work and efforts the past year. Their dedication to the preservation and enhancement of our lake environment is awesome. It would be difficult to find more capable volunteers. I would also like to thank the many association members who have volunteered their time and efforts to our various fundraising activities and projects. You are to be commended for a fine job.

Well, another year has come and gone. We continue to fight for protection of the Loon Lake watershed from overdevelopment. We seem to have reached a point where the county takes us serious enough to want to work with us instead of flat out oppose us on every issue. A citizens' advisory committee is being formed to work on the Loon Lake Sub Area Plan to be included in the county's Growth Management Act. A regional planning committee has already been formed to work on other issues relative to GMA. So it seems on the surface that progress is being made. Only time will tell.

There are still some pending legal issues we've been involved in for several years now. We have a lot of time and money invested in these, but it looks like some are finally winding down. Our legal expenses still remain high though. Donations to our legal fund are needed and appreciated.

As you all know, the LMD passed overwhelmingly. Our battle against Eurasian Milfoil is now funded for a number of years. Thanks for your support.

Our fisheries program is a tremendous success. Funding is fantastic and the fish are thriving. Should be another great year. A special thanks to Joe Haley at Granite Point for the use of his facilities.

Look for some additional fundraisers this year as we strive for additional revenue to fund more projects. Volunteers will be needed.

One of our goals this year is to improve communication with the membership. Newsletters are costly and not very timely. We are looking into developing a web site that can be constantly updated and easily navigated. We can get feedback from the membership on issues, helping your board to better represent the wishes of the community.

Overall, it's been a very rewarding year. There have been some bumps in the road, some controversies, but these are commonplace in any organization. The one thing we all have in common is the protection and enhancement of Loon Lake. I know we all want to do the right thing. Communication with each other is the key.

Take care, and I hope to see everyone at the annual meeting.

LLPOA OFFICERS & BOARD MEMBERS

President-Jim Rudisill
Vice President-Dan Gann
Secretary-Brian Veale
Treasurer-Bob Morrozo
Past President-Judy Richardson

STANDING COMMITTEE CHAIRMEN

Walter Davis
Red Crass
Bill Shawl
Jim Richardson
Jim Nolden

LLDF OFFICERS & BOARD MEMBERS

President-Jim Rudisill
Vice President-Dan Gann
Secretary-Brian Veale
Treasurer-Bob Morozzo

Additional Board Members

Walter Davis, Steve Nepean and Tom Williams

HEARING BOARD ORDERS STEVENS COUNTY TO INCREASE RURAL LOT SIZE

By Bruce H. Erickson
Attorney for LLPOA

On March 14 , 2001 the Eastern Washington Growth Management Hearings Board issued its findings in the case of Sandra Wilma and the Loon Lake Property Owners Association vs Stevens County. The Board said that Stevens County "continues to be out of compliance with the Growth Management Act and the Orders of this Board." This written Order states that the County continues to be out of compliance because of its " failure to prohibit urban development beyond the Interim Urban Growth Area boundaries" (around the six cities). The Board found that "permitting minimum lot sizes of 2.5 acres throughout the County would encourage sprawl and not protect resource lands (agricultural and forest lands), critical areas and the rural nature of the non-urban areas of Stevens County." As a result of this decision, the County will be required to increase minimum lot sizes beyond 2.5 acres in all rural areas including Loon Lake. As Loon Lake is not an incorporated town, the minimum lot size regulations apply throughout the entire Loon Lake watershed, including the "town" of Loon Lake.

In this same decision the Board also found that the Public Participation Plan which Stevens County developed is inadequate. The Plan does not provide for "early and continuous participation" by the public and does not "seek out and ensure" participation by the public in the planning process. Stevens County was found to be out of compliance in this area in a previous Hearing Board decision rendered in 1999. The failure to correct this problem has left the County in continued noncompliance in this regard.

In conclusion, the Board ordered Stevens County to "bring these matters into compliance within 90 days of this Order." This means that the Hearing Board will hold another hearing on these matters in mid - June. Stevens County has now appealed this decision to Superior Court. LLPOA will be one of the litigants in this case.

Stevens County Title 4 and 5, Development Regulations for Long and Short Plats passed in November are the focus of this Hearing Board decision. These subdivision ordinances, among other things, establish allowable lot sizes throughout the county. The ordinances contain no exceptions. There are areas within the present Loon Lake Zoning District that are zoned for lot sizes (densities) less than the 2.5 acres. This new County regulation overrides the local zoning ordinance. Although Stevens County initially disputed this interpretation, the County now recognizes, at least orally, the supremacy of the county wide minimum lot sizes. Written confirmation from the County is expected within a short period of time.

It will be remembered that in October the Loon Lake Property Owners Association made a proposal to the County Commissioners for a temporary moratorium on developments of lots of less than 20-acres in size within the Loon Lake watershed. The request was for a "time out" while a new GMA plan for the Loon Lake watershed is developed. The case for a moratorium was discussed at two meetings in Loon Lake scheduled in December by the County Commissioners. After hearing input from the citizenry, the Commissioners voted 3 to 0 not to establish a moratorium.

Stevens County is required to adopt a comprehensive plan under the GMA for all of Stevens County. This will probably include a modified sub-area plan for the entire Loon Lake watershed. The new Subdivision Codes are interim measures that will apply until the County comprehensive plan is enacted. Loon Lake citizens should participate in the drafting of the revised Loon Lake sub-area plan to prevent over development of the Loon Lake watershed and appropriate development around the town of Loon Lake.

Such action is in accordance with the goals of the LLPOA to safeguard the water quality of Loon Lake, to prevent a lowering of summer lake levels and to generally protect the environment of Loon Lake.

SPECIAL THANKS

We are very fortunate to have such a hard working attorney in our corner fighting the battles of Loon Lake. His abilities continue to amaze us in dealing with legal issues and Stevens County. He has truly become an advocate and friend of the lake.

You can see by reading the articles in this newsletter that with his help we are making progress. Thank you, Bruce!

Preserving a lake does not come easily or without costs. Send donations to LLDF, Box 165, Loon Lake, WA 99148. Don't forget the anonymous donors; they only match 50 cents on the dollar for the donations received. Please donate what you can for this noble cause because it apears we are not finished yet.

Special thanks to the anonymous donors and to any of you who have sent donations recently.

We are also very fortunate to have Bill and Jan Shawl who have devoted a tremendous amount of their time and energy attending meetings, working with the attorney on our be-half or whatever was needed. Thanks!

Thanks to our new, newsletter chairman, Paulette Jewett. Our proof-reader, Sunshine Millhorn, who does her job so speedily and efficiently, even on short notice, deserves our appreciation, too.

THANK YOU!

OLD DOCK DEMOLITION
June 23, 2001-9:00a.m.
Public Access
Pot Luck-5:00p.m.

HOW ARE WE DOING?

by Bill Shawl for the Legal Committee

At last year's Annual Meeting the Association Legal Committee recommended that the membership look at three possible alternatives—

1. cease our legal activities and hope for the best.
2. continue our efforts to fight on a case by case basis
3. focus our efforts on forcing Stevens County to enact ordinances which bring the county into strict compliance with the Growth Management Act.

The membership voted overwhelmingly to follow alternative number three. So, are we making any progress with this new strategy?

The Association requested that the Eastern Washington Growth Management Hearing Board allow us to participate as "Interveners" in the on going case of Sandra Wilma et al vs Stevens County which was then before the Board. We were granted permission to participate and did so whole heartedly because the issues were important to our goals for Loon Lake. As may be seen in the article by Bruce Erickson, we made some progress in this new venue. This state Board heard our arguments and agreed with much of what we have been saying.

Prior to this action by the Hearing Board, it became obvious that the County was not going to enact a minimum rural lot size adequate to protect the lake. The Association therefore requested the Board of County Commissioners to declare a temporary moratorium on development in the Loon Lake watershed. Looking once again at the article by Erickson, we made no progress here. The County officials did not believe our arguments and did not agree with us.

We are still having little success in convincing County officials that development poses any threat to Loon Lake. However, our efforts with the Growth Management Hearing Board are having an effect. Sooner or later the County must comply with state law or suffer serious consequences.

Some County officials have recognized that actions must be taken to move toward compliance with the Growth Management Act. This can be seen in the recent creation of the Loon Lake Watershed Citizens' Advisory Committee (requested by LLPOA) and the county wide Natural Resources Committee which will designate agricultural and forest lands in the County(this is a requirement of GMA). These are positive steps in terms of citizen participation.

The state Growth Management Act is proving to be a very good friend of Loon Lake. As the County comes into compliance with this law, we will get protection from intense development and urban sprawl. If the County provides leadership to these committees which results in proposals that respond to the requirements of state law, compliance will occur. The time is long past when Stevens County officials can declare that they are "opposed to the Growth Management Act," take nearly one million dollars in state funds to plan under that Act, and have the citizenry believe that this is good government. We are making progress!!

DEVELOPMENT AT LOON LAKE

According to Stevens County officials, Loon Lake does not have a problem with development. It depends upon what level of development you see as problematic.

Although there are not very many new homes being built in the Loon Lake area, there has been considerable action in the platting of lots, the first stage for development.

Platting activity over the last several years reveals that there has been more activity than one might think. Here is a preliminary list of platted lots that has been compiled using County and Sewer District information -1993 - Schauls Subdivision (52 lots on 60 acres) now Pine Meadow Estates- 33 lots

1995 - Loon Lake View Estates 26 lots
1995 - Loon Lake Acres III 6 lots
1995 - Kasbar subdivision 15 lots
1996 - Loon Lake Forest Estates I (rezone for 15 lots on 17 acres) denied Superior Court
1997 - Selder Crest (rezone for 55 lots on 60 acres) rezone denied Planning Comm.
1998 - Loon Lake Forest Estates II (resone for 3 lots on 17 acres) denied Superior Court
1998 - Whispering Springs Long Plat 71 lots
1999 - Steve Zwarg short plat 4 lots
2000 - Joe Haley short plat 4 lots

The total is 242 lots applied for (counting the largest number for Loon Lake Forest Estates I) and 159 approved and ready to go. That seems like quite a bit of development activity for a lake watershed. Of these platted lots, very few have been sold or built upon.

When the County starts talking about rezones and needing more development, perhaps this should be taken into consideration. Where is the need for more home sites? When the Loon Lake Watershed Citizens' Advisory Committee begins to look at what is happening in the watershed, we hope that they will keep this in mind.

MEMBERSHIP

It's time again to renew your membership to the Loon Lake Property Owners' Association. Your support is what has kept this organization going for twenty -two years. In recent years over half of the total number of properties around the lake have chosen to join this organization. Dedicated elected officers and board members carry out the wishes of the membership during the year between annual meetings.

Please send in your dues and encourage your neighbors to send in theirs. We need to all work together for the betterment of the lake. Get involved; share your ideas. Does anyone have ideas for more money making projects to pay our legal bills? Call 233-8401.

PEARSON MEADOW REZONE LOSES IN COURT AGAIN

On March 1, 2001 the years of struggle over building homes in the Pearson Meadow wetlands once again arrived in Superior Court. This case; Loon Lake Property Owners, Loon Lake Defense Fund, and Larson Beach Neighbors VS Loon Lake Forest Estates and Stevens County was heard by Judge Larry Kristenson.

The Judge found that Stevens County's procedure having Hearing Examiner Andrew Braff make the final decisions on rezones is contrary to state law.

State law requires that the Board of County Commissioners must be the final decision-maker when it comes to rezones. The rezone must go back to the County for new hearings.

It will be recalled that a rezone for this same property came before Superior Court in 1998. Judge Rebecca Baker at that time ruled in a Summary Judgment that the County's rezone was void because it created a new and unauthorized density violating state requirements for uniformity.

The merits of the Pearson Meadow rezone have not yet been heard in Superior Court. Stevens County must obey the laws and follow proper procedures in making decisions before we can arrive at arguments before the court on whether the rezone is actually needed.

LAKE STEWARDSHIP

Shorelines are a very important component of a lake's environment. Also, this is where people and nature come in direct contact. Looking at the shores of one of the natural lakes in the high country, one sees a much different picture than the shores of Loon Lake. We probably do not want to give up our homes and return the lake to nature, but there are some things that we each could do to be friendlier to the lake.

Natural shorelines tend to be gently sloped by action of wind and waves. Natural plant growth extends to the edge of areas scoured out by wave action. Nature provides trees and shrubs close to the shore to hold back erosion, provide for water absorption and cover for small animals and birds. Taking Mother Nature's model as a beginning, what might a lake shore homeowner consider doing.

Think in terms of re-landscaping your property in a lake friendly way. Try to create a shoreline area that looks and acts more like what is found in nature.

Instead of that manicured lawn all the way down to the lake edge (which the geese love), consider removing some of it near the shore and planting native plants and trees. Or, if that old bulkhead is not really holding back the wave action, take it out and go natural. There is an excellent booklet called "Landscaping with Native Plants for the Inland Northwest", which is available from WSU Cooperative Extension, 222 N. Havana, Spokane, WA, 99202-4799, tel. 509-477-2048. This is a good place to begin in terms of plant selection.

Native plants, once established, take less water and care than non-native plants. This is a year when we are all going to be involved in saving water and energy so it is a good time to start such a project.

Here are some specific things which we each can do to be good stewards of Loon Lake — *

1. Use lawn and garden fertilizers sparingly; choose low phosphorous fertilizers.
2. Retain or plant native vegetation adjacent to the water to protect the shoreline and filter pollution.
3. Infiltrate or direct runoff from rooftops, driveways, and patios away from the lake.
4. Cover or mulch bare soil areas.
5. Use pesticides, herbicides and household. chemicals sparingly and never near the water.
6. Conserve water both inside and outside.
7. Do not feed geese or ducks.
8. Keep livestock away from the lakeshore.

* Recommended by the Washington State Lake Protection Association.

CALENDAR

May 12, 2001.....**Road Cleanup**
June 1, 2001.....LLPOA Board Meeting, 7:30 p.m.
June 2, 2001.....**Loonsday-**
June 22, 2001.**LLPOA ANNUAL MEETING**, 7:30p.m.
June 23, 2001.....**Dock Demolition,** 9:00a.m.
July 6, 2001.....LLPOA Board Meeting, 7:30p..
August 3, 2001.....LLPOA Board Meeting, 7:30p.m.
August 3-5, 2001.....**Summerfest**
August 5, 2001.....**LLPOA Pancake Breakfast**
September 2-3, 2001.....**LLPOA YARD SALE**

HAVE A FUN, SAFE SUMMER!

FISH PEN PROGRAM A BIG SUCCESS

By Red Crass for the Fisheries Committee

The Loon Lake Property Owners' Association winter fish pen project will end sometime in April when approximately12,000 RainbowTrout will be released into the lake. When this project started November 1, the fish received from the hatchery were four to five inches long. By release time, they are expected to be six to seven inches long.

Although this is less growth than during our summer fish pen, it is a good growth rate for winter when water temperature is much colder. The fish were fed daily until the water temperature dropped below 43 degrees. After that they were fed for two days and the third day was skipped. The State Fish and Game Department provided the food.

This project has been very successful. Best of all, there has been low fish mortality. To date, only 30 dead fish have been counted. The fish pen remained ice free thanks to being located adjacent to Granite Point's aerator. Loon Lake's two domestic geese are spending the winter near the fish pen and seem to be enjoying the only open water on the lake.

MANAGING THE LOON LAKE WATER LEVEL

By Walter Davis for the Water Level Committee

The lake level as of Apr. 6, 2001 was 10 ½ inches below the adjudicated level of 2381.25 ft. above mean sea level. The control gates have been closed since June 13, 2000.

Normally by this date, the control gates would be open to regulate the lake level so as not to exceed the adjudicated level. Last year the gates were first opened on Feb 16. So far this year the weather has failed to deliver the moisture to the watershed to restore the lake to its adjudicated level.

During a normal year, the lake level drops about 18 inches between mid June and the end of October. During this period the net evaporation (total evaporation less rainfall) from the lake is about twice this amount. However the lake level does not drop as much as one would expect from evaporation because it is recharged from the water stored in the watershed.

Keith Vanetten of Loon Lake Sewer Dist. No. 4 under the direction of the Dept of Ecology, maintains a daily record of the lake level, gate openings, rainfall and general weather conditions. These records are open to the public.

During the time the gates are closed, anyone can read the lake level by visiting the control gate installation and reading the staff gauge mounted on the west wing wall of the control gate.

When the gates are open, the staff gauge will not give an accurate reading because of the drawdown in the discharge channel. During this time, the lake level is read from an elevation benchmark established at the lake edge at 39943 North Shore Dr.

The original procedure to control the lake level established by the DOE was to draw down the lake further in the late Fall in anticipation of the Spring runoff. However because of the small size of the Loon Lake Watershed, this procedure led to the lake not regaining its adjudicated level at times. At the urging of the Loon Lake Property Owners, the DOE agreed to let the Loon Lake Sewer Dist. manage the control of the lake level, resulting in the current procedure of releasing water only when the lake level is at or near the adjudicated level.

SAFE BOATING

1. Life Jackets and safety equipment in your boat.
2. All youth under 12 must wear a life jacket when in a powerboat.
3. Minimum age of 16 for operator of more than a 10 HP motor (includes all Jet Ski type boats).
4. Spotter in the boat when pulling a skier, wakeboard, tube, etc. Orange flag when down.
5. Speed 50 mph on the lake.
6. Running lights mandatory after sunset.
7. Maximum speed 5 mph within 100 ft. of shore, dock, swimming area, safety (NO WAKE) buoy, or another boat and between sunset and sunrise.
8. Do not overload any boat, row boats, canoes.

LMD A REALITY

By Jim Richardson for the Noxious Weed Committee

Stevens County Auditor, Tim Gray, announced the LMD for control of milfoil in Loon Lake has passed by over 80% approval. Final charges are being computed and a citizens' advisory steering committee is being formed of applicants within the district by the Stevens County Commissioners.

The next step in the Lake Management District becoming operational is for the Board of County Commissioners to set a date for a public hearing to consider objections to the proposed roll of rates and charges. This gives property owners who feel that their tax charges are not correct to come forward in a public hearing. After the hearing the commissioners should adopt the roll by resolution.

The purpose of the Lake Management District is to fund the treatment of the milfoil problem on Loon Lake. Grant funds were used in the early stages of treating the noxious weed, but it now becomes the responsibility of the property owners to continue with the treatment.

The LMD is one tool used by lakes to fund the management of this aquatic weed. If each person pays just a little into the tax fund, enough money can be raised to maintain our lake as it is now.

The Lake Management District establishes a specific tax for a specific purpose which is collected for a specified period of time. The Loon Lake LMD is for three years consisting of 2001,2002,and 2003. It goes out of existence at the end of three years unless another LMD is created by another vote.

The amount of money proposed to be raised by these special assessments is a total of $126,144 for the three years.

Washington State law is very specific about what LMD funds can be used for. The funds may be used only for the activities set down in the work plan which is milfoil eradication and monitoring. Those paying the tax have the assurance that the monies they pay into the LMD will be used for these purposes only.

Property owners of Loon Lake are to be commended for the decision to take responsibility for their lake. If we don't do it, nobody will!

ROAD CLEANUP

The Adopt a Road Cleanup will be on May 12, 2001at 9:00a.m. Bags will be furnished and, remember, no personal trash. Pickups must have an LLPOA letter to receive free dumping. We appreciate all of you who join in this project, particularly the Blizzards, Bill Coats and the large group from Cedar Beau Bay. Thanks! Call 233-8401.

8TH ANNUAL DOCK DEMOLITION

This year's Dock Demolition will begin June 23, 2001, at 9:00a.m. at the public launch.

If you have a dock to demolish, just bring it to the public launch at the appropriate time and and consider paying $2.00 a foot to have it destroyed. The LLPOA has hired Pete Smith and his equipment to help with the project. It has made the job much easier for the volunteers who have worked so hard in the past. Hope to see you all there. A Pot Luck will be held again at 5:00p.m.

Boating Season's Back !

By Jim Nolden for the Marine Patrol Committee

The sun is finally starting to peek out, the lake is liquid again, and fishing season is upon us. It's time to get the boats out again!! Last year we had an excellent boating season here at the lake. We couldn't have asked for much better. Thanks to the rapid response of the Fire Dept. Paramedic unit, your lake Marine Patrol, Deer Park Ambulance and concerned citizens, a near drowning was defeated, and the young gentleman involved recovered well. We had no reported accidents on the lake last year. Excellent!!

Last year the Loon Lake Volunteer Marine Patrol logged over 750 hours total. Boating Safety classes were conducted at the Loon Lake elementary school, along with hundreds of hours spent on the water. Primarily, infractions were issued for no lifejackets onboard, and excessive speed after dark. Each vessel, pedal "boats" inclusive, is required to have at least one life jacket of proper size and fitting, in good condition and readily accessible for each occupant. We will be doing spot checks for these again this year. An orange life vest cost is approximately $5, where an infraction issued ranges from $66 to $90. You do the math. There is a speed limit on the lake. A half hour after sunset, and a half hour before sunrise, the lake speed is "No Wake" or 5 MPH. Excessive speed after dark brings a penalty of $90. Remember, the PBY has complete right-of -way on the lake at any time. When the siren sounds, be sure to clear the lake. Safety is the primary concern.

Did you know, many insurance companies will give a discount for just taking a Washington Boating Basics test, (open book) and receiving a state certificate? Ask us how!

We are looking forward to seeing you out on the water. Enjoy our beautiful lake and have fun this summer. If you have any questions or concerns, you are welcome to contact me at 233-8625, or the Stevens County Sheriff Office at 1-800-572-0947. Thank you and boat safe!!

LOONSDAY 2001

A Fun Walk in Loon Lake, Washington

When: Saturday, June 2, 2001 at 7 a.m.

Where: Starting at the Old Schoolhouse in Loon Lake, WA

Timing: This is a FUN walk. Don't feel you have to hurry, just take your time and enjoy!

Awards: Loonsday 2001 T-shirts are available in all sizes. Sweatshirts are available in adult sizes only.. Shirts should be picked up after the walk before 10 a.m. Any shirt not picked up on the day of the race should be claimed the following Saturday at the Old Schoolhouse from 11 a.m. to 1 p.m. The phone number for the Old Schoolhouse is 233-2222.

Entry Fees: T-shirts cost $10. Sweatshirts are $16.
Late fee of $5 per entry is charged on forms mailed after May 24.
Extra-extra large shirts cost $2 more than the prices listed above.

General Information: This walk is open to all ages. It is a five mile course beginning and ending at the Old Schoolhouse in Loon Lake. You can walk any or all of the course. The course is well marked. Please keep pets on a leash. We welcome donations and sponsors for this walk. Proceeds from this year's walk will be donated to community projects. For questions and additional information concerning Loonsday call 233-2222.

Please detach this portion and keep for your information.

****

Entry Form for Loonsday 2001

Last Name _____ **First Name** _____

Address _____ **City** _____ **ST** _____ **Zip** _____

Phone Number _____ **Mail Shirts($4 extra) Y N** **Total Enclosed** _____

T-Shirt Size: Child S(6-8) **($10)** Child M (10-12) **($10)** Child L(14-16) **($10)**

Adult S(32-34) **($10)** Adult M(38-40) **($10)** Adult L (42-44) **($10)** Adult XL(46-48) **($10)** Adult XXL (50-52) **($12)**

Sweatshirt Size: Adult S(32-34) **($16)** Adult M(38-40) **($16)** Adult L(42-44) **($16)** Adult XL(46-48) **($16)** Adult XXL(50-52) **($18)**

Make checks payable to *Loonsday, Loon Lake Loon Association*, PO Box 75, Loon Lake , WA 99148

Waiver: In consideration of acceptance of this entry, I waive all claims for myself and my heirs against officials and sponsors of the Loonsday 2001 Walk, for injury and illness which may directly result from traveling to and from or participating in this event, I also state I am in proper physical condition to participate.

Signature: _____

Signature of Parent or Guardian if Participant is under 18 _____

This entry form may be copied. *PLEASE ONLY ONE NAME PER FORM.* Late fee is $5 per form.

LOON LAKE PROPERTY OWNERS ASSOCIATION
BOX 165, LOON LAKE, WASHINGTON 99148

Bulk Rate
U.S. Postage
PAID
LOON LAKE,
WA 99148
Permit No. 4

SAVE LOON LAKE

LOON LAKE PROPERTY OWNERS ASSOCIATION

SPRING NEWSLETTER
2000

MILFOIL UPDATE

by
Dave Lamb, Aquatic Biologist
Resource Management In.

Well, it sure looks like spring is well on its way here in the Inland Northwest. The glorious blooms which are all around us and the warm rays of the sun sure bring a feeling of happiness to anyone who ventures outdoors (except those who have really big lawns to mow!) If the warm weather we have been having is any indication, it won't be long before we are head, shoulders, knees and toes in the lake to cool off. I for one will be pleased to spend some quality time on the shores of beautiful Loon Lake.

I guess the "quality time" that I will be spending at Loon will start out being work related as I help update the Milfoil survey and get ready for another round of treatments. To help me get in the mood, so to speak, I would like to reflect back on last year's accomplishments which help you to appreciate what it takes to control the growth of this really tenacious water weed.

First and foremost I can say that, thanks to the continued efforts of the LLPOA Board and financial help from the state and your donations, at least the target species (Myriophyllum spicatum) was reduced in density by perhaps 50% as a result of the July 2, 4-D treatment. This treatment covered 32 acres and was primarily focused near the shore. The effectiveness is shown clearly in maps prepared following diver surveys conducted in June and in August.

The 1999 treatment was seen to eliminate the dense growth that was present in a number of areas, such as Meadowview, Morgan Park, the northeast corner, Shore Acres and Granite Point Park. In all of these areas "dense" growth (more than five Milfoil plants per square meter) was replaced by sparse growth, basically occasional Milfoil plants. As with the 1998 treatment we have seen excellent selectivity, that is to say, no adverse effects on non-target, beneficial plants.

Note that Milfoil is certainly capable of growing out away from the shore, in fact wherever the water depth is less than about 20 feet, but the larger scale (60 acres) treatment in 1998 appears to have eliminated much of the deeper growth. Because Milfoil growth is in shallow water for the most part, where it is difficult to tow the divers (oh, you thought that we swam the entire eight miles of shoreline ?), we supplemented the diver survey last August with surface (from boats) inspections. Thus, we need only to spot-check certain areas this spring to be able to finalize this year's treatment recommendation. It is also worthy of note that diver surveys are critically important in understanding aquatic plant problems and planning treatments. Since even the best diver surveyor will miss Milfoil that is hidden among other plants, the continuation of these efforts is really the only way to stay ahead of the growth.

So, I am now "in the mood" and looking forward to getting out and treating Loon this summer - hopefully a bit earlier this year (mid-June is optimum). I understand that there are some Department of Ecology grant funds available to support a part of this year's treatment, but after it runs out, you will be on your own. For this reason, as a final note, I encourage you to vote in favor of the Lake Management District to support further Milfoil monitoring and control work. While I understand that money is tight (look at me, I have to put Milfoil in my sandwiches because I can't afford lettuce), and more taxes are often a bitter pill, the LMD is one of the few ways that you have available to equitably share the costs of this work. I believe that it is possible to knock the Milfoil back to a manageable (and affordable) level, but it is certainly going to be your responsibility to finish the job and protect the lake for your future generations.

Last one in is a rotten egg .....

MEMBERSHIP

by
Jan Shawl

It is time to pay your dues for the Property Owners Association. $20.00 per year per household is a small price to pay for the organization to continue the many programs and projects that in one way or another protect the lake and maintain the quality and quantity of the water.

For example:

1. A newsletter is sent usually 2 times a year to all property owners who are members of the Sewer Department, not just LLPOA members.
2. Maintenance of the control gate under the direction of the Department of Ecology, including designing and installing screens to keep fish from going down the stream when the gate is open.
3. Marine patrol activities to maintain safe boating and swimming activities.
4. Fish net pen project.
5. Dock demolition project which keeps the lake free of debris which is hazardous to our boats and motors.
6. Water quality testing.
7. Milfoil control
8. Protection of the wetlands and watershed.
9. Road cleanup.

Clearly our dues can't fully fund these programs. So, several fund raisers are held each year such as the Pancake Breakfast and the Yard Sale. And many members donate their time and their money.

The first step is to pay your dues. Your support is crucial to maintaining the quality of life at Loon Lake as well as your property values. Please send your dues in now. Make your dues check payable to LLPOA.

LAKE MANAGEMENT DISTRICT - PROGRESS REPORT

The Association has not been inactive this winter on the creation of a Lake Management District. The next step after we ironed out differences with a group of concerned citizens of creating a LMD was to go through the county records to find out which lots are actually in the proposed Lake Management District. This very labor intensive and highly detailed, tedious, job fell to Walter Davis, probably the only one in the county who could have done the research thoroughly. He was ably assisted by long time partner Betty Davis. We owe them both a round of applause.

With this information on the number and location of the lots in hand, the Executive Board was able to propose accurate tax rates to raise the funds needed to treat the milfoil. The proposed rate for lake front lots will be approxmately $1.20 per lake front foot. A maximum rate of $200.00 per year was set for any private property owner. A maximum rate of $500.00 per year was set for resorts and semi-public property. The rate for secondary lots with lake access (through private access lots such as Association owned beaches) is $35.00 per lot. Association beaches will not be taxed.

The next step in the process will be to submit a revised proposal (containing the new language) to the County Commissioners and request that they schedule a public hearing. It is suggested that this not be done until early summer when more people are at the lake and available to attend. Please watch for announcements of this meeting and plan to attend. Your participation is very important to Loon Lake.

The County Commissioners will be looking for evidence of community support to warrant putting the LMD on the ballot.

ANNUAL MEETING

This year we are considering making some by-law changes for the Loon Lake Property Owners Association. Our needs have changed over the years and we have had legal help make some recommendations to improve the scope of our by-laws. Any changes will be the decision of the general membership and will require a vote at the annual meeting. Election of Officers will also be held and current information on where we stand on our current projects. Please attend if possible.

ANNUAL MEETING - June 23, 2000 -7:30p.m.- at the Loon Lake School.

QUESTIONS ABOUT CREATING A LAKE MANAGEMENT DISTRICT

During this process of attempting to create a Lake Management District, many questions have been raised in one form or another. We put out information on these questions in the "Loon Lake Times" and the last newsletter. We are repeating the information here.

Q. Why should we form a Lake Management District?
A. To raise funds for the treatment of Eurasian milfoil. The only purpose for which the tax dollars raised by the LMD may be used is for milfoil control.

Q. Why not continue to have Washington State fund the Milfoil control project?
A. There are very limited state funds available for aquatic weed control grants. To be eligible for these grants, a formal control program must be established. There is no other known local, county, state, federal, or private funding program for treating Milfoil that we are aware of.

Q. Why can't this be called something other than a Lake Management District?
A. This is the name given to this procedure and required by the RCW's of the State of Washington.

Q. What are the boundaries of the Lake Management District?
A. The LMD includes all property on the shores of Loon Lake, which has private or semi-private access to the lake. This includes privately owned property; association owned property, corporate property and publicly owned property.

Q. Who is behind this proposed Lake Management District?
A. The Loon Lake Property Owners Association is doing the work on establishing the LMD. They are doing this at the direction of the Association general membership. At the Annual Meeting in June, the membership voted to proceed with establishment of an LMD. Petitions were circulated to the membership and 167 signed petitions were filed with the County Commissioners on August 18, 1999. At present the Association is assisting the county (at the request of the Commissioners) in determining which lots in the proposed LMD have lake access.

Q. Who manages the LMD? Do property owners have a role?
A. LMDs operate under the authority of the Board of County Commissioners. The County Treasurer collects LMD charges on the annual property tax statement as a specific item. There is not a separate elected commission for each LMD (as there is for a sewer district). However, on-going lake property owner involvement is crucial to a successful program. Forming an advisory committee of lake property owners is the preferred way to work with county staff and elected officials in initiating and implementing the LMD program. The County Commissioners should agree to choose such a committee of property owners.

Q. How was the yearly amount needed for the LMD determined?
A. In the past two years we have treated 40 to 70 acres of the lake. The annual amount of $5,000 was spent on diver surveys to determine where the Milfoil is located and the effect of the treatment. The cost of chemicals and application was $33,600. Keeping residents informed of the testing as required came to $1,000. Water testing after the application cost $900. This is how the budget was arrived at. If we are able to keep the infestation under 20% of the littoral zone (the area of the lake where weeds can grow), we will be able to continue to use 2,4-D. Legislation passed last year allows the use of 2,4-D for treating no more than 20% of the littoral zone. The budget is based on that type of treatment.

Q. When will I know how much my tax is going to be?
A. The formation of an LMD is a very long and involved process. This process is meant to assure that everyone gets an opportunity for input before we have to pay. There are two public hearings

(Con't Page 4)

scheduled before the District is actually in effect. The tax rates will be thoroughly discussed at the first meeting prior to the vote on the LMD.

If the LMD is voted in, there will be a second public hearing to deal with individual questions/complaints about the tax rate.

The formula for rates and charges in the petition sent to the county is as follows:

For lake front residential property - -$1.20 per lake front foot to a maximum of $200.00 per private property owner.

For association owned lake front property there will be no charge per lake front foot. There will be a charge of $35.00 per lot for upland residential property with private lake access or access through association owned property .

For resorts and semi-public property - -$1.20 per lake front foot to a maximum of $500.00 per property owner.

Q. Who gets to vote on this proposed taxing district?

A. All property owners who pay the tax will get to vote. You get one vote for each dollar of tax you will pay.

Q. I don't use the lake, so why should I have to pay this tax?

A. This is not a use tax. It is a property tax. The value of your property will be seriously affected by the growth of milfoil. If we ignore the milfoil, it will take over the shorelines of the lake.

Q. Isn't this just creating another bureaucracy to collect taxes?

A. No. Existing county government administers the LMD. The elected County Commissioners have the legal responsibility for the LMD. The County Treasurer bills and collects the tax.

Q. Once this tax is established, won't we pay it the rest of our lives?

A. No. This is a specific tax for a specific purpose for a specified period of time. The LMD is for three years. It goes out of existence unless another LMD is created by another vote.

Q. Once formed, can the LMD apply for grants for Milfoil control?

A. Yes, however, we will not have the advantage we have had in the past with our demonstration project. With so many other lakes in Washington having discovered Milfoil too, we will be in competition with all of them. Since we have already received so much money from the Department of Ecology, they have indicated they may choose to help other lakes.

Q. If excess funds are collected can they be carried over to the next year?

A. Yes, during the term of the LMD. It can be mandated during the formation process that excess funds at the end of the LMD's life be returned to taxpayers as a tax credit.

Q. Are there standards set for how this tax money is to be spent.

A. State law is very specific about what LMD funds can be used for. The funds may be used only for the activities set down in the Work Plan, in this case, milfoil eradication and monitoring. This has its disadvantages because needs may change during the three year period. However, voters do have the assurance that they have control over how the funds are spent.

Q. Plenty of regulations and organizations are already in place to help preserve the lake. Why establish another one?

A. While there are other organizations and legislation concerned with lake preservation issues, there is no funding for ongoing milfoil control. Loon Lake has benefited from grant funds from the Department of Ecology's Aquatic Weed Control Fund the past three years. These funds are no longer available for our lake. Milfoil is spreading statewide and funding must now go to other lakes. The milfoil problem is one of continuous effort to control the weed. The state funding was just to get us started. This is something we must tax ourselves for if we want it done. There is no known other local, county, state, federal, or private funding for treating milfoil.

LAKES TRANSPORTATION STUDY

by
Judy Richardson

Stevens County is experiencing significant growth in the areas surrounding Deer Lake, Waitts Lake, Jump-off Joe Lake and Loon Lake herein-after referred to as the Lakes. Given the density of development around the Lakes, the existing infrastructure and the limited resources at the disposal of Stevens County, it is prudent to evaluate current roadway infrastructure, identify attainable goals for future improvements and develop a long term plan for the development of transportation facilities in the Lakes areas.

Current roadway facilities in the Lakes areas are generally substandard resulting in significant and extraordinary summer maintenance expenditures. Construction of underground utilities in some areas has caused significant damage and further degraded the situation. Winter maintenance activities are hampered by lack of width and minimal room to place plowed snow. Further, substandard roadway widths in many areas puts Stevens County in a position where damage to private property may occur. In any case it often presents an untenable situation.

In general the scope of this study is three-fold. The first task is evaluation of the existing transportation system in the area of the Lakes. Items of interest include but are not limited to geometrics, connectivity with the overall transportation system and levels of service. Following the evaluation of existing facilities, the study will include fiscally constrained recommendations for improvements to the existing system. The final task involved in this study will be preparation of construction cost estimates for two portions of roadway, Southwood Shores and East Deer Lake Roads, identified prior to the current study by local residents as major areas of necessary improvement.

A public meeting is planned to get input from people who have property in the Lakes area.
Saturday, May 6, 2000, at 3:00pm
at the Loon Lake School
PLEASE PLAN TO ATTEND

ROAD CLEANUP

by
Judy Richardson

This year we are involved in a Clean Team project with Stevens County Public works and Waste Management. A Road Clean-up will be held on **May 20, 2000**, beginning at 9:00 a.m. Trash bags will be furnished and we will have free dumping privileges at the transfer station if vehicles have a letter from the LLPOA designating that they are part of the project. Again, as in previous years, no personal garbage will be accepted. Only collections from roadways are allowed. If you are interested in being a part of this worthwhile project to beautify the roads around Loon Lake, please call 233-8401.

DOCK DEMOLITION

by
Judy Richardson

This year's Dock Demolition and Pot Luck will be **June 24, 2000**, beginning at 9:00 a.m. at the public access. This must be the seventh year we have held this event. Over 140 old docks have been removed from the lake and demolished. We believe this has been a worthwhile project to remove the hazards of floating debris for boaters and water skiers. Every year more people have joined this great group of volunteers who enjoy the friendship of working as a team and take satisfaction in a job well done. Please don't just cut a dock loose when you are done with it to become everybody else's problem . All we ask is that you bring your old dock on the morning of the dock demolition. Either bring your tools and stay to help with the project or pay $2.00 per foot to have your dock demolished for you. Do you think this is an exorbitant price? Well, believe me, you haven't checked with people who volunteer to do this. **Let's keep the trash out of the lake and off our roadways!**

THE KASBAR PROBLEM RETURNS

Perhaps you remember back to 1997 when we lost our case against a rezone application by Brian and Laura Kasbar. This was a loss due to a technicality regarding filing dates for appeals. We were new at this game then. Now, the Kasbars have come forward with what is called a "long plat" which is the plan for what the subdivision will look like (essentially, a map)

The proposal contains the details for how they will place 15 home sites on this 22 acre parcel located in the Anderson Meadow area. The property abuts Shore Acres Estates. The Association has raised several issues regarding this project related to how it will affect the wetland and the watershed areas. The most damaging aspect of the project is the placement of five housing sites in the lake edge wetland. It is inconceivable that this action would not seriously damage, if not totally destroy the wetland. This, combined with the already constructed 18 boat marina in the same wetland, will surely lead to the destruction of another 400 feet of the lake edge wetland.

The subdivision proposes to put nine houses in the upland section of the property west of the county road. This is a heavily forested area and is quite steep in places. Homeowners up on the ridge have revealed that this upland part of the Kasbar property contains a year around marsh and spring which runs a stream of water most of the way down the hill but that disappears just before it reaches the county road. This was not revealed in their wetland delineation report done back in 1996 and was left out of their current proposals. What effect putting nine houses in this upland area will have on the watershed is a serious concern.

The Association has appeared at two meetings of the Planning Commission, one in March and one in April, where we expressed our objections to the proposed subdivision. On both occasions the Planning Commission has deadlocked on a three to three vote regarding this proposal. There will be another meeting in May to attempt to reach a decision. During the interim, the Association will be meeting with the Kasbars and representatives of the Planning Department staff to see if a compromise solution can be achieved. We are making every effort to prevent another court fight on this issue.

This is a very serious problem for the future of the Anderson Meadow wetland. We already have one area where 285 yards of fill have been placed in this wetland. Another property owner has indicated an interest in building in the wetland if Kasbar is permitted to do so. The Association will oppose these proposals with every resource at its disposal. We are not opposed to <u>all</u> housing development around the lake, but we are opposed to increasing the placement of homes in wetland area and increasing the number of homes in the watershed around the lake.

FUND RAISERS

Last year the Loon Lake Property Owners Association held our second annual Pancake Breakfast. We plan to hold our third annual **Pancake Breakfast** on **August 6, 2000**, from **7:00 a.m. to 11:00 a.m.** at the Loon Lake School. It is held in conjunction with the Summer Fest as has been done for several years. On **Labor Day weekend** we plan to repeat our successful **Yard Sale** at the "Old School" in Loon Lake. As you may remember we asked that you bring things to donate marked for sale and come to shop. *Volunteers will be needed too.*

The **Fourth of July Boat Parade** kicks off our fund raising projects for the season. At the present time a Loon Lake family is considering selling ice cream out of there boat during the parade. Proceeds would go to the Loon Lake Defense Fund. Join in the fun!

Questions or volunteers call 233-8401

MORE ON PROBLEMS WITH DEVELOPERS

In the last Newsletter we reported on the continuing battle with Gary Myers/Loon Lake Forest Estates over their proposed development in Pearson Meadow (see Once Again).

As reported, we lost the rezone battle at the Planning Commission level and we appealed it to the Stevens County Hearing Examiner (Andrew Braff). We also lost our appeal. His decision was based upon the record of the Planning Commission hearings. This decision is particularly onerous because it implies that any request for a rezone should be granted regardless of whether the criteria for a rezone (contained in the Stevens County Zoning Ordinance) are adhered to and whether the testimony submitted is given credence.

The Association Board decided to appeal the Hearing Examiner's decision to Stevens County Superior Court. The case is assigned to Judge Larry Christenson. We have had one hearing before judge Christenson on a point of law. Loon Lake Forest Estates challenged the "standing" rights of the Loon Lake Property Owners Association to bring the case to court. We won this preliminary fight. The actual case will probably be heard this summer.

FIRE DESTROYS

PRACTICE FIRE PREVENTION

HOW THE DEFENSE FUND GOT ITS NAME

by
Judy Richardson

About 5 years ago, the Loon Lake Property Owners Association realized that it was becoming necessary to retain help from legal services again. At an annual meeting, a couple from Lakeshore Homes suggested we develop a fund to receive donations to pay for the services of an attorney to direct our testimony at hearings and appeals on uncontrolled development around the shores of Loon Lake. They then made a motion to create the Loon Lake Defense Fund. This fund was established to aid in the defense of Loon Lake, whatever the need may be. It was seconded and carried and immediately they wrote out a check for the first donation.

This fund has since been incorporated and now carries the status of 501,C-3. This makes it possible for donations to be tax deductible to the donors.

This fund has enabled the Board of Directors and dedicated members to continue to monitor and attempt to correct possible detrimental effects for the lake, for instance to treat milfoil and to start a fish pen program. On the advice of legal counsel, we have been able to appeal the county's decisions when not acceptable and have even filed suits in Superior Court to continue to protect Loon Lake and our zoning code. Remember, protecting Loon Lake is also the purpose of our parent organization. We have won some cases and lost some, but we continue to be ever watchful.

Living on a lake and protecting our way of life carries a heavy price. Your donations make it possible to proceed on this course. **Thank you for the support you have given, whether it is financial or attending hearings when needed, or helping with our various projects.**

A special thanks goes to the **"ANONYMOUS DONOR"** who now contributes fifty cents on every dollar donated. This has helped keep the ever increasing legal fees paid. However, we are nearing the end of the $10,000 pledge. So, now its up to the rest of us. You, the property owners, determine where we go from here.

Donations may be made payable to.....

THE LOON LAKE DEFENSE FUND
P.O. Box 165
Loon Lake, WA 99148.

ANONYMOUS DONOR

by
Jan Shawl

Last year an anonymous donor came forward with a pledge of matching every dollar donated for legal defense with a fifty cent contribution. Thus, a $50.00 donation turns into $75.00 to help pay for protection of wetlands and watershed areas. Our lawyer, Bruce Erickson, is very dedicated to our cause and continually helps us to find ways to keep our costs down. A lot of progress has been made, but it all costs money.

Please be as generous as you can. Every dollar is important. We need to sustain our efforts over time so that those who would disregard the best interests of Loon Lake cannot be confident of an easy victory. Send your checks payable to the Loon Lake Defense Fund to P.O. Box 165, Loon Lake , WA 99148. Mark them for legal defense if you wish to earmark them for this purpose. Remember, it's deductible!

MEMORIAL FOR PAST PRESIDENTS

The Board of Directors of the Loon Lake Property Owners unanimously voted to donate $300 to the Loon Lake Defense Fund as a memorial to honor each past president of the organization at the time of his or her death.

Jim Nolden, Chairman of the Marine Patrol Committee, has also generously offered to create a plaque with the names of all past presidents. It will be hung in the historical room of the Old School.

Remember our Memorial Fund for other members of the Loon Lake Property Owners Association or other concerned citizens. Memorial Contributions may be made to the LOON LAKE DEFENSE FUND and sent to P.O.Box 165, Loon Lake, WA 99148.

GRANT MAY SAVE WETLANDS AND THE LOONS

The Loon Lake Loon Association and the Loon Lake Property Owners Association have joined forces to retain the services of a professional grant writer. Mr. Leonard Hendricks has a successful reputation and has acquired several grants for the city of Spokane. Mr. Hendricks will be applying for a federal grant. If successful, the grant will provide funds to purchase wetlands around Loon Lake for placement in a conservancy. Mr. Hendricks will be working with LLLA and LLPOA members to gather information for the grant. Profits from Loonsday are being used to fund this project.

If we find that wetlands can be purchased, there is a potential for a creative project with the Washington Department of Transportation. This agency has a "wetland banking" program which replaces wetlands that are destroyed by highway construction in nearby areas. When the D.O.T. receives its credits for the project under this program, the restored wetlands will then be maintained by both the lake associations.

With increasing environmental restrictions on development in wetland areas, it appears that there may be a way for land owners to get fair market value for their land and also protect these sensitive wetlands at the same time. We look forward to the day when the wetlands on Loon Lake are protected in conservancies and the Loon Lake Property Owners Association can stay out of the courts.

LMD HEARING

The County Commissioners will soon be determining if we proceed with the Lake Management District. If we are allowed to proceed, a hearing will be set to show the interest of the property owners around Loon Lake to control the milfoil problem. **PLEASE WATCH YOUR MAIL AND PLAN TO ATTEND** the hearing when the time and date is set. Your interest is very important to Loon Lake!

UPCOMING EVENTS

MAY 6 **SALE IN PARK**
8:00 a.m. to 2:00 p.m.
COUNTY ROAD PUBLIC MEETING
3:00 p.m. Loon Lake School

MAY 20 **ROAD CLEANUP** -- Starts at 9:00 a.m.
Call 233-8401 for letter authorizing free dumping

JUNE 2 **LLPOA BOARD MEETING**
7:30 p.m. Loon Lake School

JUNE 3 **LOONSDAY**
7:00 a.m. Old School

JUNE 23 **LLPOA ANNUAL MEETING**
7:30 p.m. Loon Lake School

JUNE 24 **DOCK DEMOLITION DERBY**
Starts at 9:00 a.m.
Pot Luck 5:00 p.m.

JULY 4 **BOAT PARADE**
12:45 p.m. Cedar Beau Bay

JULY 7 **LLPOA BOARD MEETING**
7:30 p.m. Loon Lake School

AUG. 4 **LLPOA BOARD MEETING**
7:30 p.m. Loon Lake School

AUG. 4-6 **LOON LAKE OLD SCHOOLHOUSE SUMMER FESTIVAL**

AUG. 4 ***Silent Auction & Wine Tasting***
7:00 p.m. to 8:30 p.m. Loon Lake School
(must be 21 or older)

AUG. 5-6 ***Crafts- Food - Art Show & Sale***
Historical Displays - Quilt Show
Sat. 10 a.m. - 4 p.m.
Sun. 8 a.m. - 2 p.m.

AUG. 6 **PANCAKE BREAKFAST**
7 a.m. -11:00 a.m.
Loon Lake School

FOURTH OF JULY BOAT PARADE

The first annual
INFORMAL BOAT PARADE
will be held
Tuesday, July 4th beginning at 1:00 p.m.

YES ALL BOATS -- YES JET SKIS
YES FUN FOR ALL
NO DECORATIONS -- NO COSTUMES
(UNLESS YOU WANT TO)
NO PRIZES
(SORRY ABOUT THAT!)

RALLY IN CEDAR BEAU BAY AT 12:45 P.M.
Parade will be led by Loon Lake's own Volunteer Marine Deputies. Course will be - - northward along the east shore, past Granite Point and Sunset Bay, sail around the North Shore, onward to Shore Acres, past Loon Island and return to Cedar Beau Bay.

Call Jan Shawl at 233-8355 or 747-3780

AD AND PRAYERS ANSWERED

Remember the ad in the last newsletter asking for someone to apply for the job of newsletter publisher? No wages, no benefits etc. Well you guessed it. **The ad was answered**. May I introduce **Dave and Paulette Jewett** who have so graciously accepted this responsibility. Lets give them a warm **WELCOME.**

With luck like that, I am now considering running an ad for chairpersons for Road Cleanup, Dock Demolition, Pancake Breakfast and the Yard Sale. If anyone is so inclined, please call.....**233-8401**

I would like to thank **Jim Richardson** for his outstanding work over the past few years as newsletter publisher. He is retiring from the job because of lack of time to devote to it. Also, a big continuing thanks to our proof-reader, **Sunshine Millhorn.** She does a marvelous job, even on short notice.

SAVE LOON LAKE

LOON LAKE PROPERTY OWNERS ASSOCIATION
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LOON LAKE PROPERTY OWNERS ASSOCIATION

FALL NEWSLETTER
1999

LAKE MANAGEMENT DISTRICT PROGRESS REPORT

As reported in our spring newsletter, the Lake Management District proposal is going forward. The proposal and your signatures on the petition were delivered to the County Commissioners in August. As required by law, the county is checking the signatures to make certain that they belong to property owners within the proposed LMD. The Association is assisting in identifying lots which have private lake access.

At the October 12th meeting of the County Commissioners, a group from Loon Lake presented a petition protesting the formation of an LMD. We were there to respond and answer questions. The Commissioners are required to hold a public hearing prior to a property owner's vote on creation of the LMD. They will be doing this. However, they encouraged the two sides to attempt to work out their differences prior to the hearing, which the County will schedule later.

The Association initiated an informal meeting with the opponents on October 28th to clarify points of disagreement/agreement. Invited to that meeting were SueWinteroud (Stevens County Weed Board) and Dave Lamb (Resource Management Inc.) Sue is the manager of this year's DOE grant for milfoil treatment in Loon Lake and Dave is a representative of the company that did the treatment and is the diver who did the mifoil survey.

Changes in the LMD proposal are being considered at this time. Agreement on wording changes has been achieved. The next area for discussion is the formula for assessments. It appears that there will be no LMD charge against beach association owned waterfront property. There will only be a charge against lots that enjoy access through the beach association property. The budget is being reworked and is one of the main issues of disagreement. The main point seems to be just how much milfoil will be treated next year and in each of the succeeding years of the LMD. This amount can only be an estimate. Our position is that it makes little sense to create an LMD unless it generates enough funds to adequately treat the milfoil that we know we have.

QUESTIONS ABOUT CREATING A LAKE MANAGEMENT DISTRICT

As the process of creating a Lake Management District goes forward, we receive questions about various aspects of it and try to find the best answers available. We make whatever information we have as widely available as possible. These questions and answers were published in the *Loon Lake Times*, which many of you do not receive. Here is a reprint that is updated with anything new that we have learned.

Q. Why should we form a Lake Management District?

A. To raise funds for the treatment of Eurasian Milfoil. The only purpose for which the tax dollars raised by the LMD may be spent is for milfoil control.

Q. Why not continue to have Washington State fund the milfoil control project?

A. There are very limited Washington State funds available for aquatic weed control grants. Loon Lake has been informed by state agencies that we have already had our share of the limited funds available for aquatic weed control. There is no other known local, county, state, federal or private funding for treating milfoil that we are aware of.

Q. What are the boundaries of the proposed LMD?

A. The LMD includes all property on the shores of Loon Lake which has private or semiprivate access to the lake. This includes privately owned property, association owned property, corporate property and publicly owned property.

Q. Who is behind this proposed Lake Management District?

A. The Loon Lake Property Owners Association is doing the work on establishing the LMD. They are doing this at the direction of the Association general membership. At the annual meeting in June, the membership voted to proceed with establishment of an LMD. Petitions were circulated to the membership and 167 signed petitions were filed with the County Commissioners on August 18, 1999. At present the Association is assisting the county (at the

(Continued on page 2)

(Continued from page 1)
request of the Commissioners) in determining which lots in the proposed LMD have lake access.

Q. Who manages the LMD? Do property owners have a role?

A. LMDs operate under the authority of the Board of County Commissioners. LMD charges are collected by the County Treasurer as a specific item on the annual property tax statement. There is not a separate elected commission for each LMD (as there is for the sewer district). However, on-going lake property owner involvement is crucial to a successful program. Forming a committee of lake residents is the preferred way to work with county staff and elected officials in initiating and implementing the LMD program. We are recommending that the County Commissioners choose property owners to serve on an advisory committee for the management of the LMD.

Q. How was the yearly amount needed in the LMD determined?

A. The past two years we have treated 40 to 70 acres on the lake. In creating the budget, we used the dollar amount that had been spent on surveys determining where the Milfoil is located ,the cost per acre of chemical application , the cost of keeping residents informed, the cost of permits and other requirements by the State of Washington, and the cost of required water tests. This is how the budget dollar amount in each category was arrived. If we are able to keep the infestation under 20% of the littoral zone (the area of the lake where weeds can grow) we will be able to continue to use 2,4-D. The legislation passed last year allowing the use of aquatic 2,4-D in Washington State limits treating to no more than 20% of the littoral zone. Any allowable money left from this year's grant will be applied to the first year of the LMD's operation.

Q. When will I know how much my tax is going to be?

A. The formation of an LMD is a very long and involved process. There is no accurate way to determine exactly when. You will know the formula for the tax assessment prior to when you are asked to vote. The formula for rates and charges is undergoing changes at this time as we get more accurate data on the proposed budget and on the number of lots which have private access to the lake. One item which appears to be scheduled for deletion is the charge for association owned lake front property. This will probably be dropped in favor of a single charge for lots which have access but not lake frontage.

Q. Who gets to vote on this proposed taxing district?

A. All property owners who pay the tax will get to vote. You get one vote for each dollar of tax you will pay.

Q. I don't use the lake so why should I have to pay this tax?

A. This is not a use tax. It is a property tax. The value of your property will be seriously affected by the growth of Milfoil. If we ignore the milfoil, it will take over the shorelines of the lake.

Q. Isn't this just creating another bureaucracy to collect taxes?

A. No. The LMD is administered by existing county government. The elected County Commissioners have the legal responsibility for the LMD. The County Treasurer bills and collects the tax.

Q. Once this tax is established, won't we be paying it the rest of our lives?

A. No. This is a specific tax for a specific purpose for a specified period of time. The LMD is for three years. It goes out of existence unless another LMD is created by another vote.

Q. Once formed, can the LMD apply for grants for Milfoil control?

A. Yes, however we will not have the advantage we have had in the past with our demonstration project. With so many other lakes in Washington having discovered Milfoil, too, we will be in competition with all of them. Since we have already received so much money from the DOE, they have indicated they may choose to send it elsewhere.

Q. If excess funds are collected, can they be carried over to the next year?

A. Yes, during the term of the LMD. It can be mandated during the formation process that excess funds at the end of the LMD's life be returned to the taxpayers as a tax credit.

Q. Are there standards set for how this tax money is to be spent?

A. State law is very specific about what LMD funds can be used for. The funds may be used only for the activities set down in the Work Plan - - milfoil eradication and monitoring. This has its disadvantages because needs may change during the three year period. However, voters have the assurance that they have control over how the funds are spent.

Q. Plenty of regulations and organizations are already in place to help preserve the lake. Why establish another one?

A. While there are other organizations and legislation concerned with lake preservation issues, there is no funding for ongoing milfoil control. Loon Lake has benefited from grant funds from the Department of Ecology's Aquatic Weed Control Fund the past three years. These funds are no longer available for our lake. Milfoil is spreading statewide and funding must now go to other lakes. The milfoil problem is one of continuous effort to control the weed. The state funding was just to get us started. This is something we must tax ourselves for if we want it done. There is no known other local, county, state,federal, or private funding for treating milfoil.

THE FACTS ABOUT OUR MILFOIL PROBLEM

by Jim Richardson

Professionals in the business say that "Eurasian milfoil is a nightmare plant to control." It produces hundreds of fragments per plant with each fragment having the ability to produce another plant which in turn produces hundreds of fragments. It can be controlled, but it cannot be totally eradicated. A lake with milfoil must have constant monitoring and treatment. At the rate it is spreading to lakes in the state of Washington, most lakes that do not have an infestation now, will probably have it later.

There are no hunches or newfangled theories about milfoil management. We have been fighting milfoil in this state for 25 years. There is no reason to believe that milfoil will react differently in Loon Lake than in any of the other 80 plus lakes in Washington. In clear water lakes, like Lake Chelan, milfoil can grow to a depth of 45 feet. In Loon Lake you can draw a line around the 15 foot contour and color it red. This is the area which will likely be topped out with a dense blanket of milfoil from July onwords (depending on weather conditions) if no control actions are taken. We have been treating 60-70 acres per year the for past two years trying to keep the plant in check. If left alone for a few years, we could well be treating 250 acres at a cost of $100,000 or more annually.

The Department of Ecology's Aquatic Weeds Program has given Loon Lake grant dollars of approximately $150,000 over the past two years. There are many other lakes in the state which have not had the benefit of grant funds. Ecology tries to spread these grant dollars around. It makes Early Infestation Grants (which Loon Lake received) to get a lake started on the control process. Because this invasive plant is not easily controlled, undertaking a project of this kind involves an ongoing commitment from the project sponsor (the lake community). Once the plant is initially contained, it is the responsibility of the project sponsor to continue the monitoring, surveillance, and control of the noxious plant. The bottom line is that Loon Lake is unlikely to receive significant grant funding in the future. Continued milfoil management will increasingly lie with the lake residents.

Other lake groups around the state have formed Lake Management Districts to deal with milfoil management. Diamond Lake is working on forming one at the present time. Loon Lake has an advantage in being so heavily populated. If each person pays just a little into the tax fund, enough money can be raised to maintain our lake as it is now.

Old Schoolhouse
Kris Kringle Markt
Quality Arts ~ Crafts
Gift Items ~ Antiques
Holiday Evergreens ~ Poinsettias
A unique Holiday shopping experience
in an Old-Fashioned Country Store setting
Fri. Sat. Sun. Nov. 26, 27 & 28 ... 10 a.m. to 5 p.m.
Tuesday evening Nov. 30 ... 6 p.m. to 8 p.m.
Sat. & Sun. Dec. 4 & 5 ... 10 a.m. to 5 p.m.
Call 233-2829 Loon Lake, WA Janie 233-2808

ONCE AGAIN

by Bill Shawl

In October we dealt once again with a rezone application by Gary Myers/Loon Lake Forest Estates for the Pearson Meadow area. This is the third time this developer has tried to rezone the area he calls Pearson Hill. On two previous occasions his application has been denied on appeal for non-compliance with state laws and county ordinances. However, once again (as in previous applications) the Stevens County Planning Commission approved the rezone. This application differs from the last one in only one respect, the rezone is from Forestry (F20) to Semi-Rural Residential 5 (SRR5). This would allow for five acre parcels on the rezoned property.

One might ask, "Well isn't that better than the 3.5 houses per acre that they asked for last time?" Well, yes, it is. However, it is changing the density from one house per 20 acres to one house per 5 acres. This amounts to an increase of 400 percent in the density. This rezone sets a precedent for all of the property currently zoned as forestry around the lake. Our essential point on this issue is, what kind of building density can the Loon Lake watershed stand and still serve its function of protecting the quantity and quality of water in the lake? (see article by Walter Davis). We asked that a scientific hydrological study of the watershed be done to determine what density is appropriate.

After the Planning Commission made its decision, the Executive Board voted to appeal once again. The Appeal was filed on November 5, 1999. It will be heard by Stevens County Hearing Examiner, Andrew Braff, also once again.

CEDAR BEAU BAY DEVELOPMENT

Homeowners in the Cedar Beau Bay area are concerned about the activities of developer Stan McDaniel who recently purchased much of the Davis property. McDaniel has discussed several plans which call for building houses next to the wetland called "Little Loon Lake." This, of course, brought the Association into the picture because of our goal of protecting the lake environment. Members of our Board have met with Mr.McDaniel and expressed our concern for protection of the wetland and the upland watershed in that area. Action pending at this time is McDaniel's application for a logging permit to log the area between the wetland (adjacent to the railroad) and highway 395. Stevens County Planning Department will have to approve the roads and other activities on the property prior to the Department of Natural Resources granting the logging permit. Both of these agencies have denied permits to McDaniel previously.

SHORELINE PROTECTION

by Bill Shawl

This summer saw a major breakthrough in formal protections for lake shorelines in Stevens County. For several years the Association has been objecting to approval of the county's Shoreline Master Program (required by 1970's Shoreline Management Act). Our objection has been that the county plan did not give even minimum protection to lakeside wetlands. The Department of Ecology was also concerned about this , and would not give its approval to Stevens County's plan. Meetings were held to attempt a compromise on the needed language changes. At one point, Doug Pineo, Jim DeGraffenreid and Kathy Reid (DOE wetlands biologist) took a boat tour of the lake with our representatives to see what had been done and discuss what needed to be done for protection of the lake. In September , the Stevens County Commissioners adopted revised language for their Shoreline Master Program which met state standards for wetlands protection and the Director of the Department of Ecology signed off on the document.

This four year effort has finally been successful. A part of this agreement is that DOE will delineate all of the wetlands at Deer and Loon Lakes. Action on the Loon Lake delineation has begun. Thanks go to so many people who worked for so long in this effort, but most especially to Doug Pineo of the Department of Ecology and Jim DeGraffenreid of the Stevens County Planning Department who were willing to keep working on the issue until it was finally resolved.

Related to this are currentlly ongoing meetings regarding the establishment of the county's Critical Areas Ordinance, required as part of the Growth Management Act. The County Commissioners are getting close to final approval of the ordinance. This will be the culmination of five years of meetings and citizen input. The Association has been very involved in this process. What we are trying to get in this document is similar language to what is in the Shoreline Master Program regarding shoreline wetlands protection.

WE HAVE AN ANONYMOUS DONOR!!

Yes, its true! An anonymous donor has agreed to pay one dollar for every two dollars donated to help pay the Defense Fund's legal bills until he has paid $10,000. This is very generous and we really appreciate it. Donations have been coming in, and during August the Treasurer was able to pay the attorneys completely off. Of course they are charging for work they are doing continually, and we didn't have a zero balance for very long but it sure felt good. Lets take advantage of this opportunity to get an **extra 50%** on our money! Please make checks to Loon Lake Defense Fund.

Our thanks to the anonymous donor and everyone who has donated. You make it possible to continue the work to **SAVE LOON LAKE !**

IT'S THE WATERSHED

by Walter Davis

The quality and quantity of the water in Loon Lake depends entirely upon the watershed surrounding the lake. This lake is a land-locked body of water with a relatively small watershed of 7,000 acres, excluding the lake itself. The maximum level of the lake, when reachable, is regulated by law at 2,381.25 feet above mean sea level. The minimum level is regulated by mother nature. An examination of local weather bureau data indicates that the average net evaporation, i.e. total evaporation less rainfall, from June through September for Loon Lake is 31.6 inches. However, lake level records show that the average lake level drop for this same period is only 14.2 inches. Where does this additional 17.4 inches of water in the lake come from? It comes from the watershed aquifer. In other words, the watershed keeps the lake level from dropping 17.4 inches more than its normal 31.6 inches by the end of September.

Modifying the recharge capacity of the watershed through increased residential density is a very risky business in terms of the future of the lake. To make a mistake in managing the densities could cause irreversible damage. Therefore, we must resist any rezoning for setting of density levels for the Loon Lake watershed until after careful analysis by a professional hydrologist. Analysis of the data developed by the hydrological study should be made by the Department of Ecology and the Stevens County Planning Department prior to any further decisions regarding rural or urban densities in the watershed.

(note - - this is a reprint of the testimony given by Walter to the Planning Commission in the recent Myers rezone

Senate Committee visits Loon Lake

The Washington State Senate Committee on Environmental Quality & Water Resources visited Loon Lake at the home of Jim and Judy Richardson on Thursday, October 7, 1999.

The four Senators from the committee were Chairperson Senator Karen Fraser, Democrat, Thurston County; Senator Tracy Eide, Democrat, Federal Way; Senator Ken Jacobsen, Democrat, King County, and Senator Bob Morton, Republican, Stevens County.

Also in attendance were Sue Winterowd, Stevens County Noxious Weed Board, Dave Lamb, Resource Management Inc. and Walter Davis and Duane Denny both of Loon Lake.

The senators were following up on the legislation allowing the use of 2,4-D to fight Eurasian Milfoil. The senators were very interested in the results in controlling milfoil in the area lakes as well as the effect of the chemicals used. As part of their follow-up they were quite interested in the permitting

(Continued on page 5)

PRESIDENT'S MESSAGE

Another beautiful season has come to an end at Loon Lake. Leaves have turned color and most of them have fallen, kokanee are spawning, and soon we will be shoveling snow and welcoming in the new Millennium. Think for a moment what lies ahead for Loon Lake. The milfoil problem and increased density threats will undoubtedly take a toll. The Loon Lake Property Owners Association was formed to protect the lake from degradation and to organize owners around its shores to work with government agencies for the benefit of the lake. In the past few years we have done just that. We are aware not all the people around the lake agree with our direction but the by-laws clearly state these things as the purpose of the organization.

BY-LAWS OF THE LOON LAKE PROPERTY OWNERS ASSOCIATION-1989 AS AMENDED THRU 1998

BY-LAW II PURPOSE

Section 1. To organize the property owners within and adjacent to the shores of Loon Lake, Stevens County, Washington

Section 2. To protect the lake from environmental degradation.

Section 3. To provide a forum by which the property owners may assist governmental agencies in better planning the use and resources of the Loon Lake Area.

I know, we have turned down suggestions of fighting for lower property taxes, donating to community projects and rejected the idea of establishing an all-lake professional 4th of July fireworks display. The boat parade was abandoned due to lack of interest for someone to head up that project. We apologize, but we feel our course is dictated by the by-laws. That is why we have worked so hard to start the process for the LMD to fund the milfoil control program and also why we spend so much time in Colville at meetings monitoring county actions that might affect the lake's health.

It is your decision whether or not you join the association or agree or disagree with our projects. However, please do inform yourself on the issues of the LMD, attend the hearing when scheduled and most of all **VOTE.** All of our property values are at stake.

The officers and board members have already stepped forward and accepted responsibility for attending meetings or whatever is expected of them for their specific positions. We have expanded the board of directors in the last couple years. Notice the new names on it and also the officer list. We really appreciate the time and dedication these people put in, to get the work done for the association. You are all invited to become involved. Whether it is for a volunteer position, a monetary donation or an office on the board, Loon Lake needs all of us now and in the new Millennium.

(Continued from page4) **Senators**

process and the support or lack there of from the various state agencies.

To all of them, the spread of milfoil is creating a very serious problem on both sides of the state. The senators all expressed their concern in controlling Eurasian Milfoil and what the lack of control would do to the lakes. It is quite evident that the mobile public will have a very serious effect on the spread of milfoil. They were very receptive to the suggestion that lake residents need all the tools possible to control the spread of milfoil.

Earlier in the day the team of senators had visited the Dawn Mining site at Ford and were traveling on to Colville.

PANCAKE BREAKFAST

On August 1, 1999, we held our second annual Pancake Breakfast. With the Fire Department's expert instruction last year, we were able to do most of the work ourselves. Thanks to a wonderful crew of volunteers who gave up their beautiful Sunday to work in a hot kitchen, we made $1,628. Everyone seemed to enjoy it, and the food turned out good, too. We also would like to thank the donors: Topline Foods(Steve Johns), Excell, Yokes, Terry's Dairy, the Fire Department (Bob McDonald), the Loon Lake School (Roger Arleth), the Magers family and the Historical Society for advertising and everyone who came and ate breakfast. Without all of you, it would not have been such a great success. Thank you!

Wayne & Betty Neel
Red & LouAnn Crass
Patty White
Bob Cook
Dwight Aden
Tom Berendes
Skip & Carol Johnson
Tom & Catherine Hyslop
Christina Young
Bob & Connie Peetz
Bill Schoenleber
George & MaryLynn Swannack
Greg & Diana Young
Jim Rudisill
Bill Shawl
Marlene Veltri
Jim and Judy Richardson

****

If we inadvertently missed any volunteers or donors in any of our lists, please forgive us. We appreciate any and all help. A special thanks. It takes every single one of us to keep our lake in good condition.

FISH NET PEN

by Red Crass

The second year of our fish pen operation ended around noon October 20th when approximately 11,200 seven to nine inch rainbow trout were released into the lake. This was over 2,000 more fish than last year's release. Colder water temperatures this summer, plus installation of a submersible pump continuously pumping colder water from the bottom to the surface of the pen, may have contributed to this increase.

Thirty-one people gathered at Granite Point's south moorage dock to watch this year's fish release. Thanks go to Willard Ollia and Bill Shawl for their assistance. For those of you who missed it, the front page of the October 25th *Spokesman-Review* had pictures and a feature article about our fish pen operation, as well as, other projects and activities that take place in our little community of Loon Lake. A *Spokesman-Review* staff writer, Susan English, and a photographer spent several hours interviewing people and taking pictures.

The fish pen was pulled from the water on November 3rd and the net was cleaned of algae and it is ready for winter storage. Thanks go to Rob Higgins, Brian Murbach, Roger Arleth, Glenn Biddle, and Joe Haley for helping with this work. The use of Granite Point Park's backhoe and pressure pump helped this cleaning job go smoothly.

Much thought has been given to running a winter fish pen operation. (November through April) However, more planning needs to be done before trying this. Maybe we might be able to do it next year.

Our fish pen operation continues to be well supported by members of the Loon Lake Property Owners Association, the Loon Lake Loon Association, as well as other individuals and organizations. Donations were recently received from the Spokane Walleye Club and Jessie and Doris Tessier. Interest and support such as this will keep future fish pen operations going.

MILFOIL PROJECT VOLUNTEERS

Jim Nolden	George & MaryLynn Swannack	Bob Cook
Sharon Pope	Greg & Diana Young	Steve Johns
Jim Rudisill	Bill & Jan Shawl	Wayne Neel
Barbara Kilgore	Skip, Carol & Danielle Johnson	Joan Easley
Nancy French	Bob & Connie Peetz	Marie Magers
Don Christenson	Bill Schoenleber	Lee Chapin
Red Crass	Steve Coon	Cathy Franklin
Jeanie Wagenman	Pat Coats	Steve Nepean
Holly Kohlstedt	Phil Resa	Roger Arleth
Jackie Babin	Brian Veale	Walter Davis
Joyce Ransbottom	Maxine Graye	Joe Johnson
Bob Morozzo	Jim & Judy Richardson	Bob Roloff
Tom Mckern	Stevens County Weed Board	Sue Winterowd
Dave Lamb	Resource Management Inc.	Terry McNabb

A BIG THANK YOU!!
JOB WELL DONE

DOCK DEMOLITION

by Judy Richardson

Our 6th Annual Dock Demolition was the biggest ever. On the last weekend in June over 30 old docks were demolished. We had so many old logs around the public access area that we did not have room to work. Waste Management Inc. furnished us with containers to put the Styrofoam and metal parts in and dumped them for us free of charge. Our thanks to them! A skidder was hired to move the logs out of the way with donations of money we received from people who were not able to help with the demolition. This may be a good plan for coming years. Docks could be stripped of Styrofoam and metal parts prior to loading them. This would ease the physical burden for the work crew. Many volunteers were late for the 5:00 p.m. pot luck. The work load needs to be more evenly matched to our volunteers so that the work gets done, but folks still have fun doing it. A suggestion has been made for next year-- maybe a weiner roast!

Logs left at the public access area are free for the taking. You may want to use them for docks after they have dried out, or for fence posts, or even firewood. HELP YOURSELVES! It has been been suggested that $2.00 per running foot is a fair donation if you cannot help with the demolition of your derelict dock. Thanks to all who helped out :

George Swannack	Nepean family	Annis family
Lawton family	Jim Killingsworth	Magers family
Skip & Carol Johnson	Greg Young	Walt Wilson
Jerry Truax	Tom Berendes	Don Christenson
Bob & Nancy French	Tim Pedersen	Joe Johnson
Tom Yeager	Bob Morozzo	Jess Tessier
Don & Shirley Fisher	Don & Marj Clemens	Ian Mies
Jim & Judy Richardson		Waste Management

YARD SALE

On Labor Day Weekend we undertook our first Yard Sale at the Old Schoolyard. It was a big success, too, and we cleared $1,420. Special thanks to the volunteers who worked at the sale and everyone who brought donated things to sell and to all the people who came and shopped. We apologize for all the bee stings. Workers from the Loon Lake Pantry came to our rescue on Sunday evening when it was over. They were able to take all the leftover things as it started to rain. Thank you all!

Barbara Rice	Sandy Whitehill	Bob & Lauretta Strang
Bill & Jan Shawl	Red & LouAnn Crass	Don & Shirley Fisher
Joanne Beaufait	Jess & Doris Tessier	Skip & Carol Johnson
Historical Society	Joan Easley-LLLA	Lee & Jean Chapin
Scott Johnson family	Wilma Stone	Jim & Judy Richardson

MAP WITH BEACHES

We have had a lot of questions as to where certain areas are around the lake. When a development or project involves Pearson Meadow, Anderson Meadow or Cottonwood Bay, people want to know where it is. So the following map has been compiled with all of these local areas and beaches marked. Keep it handy!

LOON LAKE PROPERTY OWNERS ASSOCIATION
&
LOON LAKE DEFENSE FUND

CALENDAR

BOARD MEETING - DECEMBER 3, 1999 -7:30 PM
BOARD MEETING - FEBRUARY 4, 2000 - 7:30 PM
BOARD MEETING -APRIL 7, 2000 -7:30 PM
BOARD MEETING - JUNE 2, 2000 - 7:30 PM

ANNUAL MEETING - JUNE 23, 2000 - 7:30 PM

BOARD MEETING - JULY 7, 2000 - 7:30 PM
BOARD MEETING - AUGUST 4, 2000 - 7:30 PM
BOARD MEETING - OCTOBER 6, 2000 - 7:30 PM
BOARD MEETING - DECEMBER 1, 2000 - 7:30 PM

BOARD MEETINGS ARE THE FIRST FRIDAY OF EACH MONTH THROUGH THE SUMMER AND BI-MONTHLY THE REST OF THE YEAR. THE ANNUAL MEETING IS THE FOURTH FRIDAY IN JUNE.

1999-2000 Officers LLPOA & LLDF

President-Judy Richardson-233-8401
Vice President-Jim Rudisill-482-2935
Secretary-Brian Veale-233-8933
Treasurer-Nancy French-233-8331

Standing Committees & Board Members LLPOA

Water Level & Quality Chair-	Walter Davis	747-7548
Fisheries Chair-	Red Crass	233-2964
Noxious Weeds Chair-	Jim Richardson	233-8401
Newsletter Chair-	Jan Shawl	747-3780
Marine Patrol Chair-	Jim Nolden	233-8625
Nominating Chair-	Roger Arleth	233-2761
Legal Defense Chair-	Bill Shawl	747-3780

Executive Board LLDF

Walter Davis	747-7548
A.W. Neel	328-1467
Steve Nepean	928-4318

DONORS - OCTOBER 11-1-1998 TO 11-10-1999

Special thanks to all the people who have donated during the last year to the Loon Lake Defense Fund. Whether it's for Legal Defense, Milfoil or the Fish Pen Project, you make it all possible. Thank you!

3-D's Trust
Aden, D
Allen, F
Babin, J
Biggar
Black, G
Blakemore, J
Bold, K
Brown
Brundige, K
Bueckers, J
Christenson, D
Clemens, F
Colomb, B
Colyar, L
Conley, F
Coon, S
Corwin, W
Cozzetto, R (Memorial)
Crass, L
Crawley
Crawley, D
Cronin, M
Davis, W
DeLisle, D
Delp, C
Ely, M
Evans, Lee
Evans, Lewis
Field-Easley
Fisher, D
Franklin, T
Garland, J
Gates, C
Gluth
Goodell, R
Graye, M
Green
Greene
Gregory
Gross, R
Guyor
Hacker, R
Hasness, R
Hatch, J
Herigstad, A
Hopp
Howerton, R
Hutchins, C
Hyslop, C
Independence Beach
Jaeger, T
Jones, M
Kilgore, B
Kohlstedt, M
Kopet-Williams, B
Kreuzberger, G
Lake Shore Homes
Lancaster
Laughbon, R
Lawton, R
Linden, R
Magers, J
Masteller, K
McCabe, T
McCullough, D
Merrick, R
Miles & Rogers
Millhorn, W
Mooney, R
Moore, D
Morozzo, R
Morris, W
Morton (Tausch)
Neel, W
Nepean, S
Northshore Assoc.
Northwest Wildlife
Oman
Ostness, A
Pehl, S
Pehl-Charbonneau
Pope, K
Raftis, Jerome
Ransbottom, J
Reilly
Riblet, C
Richardson, D
Rickard, W
Riley, L
Robbins, Roland
Robbins, Roy
Roberts, L
Russ, L
Sadler,T
Sandell, J
Schanzenbach, W
Scherfenberg, B.
Schilling, C
Schimmels (Tausch)
Schoenleber, W
Scott, W
Seivers, N
Shawl,W
Sherfey, L
Shore Acres Estates
Smith, B
Smith, D
Strang, R
Swannack, G
Swett, J
Sylvester, N
Taft, J
Taylor, D
Tessier, J
Thomas-Cregar
Tierney, J
Timm, R
Timmland
Travis, G
Ubelacker, D
Ulijohn, F
Veltri, M
Volbrecht
Wagenman, J
Walleye Club
Webster, G
White, B
Whitehill, S
Wilson, W
Woirol, G
Young, D
Young, K
Zahler, R

****

HELP WANTED

Person with computer experience needed to help with layout and publishing for future newsletters. Usually 2 or 3 newsletters are published each year. No wages, no traveling, no benefits, except personal pride and a lot of appreciation. Please call 233-8401 or 747-8370 for more information.

What makes it feel like Christmas?

Snow, evergreen trees, colored lights, holiday music, decorations and those wonderful holiday smells. We have them all...and more at the Kris Kringle Markt.

The Old Schoolhouse has been the heart of the community since 1929, when the brick structure was built. Purchased in 1992 and maintained by the Loon Lake Historical Society, the Old Schoolhouse is undergoing continual restoration to ensure its use for future generations.

We host a variety of fundraisers and the upcoming Christmas season will again bring the Kris Kringle Markt to the Old Schoolhouse. Yes, Markt is spelled correctly. It's the German spelling of market and the Kris Kringle Markt is fashioned after German Christmas markets.

This year will be better than ever, with some of the vendors you have seen in the past, plus many new ones. It's set up like an old fashioned country store, a perfect place to do your Christmas shopping. There will be wonderful gift ideas, decorations, art, antiques and quality crafts. The Loon Lake Loon Association Gift Shop and the History Room will also be open during the hours of the Markt.

This year's Kris Kringle raffle will feature a wooden and wrought iron sleigh with two cute mice on their way to grandma's house as one prize. Another prize will be a collection of items donated by the vendors. This is a unique collection.

Either prize could be won by purchasing a $1 chance on the raffle. Tickets are available from Historical Society members, at the loon gift shop, or can be purchased anytime during the Markt. The drawing will be held at the close of the event and winners need not be present to win.

Beautiful poinsettias and locally made fresh Christmas wreaths will be available for purchase. Shoppers can take a break upstairs and enjoy cookies, coffee and cider which will be available at a nominal price.

Mark your calendar and put a big note on the refrigerator so you don't miss this fun event. The Kris Kringle Markt will be held the Friday, Saturday and Sunday after Thanksgiving. It will also be open during the first weekend of December. Hours will be from 10 a.m. to 5 p.m.

The Kris Kringle Markt will also be open one evening, Tuesday, November 30, from 6 to 8 p.m. We hope these times will make it easier for everyone to attend.

Come early and then come back again with lots of friends. Show them what you would like for Christmas! This is truly an old fashioned holiday shopping experience you won't want to miss. It can take several visits to make sure you have seen everything that's available!!

The proceeds from this event help in the restoration and future improvements of the building. We are currently in the process of installing a handicapped lift to make the building accessible to all. Future plans include replacing the sidewalk and restoring the upstairs floors.

For additional information on the Kris Kringle Markt, contact Jane at 233-2808 or Gail at 233-2829.

SAVE LOON LAKE

LOON LAKE PROPERTY OWNERS ASSOCIATION

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1:00 pm both days
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Loon Lake 233-8262

Loon Lake receives second Milfoil treatment

Notices were mailed on June 21 to property owners on Loon Lake to alert them of the upcoming Milfoil treatment on the lake. This will be the second time the lake has been treated for this noxious weed.

The expected dates for treatment are July 12 to 16 using a granular herbicide containing the active ingredient 2,4-D. This is an EPA-approved chemical which has been shown to be very effective against Eurasian Water Milfoil while not harming many native aquatic plants and fish when applied following the label directions.

A trial treatment with this chemical was performed in 1998 at Loon Lake with good success and has recently been made available in Washington through a legislative effort supported by the Loon Lake Property Owners Association.

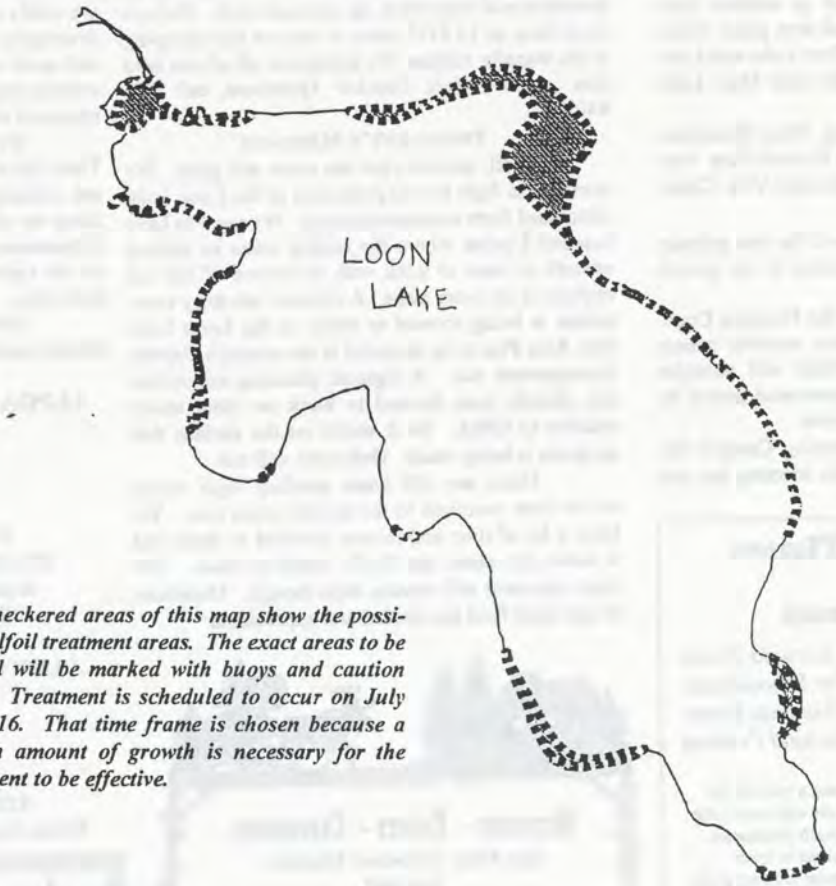
During the week of June 21, a SCUBA/ snorkeling team surveyed the lake to determine exactly where treatment is needed. Treated areas will be clearly marked with buoys and caution signs.

The following water use restrictions are recommended within the treated areas only. Do not use treated water for domestic uses, irrigation or watering of daily animals and do not swim in the treated areas. There are no fishing restrictions due to the application.

The treatment is localized to where the Milfoil is growing and buoys will mark these areas. The water in these areas is tested daily to determine when the water usage restrictions can be lifted. Caution signs and buoys will be removed to indicate the end of restrictions. It is expected that water use restrictions in the treated areas will be in force for two to four days after application.

The map on this page shows the areas that had Milfoil in 1998. Residents living in the checked areas can expect treatment in their area, although actual application may very based upon the survey.

For additional information or questions concerning this treatment, call the applicator, Resource Management at 509-299-6306 or e-mail rmilamb@ior.com. Questions may also be directed to the sponsor, Stevens County Noxious Weed Control Board at 509-684-7590 or e-mail weedboard@plix.com.



The checkered areas of this map show the possible Milfoil treatment areas. The exact areas to be treated will be marked with buoys and caution signs. Treatment is scheduled to occur on July 12 to 16. That time frame is chosen because a certain amount of growth is necessary for the treatment to be effective.

...uke's
BBQ

LOON LAKE
SAND & GRAVEL
233-2401

Expertise
Computers
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ıning Councils meet

Continued from page 2

ıs). It is a category of land use recognized MA. The are places in the County which ole of higher density development and may :h characteristics as public water, public ommercial activity, existing high density ıent, lake watershed area and/or recrea- ea. The LAMID allows for higher-density ıent to continue within the boundary of the Areas not identified as LAMIDs will be as a "Rural Land" and will not be al- higher density development.

he first step in the creation of LAMIDs is what will constitute a LAMID. There dvantages and disadvantages of becoming ted LAMID. The boundaries of the LA- need to be delineated and clearly defined. LAMIDs identified within District 1 in- ake Spokane/Suncrest, Loon Lake, Deer ayton, Valley, Tum Tum, Ford, Waitts Jump Off Joe.

weeney addressed the newly created Loon ershed Citizens Advisory Committee and equest for a 20 acre moratorium within rshed. He also spoke about the future of a Citizens Advisory Committee for kane/Suncrest in order to address their oblems. The current sub area plans within are for Loon Lake, Deer Lake and Lake while only Loon Lake and Deer Lake ıg.

the Lakeside meeting, Fran Bessermin ed as Chairman, Don Russell First Vice and Jim Richardson Second Vice Chair-

ıese three Councils will be the primary citizen input to the County in the growth ınt planning process.

ecommendations from the Planning Coun- ıe forwarded to the nine member county ning Commission, which will consider decide whether to recommend action by of County Commissioners.

e next meeting of Planning Council No. May 31. Location of the meeting has not nined.

Loon Lake Times
ox 12
ake, WA 99148-0012

..... *Lorinda Travis*
ohers..... *The Schoolhouse Quilters and Lorinda Travis*
..... *Garland Printing*

ke Times is published six times a year for the the residents of the Deer Lake and Loon Lake *on Lake Times* is a not for profit publication on advertisements and donations to cover osts. Deadline for ads and press releases is the ry, March, May, July, September and November. are by donation to the *Loon Lake Times*, P.O. Lake, WA 99148-0012.

LLPOA Issues

Information about the lake from the Loon Lake Property Owners Association

Dock Demolition

This year's Dock Demolition will begin June 23, at 9 a.m. at the public launch. If you have a dock to demolish, just bring it to the public launch at the appropriate time and consider paying $2 a foot to have it destroyed.

The LLPOA has hired Pete Smith and his equipment to help with the project. It has made the job much easier for the volunteers who have worked so hard in the past. Hope to see you all there. A pot-luck will be held at 5 p.m.

Road Cleanup

The Adopt-a-Road Cleanup around Loon Lake will be held on May 12 at 9 a.m. Bags will be furnished and remember, no personal trash. Pickups must have an LLPOA letter to receive free dumping at the transfer station. We appreciate all of you who join in this project. Thanks! Questions, call 233-8401.

President's Message

Well, another year has come and gone. We continue to fight for the protection of the Loon Lake watershed from overdevelopment. We seem to have reached a point where the county takes us serious enough to want to work with us instead of flat out oppose us on every issue. A citizens' advisory committee is being formed to work on the Loon Lake Sub Area Plan to be included in the county's Growth Management Act. A regional planning committee has already been formed to work on other issues relative to GMA. So it seems on the surface that progress is being made. Only time will tell.

There are still some pending legal issues we've been involved in for several years now. We have a lot of time and money invested in these, but it looks like some are finally winding down. Our legal expenses still remain high though. Donations to our legal fund are needed and appreciated.

As you all know, the Lake Management District passed overwhelmingly. Our battle against Eurasian Milfoil is now funded for a number of years. Thanks for your support.

Our fisheries program is a tremendous success. Funding is fantastic and the fish are thriving. Should be another great year. A special thanks to Joe Haley of Granite Point Park for the use of his facilities.

Look for some additional fundraisers this year as we strive for additional revenue to fund more projects. Volunteers will be needed.

One of our goals this year is to improve communication with the membership. Newsletters are costly and not very timely. We are looking into developing a web site that can be constantly updated and easily navigated. We can get feedback from the membership on issues, helping your board to better represent the wishes of the community.

Overall, it's been a very rewarding year. There have been some bumps in the road, but these are commonplace in any organization. The one thing we all have in common is the protection and enhancement of Loon Lake. I know we all want to do the right thing. Communication with each other is the key.

Take care, and I hope to see everyone at the annual meeting on June 22 at 7:30 p.m.

LLPOA Officers and Board Members

President Jim Rudisill
Vice President Dan Gann
Secretary Brian Veale
Treasurer Bob Morrozo
Past President Judy Richardson

Standing Committee Chairmen

Walter Davis, Red Crass, Bill Shawl, Jim Richardson and Jim Nolden

LLDF Officers and Board Members

President Jim Rudisill
Vice President Dan Gann
Secretary Brian Veale
Treasurer Bob Morrozo

Additional Board Members

Walter Davis, Steve Nepean and Tom Williams

All Seasons
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BBQ
Open Six Days a Week
Noon to 8 p.m. Sunday, Monday,

SEPTEMBER 2003 ISSUE

LLPOA Issues

Information about the lake from the Loon Lake Property Owners Association

Lake Management District to prepare Aquatic Plant Plan

by David Lamb, Lake Management Specialist

The Lake Management District (LMD) Advisory Committee of Loon Lake is currently in the initial stages of developing an Integrated Aquatic Plant Management Plan for the lake. This plan will direct the Milfoil control activities undertaken by this group into the foreseeable future.

To help in the development of this plan, the Advisory Committee, which is appointed by the County Commissioners and headed by Sunset Bay resident Jim Richardson, has solicited the assistance of local lake management specialist, David Lamb. Mr. Lamb was previously involved in Milfoil control efforts at Loon and other Eastern Washington lakes while serving as an Aquatic Biologist with the firm AquaTechnex.

The aquatic plant plan is being required by the State Department of Ecology and will be prepared following their guidelines. Components of this plan include development of a "problem statement" and management goals, which are done by the lake users (primarily the residents) through a public meeting and a questionnaire. The questionnaire will ask about peoples' feelings about the lakes' quality and usability, as well as on observed problems. The meeting is tentatively set for the week of October 5, and the questionnaire and meeting agenda are to be mailed out by September 26.

The plan will also include descriptions of the lake and watershed characteristics as well as a history of lake management efforts. The results of recent aquatic vegetation surveys will be summarized and all available aquatic plant control techniques will be formally evaluated to determine their applicability to Loon Lake.

All of these basic plan components will then be "boiled down" to come up with a recommended, integrated treatment action plan. Following approval by State and local agencies which have jurisdiction over the lake, the plan will be used to guide efforts to control Milfoil (and/or other problem plants).

The aquatic plant plan, to be most effective, must involve as many lake users as possible during its preparation. For this reason, the LMD Advisory Committee is asking people to come to the informational meeting in October, to hear about the options and voice their comments. The questionnaire, as well, is very important to have completed and returned to provide a basis for the problem statement and management goals.

loonlake.net

IT'S APPLE PICKING TIME AT
HANSEN'S
ON GREEN BLUFF!

ALL YOUR FAVORITE APPLE VARIETIES ARE READY...BOTH PICKED AND U-PICK.
ALSO THERE'S ALWAYS A GOOD SUPPLY OF OUR PREMIUM APPLE CIDER IN REGULAR, CHERRY & GRAPE FLAVORS.
PIES, JAMS, ORNAMENTAL CORN, PUMPKINS AND MORE IN OUR FRIENDLY COUNTRY STORE.

Maple Street Merchant Flea Market

Maple Street Merchants FLEA MARKET

- Furniture
- Good Used Stuff
- Collectibles
- Gifts and Gadgets

Booth space available

One mile north of 4 Corners
at the Maple Street intersection of Hwy 395

233-8480

FREE
Preschool Program

E.C.E.A.P.
(Early Childhood Educational Assistance Program)
For Southern Stevens County

- A complete child development preschool program
- For 3 and 4 year old children and their families.
- Includes daily meals, and health and assessment screenings.
- *Transportation may be available!*

Show & Tell

LLPOA Issues

Maple Street Merchant Flea Market

- Furniture
- Good Used Stuff
- Collectibles
- Gifts and Gadgets

Booth space available

233-8480

FREE

Preschool Program

E.C.E.A.P.
(Early Childhood Educational Assistance Program)
For Southern Stevens County

- A complete child development preschool program
- For 3 and 4 year old children and their families.
- Includes daily meals, and health and assessment screenings.
- Transportation may be available!

loonlake.net

IT'S APPLE PICKING TIME AT HANSEN'S ON GREEN BLUFF!

APPENDIX B: Citizen and Agency Input

IAVMP Questionnaire

Questionnaire Responses Summary

Public Meeting Announcement

Public Meeting Agenda

Public Meeting Handout

Public Meeting Minutes & Attendees List

Loon Lake, Stevens County, WA

Integrated Aquatic Vegetation Management Plan

QUESTIONNAIRE

This questionnaire is designed to solicit information about Loon Lake from those who use the lake or are involved with its' management. This information will be used to develop aquatic vegetation management goals in an *Integrated Aquatic Vegetation Management Plan* being developed for Loon Lake. Please circle or fill in the blanks and return the form to the address on the reverse side at your earliest convenience (prior to October 13 if possible). We want to encourage everyone to attend a Public Meeting on October 13 to discuss the development of the *Plan*, the preliminary results of the questionnaire and the efforts to control Eurasian watermilfoil in Loon Lake to date. See the enclosed meeting agenda for specific information.

- Please indicate your involvement with Loon Lake:

PROPERTY OWNER VISITOR MANAGER/AGENCY REPRESENTATIVE

- How would you rate the overall water quality of this lake?

POOR FAIR GOOD

- What is the most important factor to you about good water quality?

_____

- How would you rate the effect of aquatic plants on the usability of Loon Lake?

LITTLE EFFECT MODERATE EFFECT SIGNIFICANT EFFECT

- What is the most important factor to you about aquatic plants?

_____

- How would you rate the overall usability of Loon Lake?

POOR FAIR GOOD

- What is the most important factor to you in making this rating?

_____

- What uses do you make of Loon Lake?

FISHING SWIMMING BOATING WILDLIFE OBSERVATION

OTHER: _____

Are there any other questions or concerns that you would like to have considered on the subject of Loon Lake water quality and lake management?

COMMENTS / QUESTIONS:

_____

_____

_____

_____

_____

Thank you very much for taking time to answer these questions. Responses will be summarized and published in the *Plan*. Please fold the form so the mailing address for Loon Lake Steering Committee is showing on top. Tape or staple the folded sheet together, place a stamp in the upper right corner and mail it today. Thanks again and we hope to see you at the meeting on October 13.

-Loon Lake Management District Steering Committee

fold here 1st

$ .37 stamp here

Loon Lake LMD Steering Committee
40363 Sunset Drive
Loon Lake, WA 99148

fold here 2nd

#	Who?	Water Quality Rating (P,F,G)	Most Important Factor About Water Quality	Plant Effect Rating (L,M,S)	Most Important Factor About Plants	Overall Usability of Lake (P,F,G)	Most Important Factor About Usability	Uses (F,S,B,W)	Other Comments
1	PO	G	support lake ecosystem	S	support lake ecosystem	G	stewardship	FSBW	shoreline management
2	PO	F	sediment, weed free water	S	out of control aquatic plants make lake unusable	F	heavy sediment on heavy use days	SB	keep milfoil in check using all resources available
3	PO	G	free of contaminants	S	control harmful plants, encourage good ones	G	water quality	FSBW	family drinks lake water
4	PO	G	clarity, no pollutants	M	control	G	clear water	FSB	(no response)
5	PO	F-G	(no response)	S	remain in balance with environment	F-G	crowding, unsafe boating	SBW	(no response)
6	PO	F	clean for swimming & drinking-animals & humans	M	control harmful plants, encourage good ones	F	speed limits for PWC/Boats	FSBW	ban feeding ducks/geese due to affect on water quality
7	PO	G	clean for swimming	S	control harmful plants, encourage good ones	G	(no response)	FSBW	PWC/Wake boards destroying shorelines and docks. Assessment distribution unfair...
8	PO	G	clean for wildlife and swimming	S	wildlife habitat	G	keep lake open to all users	SBW-relaxation	hunt geese to control population
9	PO	G	clean, clear, drinkable	S	help with clean water, animal habitat/food, beautify lake	G	beauty & health of lake	FSBW	(no response)
10	PO	G	to control milfoil	S	control	G	continue efforts to improve lake-don't want to loose ground	FSB	(no response)
11	PO	G	clean for swimming	S	out of control aquatic plants make lake unusable	G	keep lake open to all users	SB	Milfoil should be treated in areas designated as wetland
12	PO	G	Minimize development in surrounding area	S	control harmful plants, encourage good ones	G	lake gets a chance to "rest" during off season	FSBW	need regulations for use of jet skis

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13	PO	G	(no response)	S	(no response)	G	Good water quality, low volume boat traffic	FSBW	support control of milfoil
14	PO	G	swimming & boating	M	do not want plants around docks & swimming area	G	weed free, clear water in swimming area	FSBW	make efforts to keep lake water level high as possible
15	MR	G	swimming & boating	M	do not want plants around docks & swimming area	G	weed free, clear water in swimming area	FSBW	make efforts to keep lake water level high as possible
16	PO	F	clear, no milfoil or algae, no swimmers itch	S	control harmful plants, encourage good ones	G	Length of season usage	FSBW	(no response)
17	PO	G	(no response)	M	control milfoil	G	clean water, weed free near shoreline	FSBW	like natural environment, low pollution, but too many jet skis
18	PO	F	safe & comfortable for swimming	M	that they don't interfere with activities	G	clean water	SBW	need regulations for use of jet skis
19	PO	G	odor, color, taste	S	effect on water quality	G	cleanliness of lakeshore and surrounding areas	FSBW	concern about drinking water
20	PO	G	effect on people's health	M	(no response)	G	good recreational activities	FSB	biggest concern is to keep milfoil under control
21	PO	G	healthy lake	S	control plant growth	G	(no response)	FSBW	(no response)
22	PO	F	exposure to humans & wildlife	S	control harmful plants, encourage good ones	F	beginning of pollution	FSBW	prevent pollution and keep fighting milfoil
23	PO	G	clean, clear water	S	control milfoil	G	variety of lake uses	FSBW	continue efforts to keep lake clean & pristine
24	PO	G	clean, free of ecoli, low in Pb, Cn, As	S	kept under control	F	too crowded	SB	keep water levels higher or reduce irrigation by farms
25	PO	F	reducing contaminants	M	control milfoil	F	too much silt and sediment	FSBW	concern about Granite Point sewer system
26	PO	G	clarity, no pollutants	S	control milfoil	G	usability for aquatic activities	FSBW	please include canal for milfoil treatments, full of milfoil
27	PO	G	Enjoy clean lake	S	swimming & navigational hazard	G	beauty & health of lake	FSBW	All must strive to protect the lake
28	PO	G	Maintain ecosystem of lake	S	Maintain wetlands & control milfoil	G	quality & the continuing maintenance	FSBW	concern about "soap suds" at Larson Beach

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29	PO	F	swimming & boating	S	beach has went from sand to weeds & mud	G	too many new homes where none should be	FSBW	Lake level too low but better since local management
30	PO	F	(no response)	M	(no response)	F	(no response)	FS	(no response)
31	PO	G	(no response)	M	(no response)	G	(no response)	FSB	weed program has not been effective
32	PO	G	(no response)	M	(no response)	G	(no response)	FSB	is this going to be a "forever" tax
33	PO	F	maintain lake level, clean water	M	wildlife habitat	F	too much traffic, trash from humans	FSBW	concerned that the watershed is healthy
34	PO	G	recreation, clean, wildlife habitat	M	don't want them to hinder access to docks, swimming areas	G	keep fish access open, water skiing	FSBW	where can we get monthly water quality reports? Post at stores, resorts?
35	PO	G	(no response)	S	(no response)	G	(no response)	SB	(no response)
36	PO	G	clear water, natural balance	S	control harmful plants, encourage good ones	G	clear water, spring fed, level controlled	FSBW	(no response)
37	PO	G	sewer district	L	control milfoil, maintain wetlands	G	good, clean, deep water	FSBW	Loon is at top of state list for good quality
38	PO	F	clarity	S	in check	G	ease of use for residents, not so easy for non-residents	FSBW-photography	(no response)
39	PO	G	(no response)	S	milfoil	G	having a IAVMP	FSBW	keep property owners informed
40	PO	G	healthy lake	M	keep milfoil under control	G	reduction in property values	FSB	(no response)
41	PO	G	human health	S	in check	G	recreational use	FSBW	(no response)
42	PO	G	maintain good quality	L	in check	G	continue efforts to improve lake-don't want to loose ground	FSBW	try to reach a balance so it doesn't get too expensive for property owners
43	PO	G	safe for water activities	S	control milfoil	G	(no response)	FSBW	remove muck
44	PO	G	purity	S	control milfoil	G	purity	SBW	preserve wetlands
45	PO	G	(no response)	M	(no response)	G	(no response)	FSB	(no response)
46	PO	G	healthy wetlands	S	in check	G	limit residential growth	FSBW	(no response)

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47	PO	F	low pollutant levels	M	keep from contaminating water quality	G	(no response)	FSB	curfew for waverunners
48	PO	G	swimming	M	control safely	G	long-term health of lake	FSBW	(no response)
49	PO	G	no milfoil, clear water	M	only native plants	G	clean water	FSBW	(no response)
50	PO	F	(no response)	S	(no response)	G	(no response)	FSBW	(no response)
51	PO	G	clarity, light vegetation	(no response)	sewer system	G	having a cabin	SB	keep up good work on milfoil control
52	PO	G	drinkable, useable	M	none in MY area of lake	G	lake size, cleanliness, availability	FSBW-day dreaming, stress relief, recollecting wits	keep PWC to minimum, keep on milfoil
53	PO	F	clean for swimming, fishing	M	in check	G	recreational use	FSBW	limit housing development, maintain wetlands
54	PO	F	clarity	M	(no response)	G	(no response)	SBW	(no response)
55	PO	G	clean, clear, good temp for wildlife	M	healthy for native species	G	(no response)	SW	trusting others to do what's best
56	PO	G	(no response)	M	(no response)	G	good fishing, not crowded	FSB	(no response)
57	PO	G	(no response)	M	(no response)	(no response)	(no response)	FSBW	(no response)
58	PO	G	health, aesthetics	M	clear beach	G	recreational use	FSBW	bulldozer work between Larson Beach/Lakeshore Homes creating eyesore
59	PO	G	(no response)	S	(no response)	G	(no response)	FSBW	(no response)
60	PO	G	safe water sports, healthy fish	M	control milfoil	G	clean water, police boaters & jetskis	FB	(no response)
61	PO	G	health, safety, clarity	M	Increase in growth of reeds along shoreline, plan for wildlife sanctuary	G	clarity, health, safety	FSBW	increase in wildlife, esp. waterfowl, in last 30 yrs (due to stop in DDT use or return of wetland). 5 yr moratorium on new development, continue milfoil control, biologist to monitor results

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62	PO	G	longer lake life	M	in check	G	(no response)	FSBW	continue milfoil control efforts and thanks
63	PO	F	swimming, clarity	M	return to and maintain native plants	F	milfoil growth	FSB	keep up good work on milfoil control
64	PO	G	clarity	M	in check	G	usability	FSBW	(no response)
65	PO	G	clean water	S	no milfoil	G	good recreational activities	FSBW	(no response)
66	PO	F	no milfoil	S	(no response)	G	(no response)	FSB	why does water always look dirty?
67	PO	G	clarity	S	in check	G	maintain lake quality	FSBW	(no response)
68	PO	G	no weeds	S	no milfoil	G	clear water, good fishing	FSBW	(no response)
69	PO	G	clarity, free of biological contaminants	L	in check	G	(no response)	SBW	(no response)
70	PO	G	(no response)	M	in check	F	reduced the breeding area for "non-existent" loons	FSBW	can the shallow areas be dredged at owner's expense?
71	PO	G	property values, desirable	M	control milfoil and other undesirables	F-G	clean water, protection from overcrowding, protect wildlife	FSBW	(no response)
72	PO	F	safety of all animals	S	stay at bottom, remove when near surface. Healthy plants needed for aquatic life.	F	limited use of lake due to "aquatic life" on surface of lake	FBW	appreciate the 5MPH signs to protect shoreline swimming areas
73	PO	F	milfoil control	S	milfoil control	F	too many PWC	FSB	manage geese
74	PO	G	(no response)	M	(no response)	G	(no response)	FSBW	(no response)
75	PO	G	healthy wildlife	S	hard to fish sometimes	G	access	FBW	worst thing is speeding ski boats, jet skis
76	PO	G	drinkable	M	control harmful plants, encourage good ones	G	multiple-use considerations	FSBW	(no response)
77	PO	F	benefits all life in and around lake	S	control harmful plants, encourage good ones	F	(no response)	FSBW	(no response)
78	PO	G	clarity, purity	S	control harmful plants, encourage good ones	G	water quality	FSBW	any duck itch here like at Deer Lk? Noted decline in sunfish, ducks, grebes this summer-is it due to milfoil control work?

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79	PO	G	safe for water activities	S	control necessary to preserve healthy ecosystem	G	aesthetics, safe boating, good fishing, good neighbors	FSBW	thanks to all the dedicated folks looking out for our rights in both county and state issues
80	PO	G	clear & healthy	S	balanced to keep water & fish healthy	G	good fishing, swimming, boating, wildlife obsv.	FSBW	What's going on in the wetlands by Larson Beach? Too much development going on.
81	PO	F	quality & quantity	S	controlling invasives	F	silt from erosion makes use of some areas difficult, reduces clarity	FSBW	(no response)
82	PO	G	(no response)	M	no spread	G	overall usability	FSBW	outside boats tailored in
83	PO	G	(no response)	M	(no response)	G	(no response)	SB	(no response)
84	PO	G	clear water, no weeds	S	(no response)	G	(no response)	FSB	(no response)
85	PO	G	low algae & noxious weeds	M	low noxious weed pop.	G	low probability of bacterial infection/ openness of water	FSB	(no response)
86	PO	F	(no response)	M	(no response)	F	(no response)	FBW	no PWC ever
87	PO	G	(no response)	M	balanced	G	quality of water, amt. of aquatic plants	SBW	thanks to all the dedicated folks monitoring the quality of the lake and helping keep a balance in plant life
88	PO	G	cleanliness	L	nature-leave plants alone. People ruin things, not plants	G	too many PWC, boats, people	FSBW	signs to clean props should be at all launches and enforced. The milfoil "plan" is already a bust.
89	PO	G	clear, clean for swimming	M	most plants are good for lake-want the lilies gone near Sunset Bay	F-G	clean, clear water. Do something about mud	SBW	get rid of lilies and mud near Sunset Bay. Continue milfoil treatments.
90	PO	G	clean	M	can see the milfoil	G	live on water's edge	FSB	noxious weeds don't go away by ignoring them. Must spend money to control
91	PO	F	(no response)	M	(no response)	G	(no response)	SBW	(no response)
92	PO	F	keep gas contaminants, other weeds out. Safe for all	S	balanced ecosystem	F	no skin rashes	SBW	too much muck
93	PO	G	(no response)	S	unreadable	G	(no response)	SW	(no response)

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94	PO	G	(no response)	S	(no response)	G	Clear water & controled Milfoil	FSBW	(no response)
95	PO	G	Marine life, aesthetic value & swimming; birds etc.	S	Necessary ones ar OK, viabilityof lake depends on them	G	Water quality, bird life, fish	FSBW	(no response)
96	PO	G	(no response)	L	Need to control seaweed on east & northeast sides of lake	G	(no response)	SBW	(no response)
97	PO	G	Contribute to good swimming & fishing, property values	(no response)	Swimming and boating suffer when lake gets "weedy"	G	Clean water	FSW	(no response)
98	PO	G	Clarity	L	Fish habitat	G	Boating, swimming	FSB	(no response)
99	PO	G	Clean-clear	S	undergrowth	G	Beauty! Clear	FSBW	(no response)
100	PO	F-P	Safety & clean	M	(no response)	F-G	(no response)	FSB	We would like the sludge minimized & the Milfoil also
101	PO	G	That the water be pollution-free and a healthy balance to support the appropriate wiuldlife and safe for our kids and animals to swim.	S	We fully understand the dangers of the Milfoil problem and the need to control it in some way. However, the being said, we would like to urge those managing it to consider the following factors on back	G	Ability to have a balanced healthy lake that supports fish and wildlife , non-polluting recreational use and contributes to the balanced ecological purposes.....	FSBW	Watering our lawn and garden, ice skating, cross country sking
102	PO	F	(no response)	M	(no response)	G	(no response)	FSW	(no response)
103	PO	F-G	Sandy bottom	S	Fear of speading	F	Noise of jet skis & the oil from 2-cycle engines	SBW	Suggest phasing out of 2-cycle engines over time as has been done ant Lake Tahoe, etc. The oil hurts quality of water.
104	PO	G	Clarity and lack of pollutants	S	Invasive plant must be controlled	F	We have too many high speed boats and PWC.	FSBW	If we are to manage the lake(which we must do given its court imposedadjudication) we must be more concerned about what happens in the watershed.

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105	PO	G	Clarity	S	(no response)	G	So far the boating traffic is under control	F, S, B, W	I believe that the question of maintaining the quantity of water in the lake is as important as quality. We need to address the issue of the long term health of the lake given that it's level is adjudicated.
106	PO	G	Healthy aquatic plants / fish stock & healthy amphibians	M	Native plants are great and no problem, just those that clog like Milfoil	G	(no response)	F, S, B	Outside of the Eurasian milfoil problem which I am very pro attacking with all necessary force, I am concerned with the algae bloom in late Aug/Sept that is consistently showing up. Not good.
107	PO	F-G	Safe for swimming / fish healthy - safe to eat	M	They should contribute to health of ecosystems and be kept out of swim areas	G	Speed boats interfere with fishing	F, S, B, W	The silt buildup in dock/swim areas is so thick it immediately kicks up when you swim, clouding otherwise clear water. This was created artificially from dumping sawdust from old mill. Can it be dredged? What can be done?
108	PO	G	Milfoil eradication works, water clear to look at, fish are healthy.	M	That our $ are going for a good cause.	G	Fisherman, boat traffic, swimmers	S, B	(no response)
109	PO	G	Swim in safe water	S	Get rid of ones causing problems	G	Check growth of Milfoil	F, S, B, W	Lake and watershed viewing
110	PO	F	Safe for consumption, swimming and clarity	M	(no response)	G	Water quality	F, S, B, W	Preservation of wetlands & population density

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111	M/A	g	Good nutrient balance (no algae blooms) that provides for fish growth and health. Adequate native vegetation for desirable fish species when life stages require it.	L	Availability of fish habitat.	G	The fishery	Providing a fishery.	Eurasian milfoil is a concern regarding fish habitat (spawning, rearing etc) and should be addressed whenever possible.
112	M/A	G	Clarity - if it is clean looking (no floating scum either on or under the surface)	S	Plants are needed for wildlife habitat and overall healthy ecosystems, but non-native invasive plants can and do displace helpful, desirable natives and interrupt the intended cycle of life. I would say that the present non-native aquatic plant situation at Loon is relatively stable with many of the property owners and lake users unaware of any problems caused by the plants. It is in some of the more shallow areas of the lake that the impacts of Eurasian milfoil are readily noticeable. Additionally the shoreline invasive species, purple loosestrife and garden loosestrife and yellow flag iris are currently impacting only very small portions of the shoreline but have the potential to create significant alterations in the shoreline/ wetland habitat. They need to be in the loop.	F	Too many people.	(Noxious weed control)	Both the Property Owners Association, in the early years, and the Lake Management District Steering Committee presently deserve a huge pat on the back for their tireless efforts at getting milfoil control programs up and running and continuing. There are a handfull of super-dedicated individuals that have spearheaded the control efforts, but without the overall awareness and concern of the Loon Lake residents and users especially with regard to the need for noxious weed control, but also with respect to the health of the lake system in general. It has been fulfilling and a pleasure working with these folks for the past eight years.

Water Quality Rating (P,F,G)	Most Important Factor About Water Quality	Plant Effect Rating (L,M,S)	Most Important Factor About Plants	Overall Usability of Lake (P,F,G)	Most Important Factor About Usability	Uses (F,S,B,W)	Other Comments
received late and were not included in the summary.							
G	To be able to swim in the lake in safe water	S	top get rid of the ones that are foreign and troublesome.	G	That we have checked the growth of Milfoil.	F, S, B, W- Just viewing the lake, the sky and the surroundings.	(no response0
G	cleanliness	S	(no response)	G	(no response)	F, B	(no response)
F	Safe for consumption & swimming; clarity.	M	(no response)	G	water quality	F, S, B, W- tubing, winter XC skiing	I am concerned about the preservation of the wetland areas and population density.
F	(no response)	(no response)	That they are native and not noxious	(no response)	(no response)	(no response)	(no response)

Loon Lake Public Meeting Announcement. Published in Loon Lake Times, October 2003

Lake Management District to prepare Aquatic Plant Plan

By David Lamb, Lake Management Specialist

The Lake Management District (LMD) Advisory Committee of the Loon Lake Property Owners Association is currently in the initial stages of developing an Integrated Aquatic Plant Management Plan for the lake. This plan will direct the Milfoil control activities undertaken by this group into the foreseeable future. To help in the development of this plan, the Advisory Committee, which is headed by East shore resident Jim Richardson and has oversight by the Stevens County Commissioners, has solicited the assistance of local lake management specialist, David Lamb. Mr. Lamb was previously involved in Milfoil control efforts at Loon and other Eastern Washington lakes while serving as an Aquatic Biologist with the firm AquaTechnex.

The aquatic plant plan is being required by the State Department of Ecology and will be prepared following their guidelines. Components of this plan include development of a "problem statement" and management goals, which are done by the lake users (primarily the residents) through a public meeting and a questionnaire. The questionnaire will ask about peoples' feelings about the lakes' quality and usability, as well as on observed problems. The meeting is tentatively set for the week of October 5th, and the questionnaire and meeting agenda are to be mailed out by September 26th. The plan will also include descriptions of the lake and watershed characteristics as well as a history of lake management efforts. The results of recent aquatic vegetation surveys will be summarized and all available aquatic plant control techniques will be formally evaluated to determine their applicability to Loon Lake. All of these basic plan components will then be "boiled down" to come up with a recommended, integrated treatment action plan. Following approval by State and local agencies which have jurisdiction over the lake, the plan will be used to guide efforts to control Milfoil (and/or other problem plants).

The aquatic plant plan, to be most effective, must involve as many lake users as possible during its preparation. For this reason, the LMD Advisory Committee is asking people to come to the informational meeting in October, to hear about the options and voice their comments. The questionnaire, as well, is very important to have completed and returned to provide a basis for the problem statement and management goals.

Loon Lake, Stevens County, WA
Integrated Aquatic Plant Management Plan

PUBLIC MEETING, October 13, 2003

AGENDA

INTRODUCTION

LAKE QUALITY SUMMARY
- Previous Water Quality Testing Summary
- Aquatic Vegetation Surveys

MILFOIL CONTROLS PERFORMED TO DATE
- Early Infestation Project
- Demonstration Project

2003 IAVMP PROJECT
- Project Summary
- Lake Management History
- Watershed & Lake Characteristics
- Aquatic vegetation characterization
- Beneficial uses and effects of aquatic plants
- Development of Problem Statement
- Determination of Management Goals
- Control alternatives
- Integrated Treatment Action Plan

QUESTIONS & CLOSING COMMENTS

Loon Lake IAVMP Meeting Handout

Typical Beneficial Uses

- Swimming
- Boating and motorized water sports
- Non-motorized boating (canoeing, kayaking, rowing, sailboarding)
- Recreational fishing
- Aesthetics
- Fish habitat
- Wildlife habitat

Typical Aquatic Plant Problem Categories

The current and potential problem categories which do or could result from Milfoil growth impacts are listed below.

- current and potential hindrance to swimming because of excessive plant growth
- potential hindrance to boating and water skiing
- current and potential degradation of fishing and fish habitat
- potential reduction in aesthetic appeal of the lake
- potential decrease in property values

Typical Problem Statement

The Problem Statement developed for this Plan is that ?? Lake is experiencing an increase in the growth of Eurasian watermilfoil which if not controlled has the potential to significantly impact (degrade) the human and wildlife uses of the lake.

Typical Management Goals

The development of the Problem Statement, the assessment of watershed and lake characteristics and the determination of desired beneficial uses have led to the following management goals for ?? Lake:

- Maintain recreational uses of the lake by removing or controlling excessive submersed aquatic plant growth from residential shoreline areas

- Keep swimming and boat launch areas free of aquatic plants

- Protect and enhance fish and wildlife habitat

- Choose aquatic plant control techniques which have the widest public support, a low cost to benefit ratio and prevent adverse environmental problems either in the lake or downstream.

- To the extent possible, reduce Milfoil growth to the point that chemical herbicides are not needed during each successive year.

The "action limit" for this management plan is zero Milfoil plants; that is, controls are recommended whenever Milfoil is found in the lake or in the lake's inlets or outlet within a ??? foot distance from the lake. Milfoil is to be treated wherever it is found within these bounds using the moderate or high intensity controls as outlined in this Plan.

Loon Lake IAVMP Public Meeting Notes

INTRODUCTION (Jim Richardson & Dave Lamb, 5 min)

- Jim R. introduced Dave Lamb
- Dave reported that EWMilfoil discovered in Loon canal 1996; many efforts & $ put out to control / eradicate growth; now WDOE requiring that planning process be undertaken to assess management goals and select best options for continued work
- Reasons for meeting = to present overview of IAVMP planning process, to solicit resident/stakeholder input and document involvement and support.
-

LAKE QUALITY SUMMARY (Dave,15 min)

- Previous water quality testing summary (USGS monitoring lake level since 1950; WDOE studies performed in 1969, 1971, & 1979. Conclusions from 1971 work were that lake was in early stages of eutrophication and that August/September B-G algae and nitrate levels indicate that WQ problems may be expected in future)
- Sewer system constructed 1985; lake water monitoring performed by sewer district 1996 - 1999. Summary of available results.
- Aquatic Vegetation Surveys -- many Milfoil surveys performed since 1996 show control efforts being effective but not achieving complete eradication. WDOE 2,4-D study performed 1998 - 1999 looked at all submersed plants found in study plots documented 24 species with Pondweeds predominant.
-

MILFOIL CONTROLS PERFORMED TO DATE (Dave & Jim, 20 min)

- Early Infestation Project (1996-1997) -- canal barriered & treated with Sonar; bottom barriers, hand removal & diver dredging near canal. Conclusions Milfoil in canal completely eliminated, grow of Milfoil in lake proper out paced manual control efforts.
- 2,4-D Demonstration Project (1998-99) -- herbicide treatment of ?? acres with extensive monitoring of herbicide residues and treatment success. Parsons et al. found selective control of EWM, no significant decrease in native plants (EWM showed 98% reduction after 6 weeks but only 87% reduction after one year = regrowth or re-colonization).
- Post-demonstration work -- spot 2,4-D treatments every year except 2001 -- overall conclusion is that Milfoil rebounds quickly if not treated every year.
-

2003 IAVMP PROJECT (Dave, 30 min)

- Project Summary -- will follow WDOE guidance (Citizen's Manual for Developing IAVMP's). Steps to be followed ……
- Lake Management History -- Dave to summarize available info
- Watershed & Lake Characteristics -- Dave to summarize available info
- Aquatic vegetation characterization -- Dave to summarize (will use results of demonstration project for native vegetation and recent EWM surveys).
- Beneficial uses and effects of aquatic plants -- need input
- Development of Problem Statement -- need input from residents/stakeholders (see meeting handout)
- Determination of Management Goals -- typical goals (see meeting handout)
- Control alternatives -- Dave to summarize (to include general advantages, disadvantages, costs & appropriateness for Loon Lake)

- Integrated Treatment Action Plan -- to be developed by Dave & Advisory Committee (& Sue) with input from this meeting, the questionnaires and solicited WDOE/WDFW input. Will include recommended control strategies, recommended monitoring and expected project costs.

QUESTIONS & CLOSING COMMENTS (15 min)

LMD ADVISORY COMMITTEE
December 8, 2003
MINUTES

Chairman, Jim Richardson, in the Loon Lake school library, called the regular meeting to order at 6:45 p.m.

Those in attendance were Jim Rudisill, Greg Young, Dave Lamb, Jim Killingsworth, Commissioner Tony Delgado and Jim and Judy Richardson.

It was moved and seconded to approve the minutes of the last meeting as printed.

The Chairman announced the vote for the new LMD passed by 90% of those who voted which was about 53% of those mailed out which is about the same as in the regular election.

Dave Lamb presented a draft of the report for the 5-year plan. He went through the table of contents and encouraged the committee to read, with special interest, the management goals, the control options, and let him know if he needs to make any changes. The President suggested on page 32 in the management goals—to reduce noxious weeds.

Tony asked if we had seen the big infestation (500 acres) at Long Lake or in the Columbia River. It was discussed about the difficulty in treating rivers because the current carries away the chemical so fast.

Dave is correcting copies and they can be picked up or he will mail them. He requested that any changes be given to him by the first week in January and he will make changes before it goes to the D.O.E. Probably it will be the end of February or the first of March before it is finished.

The Chairman asked the members if they would be interested in replacing the member of the committee who passed away and increasing the number of members to 9 since this LMD is for a longer period. The committee agreed and asked Tony to see if the whole committee changes for this new renewal or if some members could be added or if an advertisement would be necessary.

The Chairman asked for all comments to be ready by the next meeting, January 12, 2004.

With no further business, the meeting adjourned at 7:40p.m.

Respectfully submitted,

Judy Richardson

LMD STEERING COMMITTEE
MINUTES
OCTOBER 6, 2003

The meeting was called to order at 6:30p.m. by President Jim Richardson at the Loon Lake School Library.

Attendance—Commissioner Tony Delgado, Dave Lamb, Joe Haley, Jim Killingsworth, George Swannack and Jim and Judy Richardson.

Dave Lamb continued his recommendations for the I.A.V.M.P. We need to come up with a list of alternative treatments beside 2-4D. He said he would have his estimate of costs for drawing up the plan by October 10, 2003. The public meeting needs to be held between the 1st and 17th of October. He hopes to have the draft ready for approval by November and comments back on it by the first of the year and back from agencies by the end of January and the final plan finished by February. He was hopeful that acceptance or suggestions could be done on the telephone. He still needs water quality reports and aquatic reports and the President agreed to get them to him.

The President announced that we must get on the County Commissioners agenda so they can approve the committee hiring Dave.

The meeting adjourned at 7:50p.m.

PUBLIC MEETING FOR iNFORMATION FOR THE I.A.V.M. P.
MINUTES
OCTOBER 13, 2003

The meeting was called to order by the President of the LMD Advisory Committee, Jim Richardson, at the Loon Lake School Library at 7:35p.m.

ATTENDANCE—Commissioner Tony Delgado, Dave Lamb, Sue Winterowd, George Swannack, Jim Killingsworth, Steve Coon, Red Crass, Berferd Sherfenberg, Bill Milihorn, Sunshine Milihorn, Jim Richardson, Judy Richardson, and a couple whose names were omitted from the sign up sheet.

The President gave a background and introduced Dave Lamb who has been hired to draft our I.A.V.M.P. Dave announced that Milfoil is the prime focus for the plai~i. Water Quality will be used and the beginning of the Sewer District in 1985. The demonstration study was questioned as to how other plants were affected. The answer was minimally.

Questions about the need for water testing during the treating periods and Dave said it is very important if you are asking for money or to counter comments from bad effects.

It was suggested that the plan include 24-D safety information and that flyers be distributed at the annual meeting about pests such as zebra muscles.

LMD ADVISORY COMMITTEE
MINUTES
OCTOBER 13, 2003

The regular meeting of the LMD was called to order at 7:35p.m. Minutes were approved as printed.

The President announced that the County Commissioners had approved the proposal for the *5* yr. Plan.

Tony said the treasurer has talked about mailing out the ballots f~r renewal of the LMD in the next two weeks.

The President asked the quests how they felt about renewing the LMD. The answer was positive. Steve Coon suggested that maybe The Department of Fish and Wildlife could use money from launching boat fees to control the milfoil but the President said that it is already being used for that but it is only a small portion of what is needed.

Sue Winterowd said she is pleased with the surveys that are coming in.

Tony Delgado suggested that *$.50* be added to fishing licenses to control milfoil.

OLD BUSINESS—The President asked for input at the next meeting for the *5* yr. Plan when Dave meets with us.

There was no new business so the meeting was adjourned at 7:55p.m.

The next meeting will be November 10, 2003.

Respectively submitted,

Judy Richardson

LMD ADVISORY COMMITTEE
MINUTES
AUGUST 11, 2003

The Meeting was called to order at 7:45 p.m. at the Loon Lake School Library.

PRESENT were Sue Winterowd, Dave Lamb, Joe Haley, Tony Delgado, Jim Killingsworth and Jim and Judy Richardson.

MINUTES were approved as corrected.

The Chairman introduced Dave Lamb and he gave some information on his qualifications. He is no longer under any legal restrictions from his employment with Aquatechnex and would be interested in working on an Integrated Aquatic Vegetation Manaagement Plan for Loon Lake. His estimate of what the cost would be was about $1000.00, which the committee and Sue Winterowd agreed was extremely low. The Chairman encouraged him to look over his charges to make sure they were fair to him and did advise that the committee is expecting a thorough plan that covers many things. Dave agreed to draw up a proposal for the next meeting.

Joe Haley suggested maybe he could have a draft drawn up by the November meeting. Information articles need to be placed in all the local newspapers; Loon Lake Times, Chewelah Independent, Deer Lake Paper, Deer Park Tribune. The deadline for the Loon Lake Times is August 25, 2003.

Sue reported that 701 Hearing notices had been sent out for the LMD. One or two meetings should be held with advertising for them, however they do not have to have legal notification. It was discussed if a survey to be filled out and sent back should be sent with the notice for people's input that were unable to attend the upcoming meeting. The Committee, Sue and Dave all agreed that this would be a good idea.

Joe moved to tentatively accept Dave's proposal, subject to change. Jim Killingsworth seconded and the motion unanimously carried.

The meeting was continued to Aug. 25, 2003 at 6:30 p.m. Everyone was encouraged to attend the hearing tomorrow, August 12, 2003, at 3:30 p.m. in Colville when the County Commissioners draw up the resolution for the new LMD.

The meeting was resumed at 7:10p.m. Aug. 25, 2003 with Dave Lamb, George Swannack, Greg Young, Joe Haley and Jim and Judy Richardson in attendance.

Dave Lamb presented his proposal for the 5 year plan for Loon Lake. It will be based on the same format as the one he did for Sacheen Lake. This plan must be approved by the Department of Ecology and the Department of Fish and Wildlife. A questionnaire will be sent out to all property owners on the lake to get input on the progress of the LMD. A public meeting will be also held in October.

Dave estimates the cost for writing up the 5 year plan will be $2,600.00. The President agreed to make copies and get them to the members for review and approval.

On Sept. 26, 2003 the questionnaires and agenda for the meeting will be mailed out. A copy of the proposal will be sent to the County Commissioners as they make the final decision on the plan.

The Committee discussed with Dave that 24-D is our key for use against the milfoil but other techniques will be explored for an alternative treatment.

The Public meeting should be scheduled between the 1-17 of October. The draft should be ready for approval by November with comments on it by the first of the year or the end of January with the final plan ready in February.

The President agreed to contact all members by phone for their opinion of the reviewed proposal.

Dave said he needed water quality and aquatic reports to continue with the plan.

The President agreed to get Dave Lamb's proposal for the drafting of the Integrated Aquatic Management Plan on the Commissioner's agenda so they can approve it.

The Meeting adjourned at 7:50p.m.

Respectfully submitted,

Judy Richardson

LMD ADVISORY COMMITTEE
MINUTES
JULY 14, 2003

The regular meeting of the LMD was called to order at 6:45 p.m. at the Loon Lake School.

PRESENT--Jim Rudisill, Greg Young, Jim Killingsworth, Joe Haley and Jim and Judy Richardson.

MINUTES—were approved as printed.

The Chairman reported that the maps for the treatment area of the lake showed 72.3 acres treated with 20 acres being treated with liquid and the rest with granular. Terry and Kyle plan to come back in 3 weeks and check the result. The PUD is still providing water to the Claussens.

The Hearing Notice resolution was passed by the Commissioners on ~~August 12,~~ 2003. Sue Winterowd and the County Treasurer are working to get it sent out as it has to be sent out 15 days prior to the hearing.

The Chairman encouraged the committee to be thinking about the plans for writing the 5 year plan for Loon Lake. Jim Killingsworth said he will continue looking for people who might help with it and the Chairman will too.

NEW BUSINESS—The next meeting will be August 11, 2003. The LMD Hearing will be August 12, 2003, at 3:30 p.m. at the Commissioners room at the Colville Courthouse.

The Chairman reminded everyone we have to keep the flow moving to get the next LMD established. A discussion followed why the railroad and the state were left out of the first one.

The meeting adjourned at 7:10 p.m.

Respectfully submitted,

Judy Richardson

Judy Richardson

November 24, 2003
Loon Lake Property Owners Association
Loon Lake WA

LMD Steering Committee
Jim Richardson, Chairman
Loon Lake WA

On behalf of LLPOA I am stating our support for the continuing efforts to control the eurasion milfoil that infests our lake. If left unchecked, the milfoil can have disasterous effects on the quality of our water and its habitat. The numerous scientific studies bear this out.

LLPOA was instrumental in obtaining the original grant money to treat the lake as part of a pilot program. When the money ran out and no other funds were available, LLPOA pushed for the formation of an LMD to raise funds to continue treatment. Due to a court order, treatment was delayed for a year. Diver surveys showed that over this one year period, eurasion milfoil had spread to other areas of the lake and the infestation had doubled in size. LLPOA feels continued treatment is a must.

Our original LMD was for a 3 year period. 2003 was the final year. Experience has taught us that discontinuing treatment will be disasterous. Therefore the LMD steering committee is going forward with a 5 year LMD, which LLPOA supports. New regulations require an extensive plan be written outlining history, past control efforts, and a formal plan for future treatments. Dave Lamb has been retained to author this plan. Mr. Lamb has been involved with our efforts to control eurasion milfoil from day one. He is very familiar with Loon Lake and its challenges. He also spent many years doing the actual treatment.

Mr. Lamb is no longer involved in the chemical application or treatment of Loon Lake and has no financial interests. This lack of conflict and his immense qualifications make him an ideal choice to write an Aquatic Control Plan for Loon Lake. Mr. Lamb has the full support of LLPOA.

The members of the LMD steering committee have shown to be a competent group of individuals whose efforts are focused soley towards control of eurasion milfoil in Loon Lake. This committee has the full support of LLPOA.

Sincerely,

Jim Rudisill
President, LLPOA

LOON LAKE SEWER DISTRICT #4
3963 CHRISTENSEN ROAD
P.O. Box 98
LOON LAKE, WA 99148-0098
PHONE: 509-233-8132
FAX: 509-233-3029

DISTRICT MANAGER BROOKE LYONS

Commissioners: Roger Arleth
Joan Easley
Thomas Williams

December 2, 2003

Loon Lake Management District Advisory Committee
Attn: Chairman Jim Richardson
40363 Sunset Drive
Loon Lake, WA 99148

RE: letter of support

Dear Mr. Richardson,

It is the understanding of the Loon Lake Sewer District No. 4 that the Loon Lake Management District Advisory Committee is in the process of creating an Integrated Aquatic Vegetation Management Plan. This state-designed plan encompasses a number of specific areas all relating to the management of Loon Lake.

As the Loon Lake Sewer District No. 4 was formed with the express purpose of installing sewer facilities to protect Loon Lake's water quality, we support your committee's further efforts to protect and manage the lake.

Our S.T.E.P. (Septic Tank Effluent Pump) sewer collection system began operating in 1986. Each property receiving sewer service has a two-chamber septic tank and an electrical control panel on-site. Effluent is pumped from the septic tank, through our mainline and into our main lift station. From the lift station, fluids flow into our treatment area. The sewage treatment system consists of aerated and storage lagoons as well as a seasonally irrigated area. The solids side of the on-site septic tank retains nearly all solids. This side is monitored and, as necessary, a licensed Septic Tank Pumping Company is retained to remove and dispose of the tank contents.

The Loon Lake Sewer District No. 4 will continue to support local efforts that share our goal of protecting the water quality of Loon Lake.

Sincerely,

Brooke Lyons

Brooke Lyons
District Manager

APPENDIX C: Herbicide Information

Reward (diquat) Product Label *

Aquathol K (endothall) Product Label *

Aqua-Kleen (2,4-D) Product Label *

DMA 4 (2,4-D) Product Label *

2,4-D Risk Assessment information

Sonar AS (fluridone) Product Label *

Sonar PR (fluridone) Product Label *

Renovate (triclopyr) Product Label *

* Not included in digital file of this document.

PULL HERE TO OPEN ►

REWARD®

Landscape and Aquatic Herbicide

TO PREVENT ACCIDENTAL POISONING, NEVER PUT INTO FOOD, DRINK, OR OTHER CONTAINERS, AND USE STRICTLY IN ACCORDANCE WITH ENTIRE LABEL.

DO NOT USE THIS PRODUCT FOR REFORMULATION.

Active Ingredient:	
Diquat dibromide [6,7-dihydrodipyrido (1,2-a:2',1'-c) pyrazinediium dibromide]	37.3%
Other Ingredients:	62.7%
Total:	100.0%

Contains 2 lbs. diquat cation per gal. as 3.73 lbs. salt per gal.

KEEP OUT OF REACH OF CHILDREN.

WARNING/AVISO

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.)

See additional precautionary statements and directions for use inside booklet.

EPA Reg. No. 100-1091
EPA Est. 100-TX-001

Product of United Kingdom
Formulated in the USA
SCP 1091A-L2 0901
154290

2.5 gallons
U.S. Standard Measure

syngenta

SCP 130-1091A-L2

FIRST AID	
If swallowed	• Call a Poison Control Center or doctor immediately for treatment advice. • Immediately give water or milk to drink and induce vomiting by inserting finger in throat. • Do not induce vomiting or give anything by mouth to an unconscious person. • Take person and product container to the nearest hospital or physician fast. • PROMPT TREATMENT IS ESSENTIAL TO COUNTERACT POISONING and should be initiated before signs and symptoms of injury appear.
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.
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 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.
NOTE TO PHYSICIAN **CALL SYNGENTA MEDICAL EMERGENCY ASSISTANCE 1-800-888-8372** at any hour to obtain toxicology information and a diquat analysis. To be effective, treatment for diquat poisoning must begin **IMMEDIATELY.** Treatment consists of binding diquat in the gut with suspensions of activated charcoal or bentonite clay, administration of cathartics to enhance elimination, and removal of diquat from the blood by charcoal hemoperfusion or continuous hemodialysis.	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
HOT LINE NUMBER For 24-Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident), Call **1-800-888-8372**	

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

WARNING/AVISO

May be fatal if absorbed through skin. Harmful if swallowed or inhaled. Causes substantial, but temporary, eye injury. Causes skin irritation. Contact with irritated skin, or a cut, or repeated contact with intact skin may result in poisoning. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor or spray mist. Do not feed forage from treated crops to livestock. Keep livestock and pets out of treated fields and crop areas.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Coveralls over short-sleeved shirt and short pants or coveralls over long-sleeved shirt and long pants
- Waterproof gloves
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing, or loading

Exception: After this product has been diluted with at least 50 gallons of water, applicators for AQUATIC SURFACE APPLICATIONS must, at a minimum, wear (Note – Mixers and Loaders for this application method must still wear the Personal Protective Equipment (PPE) as described in the above section):

- Long-sleeved shirt and long pants
- Shoes plus socks
- Waterproof gloves
- Protective eyewear

Exception: At a minimum, applicators for AQUATIC SUBSURFACE APPLICATIONS must wear (Note – Mixers and Loaders for this application method must still wear the Personal Protective Equipment (PPE) as described in the above section):

- Short-sleeved shirt and short pants
- Waterproof gloves
- Chemical-resistant footwear plus socks

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, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statements

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS. Mixers, loaders, and applicators using closed systems who meet these requirements may wear: long-sleeved shirt and long pants, protective eyewear, waterproof gloves, shoes plus socks, and a chemical-resistant apron when mixing, loading, or cleaning equipment. If handling tasks are performed from inside an enclosed cab or aircraft with enclosed cockpits that meet these requirements may wear: long-sleeved shirt, long pants, shoes and socks for the labeling-specified PPE. All labeling-specified PPE must be immediately available for use in an emergency. All applicable requirements as specified in 40 CFR 170.240(d)(4-6) must be followed.

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.

Environmental Hazards (Terrestrial and Aquatic Uses)

This pesticide is toxic to aquatic invertebrates. **For Terrestrial Uses,** do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters. **For Aquatic Uses,** do not apply directly to water except as specified on this label. Treatment of dense weed areas may result in oxygen loss from decomposition of dead weeds. This loss of oxygen may cause fish suffocation. Therefore, treat only 1/3-1/2 of the water body area at one time, especially if dense areas of weeds and/or algae exist, and wait 14 days between treatments.

Necessary approval and/or permits should be obtained prior to application if required. Consult the responsible State Agencies (i.e., Fish and Game Agencies or Department of Natural Resources) before making applications to public waters.

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 this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product should 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 such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, Inc. or Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of the product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and Buyer and User assume the risk of any such use. SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

In no event shall SYNGENTA or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA 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 THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitations of Warranty and of Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

DIRECTIONS FOR USE

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

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.

READ ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH PRECAUTIONARY STATEMENTS AND DIRECTIONS, AND WITH APPLICABLE STATE AND FEDERAL REGULATIONS.

DO NOT APPLY THIS PRODUCT THROUGH ANY TYPE OF IRRIGATION SYSTEM.

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 24 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 over short-sleeved shirt and short pants, or coveralls over long-sleeved shirt and long pants
- Waterproof gloves
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure

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.

Keep all unprotected persons out of operating areas or vicinity where there may be drift.

For terrestrial uses, do not enter or allow entry of maintenance workers into treated areas, or allow contact with treated vegetation wet with spray, dew, or rain, without appropriate protective clothing until spray has dried.

For aquatic uses, do not enter treated areas while treatments are in progress.

STORAGE AND DISPOSAL

Prohibitions

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

Storage

Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Do not contaminate feed, foodstuffs, or drinking water. Do not store or transport near feed or food. Store at temperatures above 32°F. For help with any spill, leak, fire, or exposure involving this material, call **1-800-888-8372.**

Pesticide Disposal

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, 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.

Container Disposal

Do not reuse container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER!

DIRECTIONS

Reward Landscape and Aquatic Herbicide is a nonvolatile herbicidal chemical for use as a general herbicide to control weeds in noncrop and aquatic areas. Absorption and herbicidal action is usually quite rapid with effects visible in a few days. Reward Landscape and Aquatic Herbicide controls weeds by interfering with photosynthesis within green plant tissue. Weed plants should be succulent and actively growing for best results. Rinse all spray equipment thoroughly with water after use. Avoid Spray Drift to crops, ornamentals, and other desirable plants during application, as injury may result. Application to muddy water may result in reduced control. Minimize creating muddy water during application. Use of dirty or muddy water for Reward Landscape and Aquatic Herbicide dilution may result in reduced herbicidal activity. Avoid applying under conditions of high wind, water flow, or wave action.

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator and the grower.

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 movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses, or to applications using dry formulations.

The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.

Nozzles must always point backward parallel with the air stream and never be pointed downward more than 45 degrees.

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

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 ft. above the top of the target 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 2-10 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 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 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 wind is blowing away from adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, nontarget crops).

Commercial Greenhouses And Nurseries

For general weed control in commercial greenhouses (beneath benches), (field grown and container stock), and other similar areas, Reward Landscape and Aquatic Herbicide may be applied preplant or postplant preemergence in field grown ornamental nursery plantings or postemergence as a directed spray. Reward Landscape and Aquatic Herbicide may also be applied preemergence in ornamental seed crops (U.S., except CA). Avoid contact with desirable foliage as injury may occur. Do not use on food or feed crops.

Spot spray: 1-2 qts. Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 100 gals. of water, or 0.75 oz. (22 mls.) Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 1 gal. of water.

Broadcast: 1-2 pts. Reward Landscape and Aquatic Herbicide in a minimum of 15 gals. of water per acre. Add the labeled rate of a 75% or greater nonionic surfactant per 100 gals. of spray mixture. Use an adequate spray volume to insure good coverage.

Ornamental Seed Crops (Flowers, Bulbs, Etc.) U.S., Except CA

For preharvest desiccation of ornamental seed crops. NOT FOR FOOD OR FIBER CROPS.

Broadcast (Air or Ground): 1.5-2 pts. Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per acre in sufficient water (minimum of 5 gals. by air; 15 gals. by ground) for desiccation and weed burndown. Repeat as needed at no less than 5-day intervals up to three applications. Do not use seed, screenings, or waste as feed or for consumption.

Directions For Landscape, Industrial, Recreational, Commercial, Residential, and Public Areas

Reward Landscape and Aquatic Herbicide provides fast control of broadleaf and grassy weeds in industrial, recreational, golf course, commercial, residential, and public areas.

Reward Landscape and Aquatic Herbicide is a nonselective herbicide that rapidly kills undesirable above ground weed growth in 24-36 hours. Avoid application of Reward Landscape and Aquatic Herbicide to desirable plants.

Reward Landscape and Aquatic Herbicide is a contact/desiccant herbicide; it is essential to obtain complete coverage of the target weeds to get good control. Improper application technique and/or application to stressed weeds may result in unacceptable weed control. For best results, apply to actively growing, young weeds.

Difficult weeds (such as perennial or deeply-rooted weeds) can often be controlled by tank mixing Reward Landscape and Aquatic Herbicide with other systemic-type herbicides. Refer to other product labels for specific application directions.

For residual weed control, tank mix Reward Landscape and Aquatic Herbicide with a pre-emergent herbicide labeled for the intended use site. When mixing Reward Landscape and Aquatic Herbicide with another herbicide, it is recommended to mix just a small amount first to determine if the mixture is physically compatible before proceeding with larger volumes.

Syngenta has not tested all possible tank mixtures with other herbicides for compatibility, efficacy or other adverse effects. Before mixing with other herbicides Syngenta recommends you first consult your state experimental station, state university or extension agent.

Grounds maintenance weed control: Reward Landscape and Aquatic Herbicide can be used as a spot or broadcast spray to control weeds in public, commercial and residential landscapes, including landscape beds, lawns, golf courses and roadsides. Reward Landscape and Aquatic Herbicide can also be used for weed control around the edges and nonflooded portions of ponds, lakes and ditches.

Trim and edge weed control: Reward Landscape and Aquatic Herbicide can be used to eliminate undesired grass and broadleaf plant growth in a narrow band along driveways, walkways, patios, cart paths, fence lines, and around trees, ornamental gardens, buildings, other structures, and beneath noncommercial greenhouse benches. Vegetation control with Reward Landscape and Aquatic Herbicide is limited to the spray application width. Do not exceed the labeled rate of Reward Landscape and Aquatic Herbicide as excessive rates may result in staining of concrete-based materials.

Reward Landscape and Aquatic Herbicide, since it does not translocate systemically, can be used as an edging or pruning tool when precisely applied to select areas of grass or to undesirable growth on desirable ornamental bedding plants, ground covers, etc.

Industrial weed control: Reward Landscape and Aquatic Herbicide can be used as a spot or broadcast spray either alone or in combination with other herbicides as a fast burndown or control weeds in rights-of-ways, railroad beds/yards, highways, roads, dividers and medians, parking lots, pipelines, pumping stations, public utility lines, transformer stations and substations, electric utilities, storage yards, and other noncrop areas.

Spot spray: 1-2 qts. of Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 100 gals. Water, or 0.75 oz. (22 mls) Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 1 gal. of water.

Broadcast: 1-2 pts. Reward Landscape and Aquatic Herbicide in a minimum of 15 gals. of water per acre. Add the labeled rate of 75% or greater nonionic surfactant per 100 gals. spray mixture. Use an adequate spray volume to insure good coverage. Greater water volumes are necessary if the target plants are tall and/or dense. It is recommended that 60 gals. or greater water volume be used to obtain good coverage of dense weeds.

Turf Renovation (All Turf Areas Except Commercial Sod Farms)

To desiccate golf course turf and other turf areas prior to renovation, apply 1-2 pts. of Reward Landscape and Aquatic Herbicide per acre plus the labeled rate of a 75% or greater nonionic surfactant in 20-100 gals. of water (4 teaspoons of Reward Landscape and Aquatic Herbicide plus the labeled rate of a 75% or greater nonionic surfactant per 1 gal. of water) using ground spray equipment. Apply for full coverage and thorough contact with the turfgrass. Apply only when the turf is dry, free from dew and incidental moisture. For enhanced turf desiccation, especially in the case of thick turfgrass, water volumes should approach 100 gals. of water per acre.

For **suppression** of regrowth and quick desiccation of treated turfgrass, Reward Landscape and Aquatic Herbicide may be mixed with other systemic nonselective or systemic postemergence grassy weed herbicides. Refer to other product labels for specific application directions and restrictions.

Avoid spray contact with, or spray drift to, foliage of ornamental plants or food crops.

Do not graze livestock on treated turf or feed treated thatch to livestock.

Dormant Established Turfgrass (Bermudagrass, Zoysiagrass), Nonfood or Feed Crop

For control of emerged annual broadleaf and grass weeds, including Little Barley*, Annual Bluegrass, Bromes including Rescuegrass, Sixweeks fescue, Henbit, Buttercup, and Carolina Geranium in established dormant bermudagrass lawns, parks, golf courses, etc.

Apply 1-2 pts. Reward Landscape and Aquatic Herbicide per acre in 20-100 gals. of spray mix by ground as a broadcast application. Add the labeled rate of a 75% or greater nonionic surfactant per 100 gals. of spray mixture.

Bermudagrass must be dormant at application. Application to actively growing bermudagrass may cause delay or permanent injury. Users in the extreme Southern areas should be attentive to the extent of dormancy at the time of application.

*For control of Little Barley, apply Reward Landscape and Aquatic Herbicide prior to the mid-boot stage.

Aquatic Use Directions

New York – Not for Sale or Use in New York State without Supplemental Special Local Needs Labeling.

Necessary approval and/or permits should be obtained prior to application if required. Consult the responsible State Agencies (i.e., Fish and Game Agencies or Department of Natural Resources). Treatment of dense weed areas may result in oxygen loss from decomposition of dead weeds. This loss of oxygen may cause fish suffocation. Therefore, treat only 1/3-1/2 of the water body area at one time and wait 14 days between treatments.

For application only to **still water** (i.e. ponds, lakes, and drainage ditches) where there is minimal or no outflow to public waters.

and/or

For applications to **public waters** in ponds, lakes, reservoirs, marshes, bayous, drainage ditches, canals, streams, rivers, and other slow-moving or quiescent bodies of water for control of aquatic weeds. For use by:

- Corps of Engineers; or
- Federal or State Public Agencies (i.e., Water Management District personnel, municipal officials); or
- Applicators and/or Licensees (certified for aquatic pest control) that are authorized by the State or Local government.

Treated water may be used according to the following table or until such time as an approved assay (example: PAM II Spectromatic Method) shows that the water does not contain more than the designated maximum contaminant level goal (MCLG) of 0.02 mg./l. (ppm) of diquat dibromide (calculated as the cation):

Water Use Restrictions Following Applications With Reward Landscape And Aquatic Herbicide (Days)

Application Rate	Drinking	Fishing and Swimming	Livestock Consumption	Spray Tank Applications** and Irrigation to Turf and Ornamentals	Spray Tank Applications** and Irrigation to Food Crops
2 gals./surface acre	3 days	0	1 day	3 days	5 days
1 gal./surface acre	2 days	0	1 day	2 days	5 days
0.75 gal./surface acre	2 days	0	1 day	2 days	5 days
0.50 gal./surface acre	1 day	0	1 day	1 day	5 days
Spot Spray* (< 0.5 gal./surface acre)	1 day	0	1 day	1 day	5 days

*Rates refer to total surface area.

**For preparing agricultural sprays for food crops, turf or ornamentals (to prevent phytotoxicity), do not use water treated with Reward Landscape and Aquatic Herbicide before the specified time period.

When the contents of more than one spray tank is necessary to complete a single aquatic application, no water holding restrictions apply between the consecutive spray tanks.

No applications are to be made in areas where commercial processing of fish, resulting in the production of fish protein concentrate or fish meal, is practiced. Before application, coordination and approval of local and/or State authorities must be obtained.

Apply Reward Landscape and Aquatic Herbicide in Accordance With the Following Table

Weed Species	Subsurface or Bottom Placement Gals./Surface Acre*	Surface Gals./Surface Acre*
Bladderwort (*Utricularia* spp.)	1-2	2
Coontail (*Ceratophyllum demersum*)	2	2
Elodea (*Elodea* spp.)	2	2
Naiad (*Najas* spp.)	1-2	2
Pondweeds[1] (*Potamogeton* spp.)	2	2
Watermilfoils (*Myriophyllum* spp.)	1-2	2
Hydrilla (*Hydrilla verticillata*)	2	2
Waterlettuce[2] (*Pistia Stratiotes*)	NA	0.5 - 0.75
Waterhyacinth[2] (*Eichhornia crassipes*)	NA	0.5 - 0.75
Pennywort[3] (*Hydrocotyle* spp.)	NA	0.5 - 0.75
Frog's Bit[6] (*Limnobium spongia*)	NA	0.5 - 0.75
Salvinia[2] (*Salvinia* spp.)	NA	0.5 - 0.75
Duckweed[4] (*Lemna* spp.)	NA	1
Cattails[3] (*Typha* spp.)	NA	1-2
Algae[5] (*Spirogyra* spp. & *Pithophora* spp.)	1-2	2

*For water less than or equal to 2 ft. in average depth of treatment area, use a maximum of 1 gal. Reward Landscape and Aquatic Herbicide per surface acre. Lowest rates should be used in shallow areas where the water depth is considerably less than the average depth of the entire treatment area, for example, shallow shoreline areas. At water temperatures below 50°-60°F, efficacy and immediacy of results may be reduced.

[1]Reward Landscape and Aquatic Herbicide controls *Potamogetan* species except Richardson's pondweed (*P. richardsonii*). For control of *P. robbinsii,* applications must be made when the plants are in the early stages of growth such as in Spring and early Summer.

[2]For salvinia, waterlettuce, and water hyacinth, use the labeled rate of Reward Landscape and Aquatic Herbicide in 75-200 gals. water plus the labeled rate of a 75% or greater nonionic surfactant per acre for surface sprays, and for aerial application for waterlettuce and water hyacinth control, apply the labeled rate of Reward Landscape and Aquatic Herbicide in 10-24 gals. of water plus the labeled rate of a 75% or greater nonionic surfactant per acre.

[3]For Pennywort and cattail control, apply in 50-150 gals. of water plus the labeled rate of a 75% or greater nonionic surfactant per acre for full coverage and thorough weed contact. Repeat treatments may be necessary to control regrowth. For best results, apply before flowering (cattail).

[4]For duckweed control, apply as an overall spray in 50-150 gals. of water plus the labeled rate of a 75% or greater nonionic surfactant per acre. Retreatment may be necessary for plants missed in previous applications and regrowth.
[5]For suppression of certain filamentous algae species including *Spirogyra* and *Pithophora*, apply according to the submersed use directions.
[6]Not for use in California.

Application: In mixed weed populations, use the high rate of application as indicated by weeds present.

Subsurface Applications: Where the submersed weed growth, especially Hydrilla, has reached the water surface, apply either in a water carrier or an invert emulsion through boom trailing hoses carrying nozzle tips to apply the dilute spray below the water surface to insure adequate coverage.

Bottom Placement: Where the submersed weeds, especially Hydrilla, Bladderwort, and Coontail growth, have reached the water surface or where water is slowly moving through the submersed weed growth that has reached the water surface, especially Hydrilla, Bladderwort, and Coontail, control may be enhanced when applied in an invert emulsion carrier injecting diluted Reward Landscape and Aquatic Herbicide near the bottom with weighted hoses. The addition of a copper-based algaecide will improve control. Where algae are present along with the submersed weeds, pretreatment with copper-based algaecide at recommended rates is advised for best results.

Surface Application: For submerged aquatic weeds, apply Reward Landscape and Aquatic Herbicide either as concentrate slowly poured directly from the container in strips or as a spray in sufficient carrier. Applications should be made to ensure complete coverage of the weed areas. In mixed weed populations, use the high rate of application as indicated by weeds present.

If posting is required by your state or tribe – consult the agency responsible for pesticide regulations for specific details.

General Recommendations for "Posting Notification"*

- **Flowing water:** "post" the restricted area (within/at 1,600 ft. downstream of treatment) for the duration of the water use restriction.
- **Standing water:** "post" the restricted area (within/at 1/4 mile of treatment) for the duration of the water use restriction.
- **No "posting" is necessary where water use is greater than 1,600 feet downstream of treated water in flowing water bodies or where water use is greater than 1/4 mile from treated water in standing water bodies.**

*"Posting" should be removed at the end of the restriction period.

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For non-emergency (e.g., current product information), call
Syngenta Crop Protection at 1-800-334-9481.

Product of United Kingdom
Formulated in the USA

Syngenta Crop Protection, Inc.
Greensboro, North Carolina 27409
www.syngenta-us.com
SCP 1091A-L2 0901
154290

REWARD®

Landscape and Aquatic Herbicide

TO PREVENT ACCIDENTAL POISONING, NEVER PUT INTO FOOD, DRINK, OR OTHER CONTAINERS, AND USE STRICTLY IN ACCORDANCE WITH ENTIRE LABEL.

DO NOT USE THIS PRODUCT FOR REFORMULATION.

Active Ingredient:	
Diquat dibromide [6,7-dihydrodipyrido (1,2-a:2',1'-c)pyrazinediium dibromide]	37.3%
Other Ingredients:	62.7%
Total:	100.0%

Contains 2 lbs. diquat cation per gal. as 3.73 lbs. salt per gal.

See directions for use in attached booklet.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

EPA Reg. No. 100-1091
EPA Est. 100-TX-001

Product of United Kingdom
Formulated in the USA

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Syngenta Crop Protection, Inc.
Greensboro, North Carolina 27409
www.syngenta-us.com

SCP 1091A-L2 0901
154290

2.5 gallons
U.S. Standard Measure

KEEP OUT OF REACH OF CHILDREN.

WARNING/AVISO

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.)

Precautionary Statements

Hazards to Humans and Domestic Animals

May be fatal if absorbed through skin. Harmful if swallowed or inhaled. Causes substantial, but temporary, eye injury. Causes skin irritation. Contact with irritated skin, or a cut, or repeated contact with intact skin may result in poisoning. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor or spray mist. Do not feed forage from treated crops to livestock. Keep livestock and pets out of treated fields and crop areas.

FIRST AID

If swallowed: Call a Poison Control Center or doctor immediately for treatment advice. Immediately give water or milk to drink and induce vomiting by inserting finger in throat. Do not induce vomiting or give anything by mouth to an unconscious person. Take person and product container to the nearest hospital or physician fast. PROMPT TREATMENT IS ESSENTIAL TO COUNTERACT POISONING and should be initiated before signs and symptoms of injury appear.

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.

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 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.

NOTE TO PHYSICIAN: CALL SYNGENTA MEDICAL EMERGENCY ASSISTANCE 1-800-888-8372 at any hour to obtain toxicology information and a diquat analysis. To be effective, treatment for diquat poisoning must begin IMMEDIATELY. Treatment consists of binding diquat in the gut with suspensions of activated charcoal or bentonite clay, administration of cathartics to enhance elimination, and removal of diquat from the blood by charcoal hemoperfusion or continuous hemodialysis.

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

HOT LINE NUMBER: For 24-Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident), Call **1-800-888-8372**

Environmental Hazards (Terrestrial and Aquatic Uses)

This pesticide is toxic to aquatic invertebrates. For **Terrestrial Uses,** do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters. For **Aquatic Uses,** do not apply directly to water except as specified on this label. Treatment of dense weed areas may result in oxygen loss from decomposition of dead weeds. This loss of oxygen may cause fish suffocation. Therefore, treat only $^{1}/_{3}$-$^{1}/_{2}$ of the water body area at one time, especially if dense areas of weeds and/or algae exist, and wait 14 days between treatments.

Necessary approval and/or permits should be obtained prior to application if required. Consult the responsible State Agencies (i.e., Fish and Game Agencies or Department of Natural Resources) before making applications to public waters.

STORAGE AND DISPOSAL

Prohibitions

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

Container Disposal

Do not reuse container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER!

syngenta

AQUATHOL® K

AQUATIC HERBICIDE

ACTIVE INGREDIENT:	
Dipotassium salt of endothall*	40.3%
OTHER INGREDIENTS:	59.7%
TOTAL	100.0%

*7-oxabicyclo [2.2.1]heptane-2,3-dicarboxylic acid equivalent 28.6%
Contains per gallon 4.23 lb. dipotassium endothall

KEEP OUT OF REACH OF CHILDREN

DANGER

FIRST AID:

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.
- Call a poison control center or doctor for treatment advice.

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

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 by a 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 with you when calling a poison control center or doctor, or going for treatment. You may also contact (303) 623-5716 for emergency medical treatment information.

NOTE TO PHYSICIAN: Measures against circulatory shock, respiratory depression, and convulsion may be needed.

EPA Registration No. 4581-204 EPA Establishment No. 62171-MS-003

Net Contents _____

Cerexagri, Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406
1 800-438-6071 • www.cerexagri.com

cerexagri

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)

DANGER

CORROSIVE. CAUSES IRREVERSIBLE EYE DAMAGE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. AVOID BREATHING VAPORS OR SPRAY MIST.

Applicators and other handlers must wear:
- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks
- Protective eyewear

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 protective clothing and equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

Avoid contact with or drift to other crops or plants as injury may result. Wash out spray equipment with water after each operation.

Do not use fish from treated areas for food or feed within 3 days of treatment. Do not use water from treated areas for watering livestock, for preparing agricultural sprays for food crops, for irrigation or for domestic purposes within the following periods:

Up to 0.5 ppm dipotassium salt — 7 days after application

Up to 4.25 ppm dipotassium salt — 14 days after application

Up to 5.0 ppm dipotassium salt — 25 days after application

Treated water can be used for sprinkling bent grass immediately.

STORAGE AND DISPOSAL

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

Storage Instructions: Store in the original container. Do not store in a manner where cross-contamination with other pesticides, fertilizers, food or feed could occur. Storage at temperatures below 32°F may result in the product freezing or crystallizing. Should this occur the product must be warmed to 50°F or higher and thoroughly agitated. In the event of a spillage during handling or storage, absorb with sand or other inert material and dispose of absorbent in accordance with the Pesticide Disposal Instructions listed below.

Pesticide Disposal Instructions: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, 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.

Container Disposal Instructions: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

EMERGENCY TELEPHONE NUMBERS:

CHEMTREC: (800) 424-9300

MEDICAL: (303) 623-5716 Rocky Mountain Poison Control Center

WARRANTY AND DISCLAIMER

Cerexagri, Inc. warrants that this material conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions for Use, subject to the risks referred to therein. CEREXAGRI MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY. IN NO CASE SHALL CEREXAGRI OR SELLER BE LIABLE FOR CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, BUSINESS REPUTATION, OR CUSTOMERS; LABOR COST; OR OTHER EXPENSES INCURRED IN PLANTING OR HARVESTING.

Cerexagri and seller offer this product and the buyer and user accept it subject to the foregoing conditions of sale and warranty which may be varied only by agreement in writing signed by a duly authorized representative of Cerexagri.

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5-C102S-04 H0 (4/03) Made and Printed in U.S.A.

GENERAL INFORMATION

AQUATHOL K is a liquid concentrate soluble in water which is effective against a broad range of aquatic plants with a margin of safety to fish.

Dosage rates indicated for the application of AQUATHOL K are measured in "Parts Per Million" (ppm) of dipotassium endothall. Only 0.5 to 5.0 ppm are generally required for aquatic weed control, whereas some fish species are tolerant to approximately 100 ppm or over.

DIRECTIONS FOR USE

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

HOW TO APPLY:

AQUATHOL K is a contact herbicide; consequently, do not apply before weeds are present. Application as early as possible after weeds appear and are actively growing is recommended for best results.

If an entire pond is treated at one time, or if the dissolved oxygen level is low at time of application, decay of weeds may remove enough oxygen from the water, causing fish to suffocate. Water containing very heavy vegetation should be treated in sections to prevent suffocation of fish. Sections should be treated 5-7 days apart. Carefully measure size and depth of area to be treated and determine amount of AQUATHOL K to apply from chart.

AQUATHOL K should be sprayed on the water or injected below the water surface and should be distributed as evenly as possible. It may be applied as a concentrate or diluted with water depending on the equipment. Some dilution will give better distribution. For best results apply when water is quiescent and/or flows are minimal.

In instances where the weed(s) to be controlled is an exposed surface problem (i.e., some of the broad-leaved pond weeds) coverage is important. For best results apply the concentrate or with the least amount of water compatible with the application equipment.

Necessary approval and/or permits should be obtained in states where required.

AQUATIC WEEDS CONTROLLED AND DOSAGE RATE CHARTS

AQUATHOL K is recommended for the control of the following aquatic weeds in irrigation and drainage canals, ponds and lakes at the rates indicated. Since the active ingredient is water soluble and tends to diffuse from the treated area, select the dosage rate applicable to the area to be treated. Use the lower rate in each range of rates where the growth is young and growing and/or where the weed stand is not heavy. Marginal treatments of large bodies of water require higher rates as indicated.

	RATES			
Aquatic Weed	Entire Pond/Lake or Large Area Treatment	Gallons per Acre Ft.	Spot or Lake Margin Treatment	Gallons per Acre Ft.
Bur Reed, Sparganium spp.	3.0-4.0 ppm	1.9-2.6 gal.	4.0-5.0 ppm	2.6-3.2 gal.
Coontail, Ceratophyllum spp.	1.0-2.0 ppm	0.6-1.3 gal.	2.0-3.0 ppm	1.3-1.9 gal.
Horned Pondweed, Zannichellia palustris	1.0-2.0 ppm	0.6-1.3 gal.	2.0-3.0 ppm	1.3-1.9 gal.
Hydrilla, Hydrilla verticillata	2.0-3.0 ppm	1.3-1.9 gal.	3.0-4.0 ppm	1.9-2.6 gal.
Hygrophila, Hygrophila polysperma	4.0-5.0 ppm	2.6-3.2 gal.	5.0 ppm	3.2 gal.
Milfoil, Myriophyllum spp.	2.0-3.0 ppm	1.3-1.9 gal.	3.0-4.0 ppm	1.9-2.6 gal.
Naiad, Najas spp.	1.0-3.0 ppm	0.6-1.9 gal.	2.0-4.0 ppm	1.3-2.6 gal.
Pondweed, Potamogeton spp.	0.5-3.0 ppm	0.3-1.9 gal.	1.5-4.0 ppm	1.0-2.6 gal.
Including:				
American, P. nodosus	2.0-3.0 ppm	1.3-1.9 gal.	3.0-4.0 ppm	1.9-2.6 gal.
Largeleaf (Bass Weed), P. amplifolius	2.0-3.0 ppm	1.3-1.9 gal.	3.0-4.0 ppm	1.9-2.6 gal.
Curlyleaf, P. crispus	0.5-1.5 ppm	0.3-1.0 gal.	1.5-3.0 ppm	1.0-1.9 gal.
Flatstem, P. zosterformis	2.0-3.0 ppm	1.3-1.9 gal.	3.0-4.0 ppm	1.9-2.6 gal.
Floating-leaf, P. natans	1.0-2.0 ppm	0.6-1.3 gal.	2.0-3.0 ppm	1.3-1.9 gal.
Illinois, P. Illinoensis	1.5-2.5 ppm	1.0 1.6 gal.	2.5-3.5 ppm	1.6-2.3 gal.
Narrowleaf, P. pusillus	1.0-2.0 ppm	0.6-1.3 gal.	2.0-3.0 ppm	1.3-1.9 gal.
Threadleaf, P. filiformis	2.0-3.0 ppm	1.3-1.9 gal.	3.0-4.0 ppm	1.9-2.6 gal.
Sago, P. pectinatus	1.0-2.0 ppm	0.6-1.3 gal.	2.0-3.0 ppm	1.3-1.9 gal.
Variable Leaf, P. diversifolius	1.0-2.0 ppm	0.6-1.3 gal.	2.0-3.0 ppm	1.3-1.9 gal.
Parrot Feather, Myriophyllum aquaticum	2.0-3.0 ppm	1.3-1.9 gal.	3.0-4.0 ppm	1.9-2.6 gal.
Water Stargrass, Heteranthera spp.	2.0-3.0 ppm	1.3-1.9 gal.	3.0-4.0 ppm	1.9-2.6 gal.

RATE OF APPLICATION — LAKES AND PONDS

The following chart indicates the total quantity of material to be applied.

APPROXIMATE GALLONS OF AQUATHOL K FOR ONE ACRE (208' x 208') TREATMENT

	DOSAGE IN GALLONS FOR VARIOUS CONCENTRATIONS IN PPM						
DEPTH	0.5 ppm	1.0 ppm	1.5 ppm	2.0 ppm	3.0 ppm	4.0 ppm	5.0 ppm
1 ft.	0.3	0.6	1.0	1.3	1.9	2.6	3.2
2 ft.	0.6	1.3	1.9	2.6	3.8	5.1	6.4
4 ft.	1.3	2.6	3.8	5.1	7.7	10.2	12.8
6 ft.	1.9	3.8	5.8	7.6	11.5	15.3	19.2

RATE OF APPLICATION — IRRIGATION AND DRAINAGE CANALS**

The following indicates the total quantity of material to be applied.

GALLONS OF AQUATHOL K REQUIRED TO TREAT 1 MILE OF CANAL 1 FOOT DEEP*

	WIDTH OF CANAL IN FEET			
PPM	5	10	15	20
1.0 ppm	0.4	0.75	1.2	1.5
2.0 ppm	0.75	1.5	2.3	3.0
3.0 ppm	1.2	2.3	3.5	4.5
4.0 ppm	1.5	3.0	4.5	6.0
5.0 ppm	2.0	3.8	5.7	7.5

The minimum contact time with weeds for optimum results should be 2 hours.

*For deeper water, adjust rate accordingly.

** Not for this use in California.

Specimen Label

SePRO

Sonar® A.S.

Herbicide

A herbicide for management of aquatic vegetation in fresh water ponds, lakes, reservoirs, potable water sources, drainage canals and irrigation canals.

Active Ingredient:

fluridone: 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1*H*)-pyridinone	41.7%
Inert Ingredients	58.3%
Total	100.0%

Contains 4 pounds active ingredient per gallon.

EPA Registration No. 67690-4
EPA Est. 37429-GA-01
FPL 052102

Precautionary Statements

Hazards to Humans and Domestic Animals

Keep Out of Reach of Children

CAUTION PRECAUCION

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

Harmful If Swallowed, Absorbed Through Skin, Or If Inhaled

Avoid breathing of spray mist or contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

*Trademark of SePRO Corporation
SePRO Corp. • Carmel, IN 46032 U.S.A.

First Aid	
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 poison control center or doctor for treatment advice.
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.
If swallowed	• Call a poison control center or doctor 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.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment	

Environmental Hazards

Follow use directions carefully so as to minimize adverse effects on nontarget organisms. In order to avoid impact on threatened or endangered aquatic plant or animal species, users must consult their State Fish and Game Agency or the U.S. Fish and Wildlife Service before making applications.

Do not contaminate water when disposing of equipment washwaters. Trees and shrubs growing in water treated with Sonar A.S. herbicide may occasionally develop chlorosis. Do not apply in tidewater/brackish water.

Lowest rates should be used in shallow areas where the water depth is considerably less than the average depth of the entire treatment site, for example, shallow shoreline areas.

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.

Sonar® A.S. Herbicide

Shake well before using.

Storage and Disposal

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

Storage: Store in original container only. Do not store near feed or foodstuffs. In case of leak or spill, use absorbent materials to contain liquids and dispose as waste.

Pesticide Disposal: Wastes resulting from use of this product may be used according to label directions or disposed of at an approved waste disposal facility.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

General Information

Sonar A.S. herbicide is a selective systemic aquatic herbicide for management of aquatic vegetation in fresh water ponds, lakes, reservoirs, drainage canals and irrigation canals. Sonar A.S. is absorbed from water by plant shoots and from hydrosoil by the roots of aquatic vascular plants. It is important to maintain the recommended concentration of Sonar A.S. in contact with the target plants for a minimum of 45 days. Rapid water movement or any condition which results in rapid dilution of Sonar A.S. in treated water will reduce its effectiveness. In susceptible plants, Sonar A.S. inhibits the formation of carotene. In the absence of carotene, chlorophyll is rapidly degraded by sunlight. Herbicidal symptoms of Sonar A.S. appear in seven to ten days and appear as white (chlorotic) or pink growing points. Under optimum conditions, 30 to 90 days are required before the desired level of aquatic plant management is achieved with Sonar A.S. Species susceptibility to Sonar A.S. may vary depending on time of year, stage of growth, and water movement. For best results, apply Sonar A.S. prior to initiation of weed growth or when weeds begin active growth.

Application to mature target plants may require higher application rates and may take longer to control.

Sonar A.S. is not corrosive to application equipment.

The label provides recommendations on the use of a chemical analysis for the active ingredient. SePRO Corporation recommends the use of an Enzyme-Linked Immunoassay (ELISA Test) for the determination of the active ingredient concentration in the water. Contact SePRO Corporation for the utilization of this test, known as FasTEST, for the incorporation of this analysis in your treatment program. Other proven chemical analysis for the active ingredient may also be used. The chemical analysis, FasTEST, is referenced in this label as the preferred method for the rapid determination of the concentration of the active ingredient in the water.

Application rates are provided in ounces or quarts of Sonar A.S. to achieve a desired concentration of the active ingredient in parts per billion (ppb). The maximum application rate or sum of all application rates is 90 ppb in ponds and 150 ppb in lakes and reservoirs per annual growth cycle. This maximum concentration is the amount of product calculated as the target application rate, NOT determined by testing the residues of the active ingredient in the treated water.

General Use Precautions

- **Obtain Required Permits:** Consult with appropriate state or local water authorities before applying this product. Permits may be required by state or local public agencies.
- **Chemigation:** Do not apply Sonar A.S. through any type of irrigation system.
- **Hydroponic Farming:** Do not use Sonar A.S. treated water for hydroponic farming.
- **Greenhouse and Nursery Plants:** Do not use Sonar A.S. treated water for irrigating greenhouse or nursery plants. Use of an approved assay should confirm that residues are <1 ppb.
- **WATER USE RESTRICTIONS FOLLOWING APPLICATIONS WITH SONAR A.S. (DAYS)**

Application Rate	Drinking†	Fishing	Swimming	Livestock/Pet Consumption	Irrigation††
Maximum Rate (150 ppb) or less	0	0	0	0	See irrigation instructions below

† Note below, under Potable Water Intakes, the information for application of Sonar A.S. within 1/4 mile (1320 feet) of a functioning potable water intake.

†† Note below, under Irrigation, specific time frames or fluridone residues that provide the widest safety margin for irrigating with fluridone treated water.

- **Potable Water Intakes:** In lakes and reservoirs or other sources of potable water, DO NOT APPLY Sonar A.S. at application rates greater than 20 ppb within one-fourth mile (1320 feet) of any functioning potable water intake. At application rates of 6-20 ppb, Sonar A.S. MAY BE APPLIED where functioning potable water intakes are present. **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.**

- **Irrigation:** Irrigation from a Sonar A.S. treated area may result in injury to the irrigated vegetation. SePRO Corporation recommends following the precautions and informing those who irrigate from areas treated with Sonar A.S. of the irrigation time frames or water assay requirements presented in the table below. These time frames and assay recommendations are suggestions which should be followed to reduce the potential for injury to vegetation irrigated with water treated with Sonar A.S. Greater potential for crop injury occurs where Sonar A.S. treated water is applied to crops grown on low organic and sandy soils.

Application Site	Days After Application		
	Established Tree Crops	Established Row Crops Turf/Plants	Newly Seeded Crops/Seedbeds or Areas to be Planted Including /Overseeded Golf Course Greens
†Ponds and Static Canals	7	30	Assay required
Canals	7	14	Assay required
††Lakes and Reservoirs	7	14	Assay required

†For purposes of Sonar A.S. labeling, a pond is defined as a body of water 10 acres or less in size. A lake or reservoir is greater than 10 acres.

††In lakes and reservoirs where one-half or greater of the body of water is treated, use the pond and static canal irrigation precautions.

Where the use of Sonar A.S. treated water is desired for irrigating crops prior to the time frames established above, the use of FasTEST assay is recommended to measure the concentration in the treated water. Where FasTEST has determined that the concentrations are less than 10 parts per billion, there are no irrigation precautions for irrigating established tree crops, established row crops or turf. For tobacco, tomatoes, peppers or other plants within the Solanaceae Family and newly seeded crops or newly seeded grasses such as overseeded golf course greens, do not use Sonar A.S. treated water if measured fluridone concentrations are greater than 5 ppb. Furthermore, when rotating crops, do not plant members of the Solanceae family in land that has been previously irrigated with fluridone concentrations in excess of 5 ppb. It is recommended that an aquatic specialist be consulted prior to commencing irrigation of these sites.

Plant Control Information

Sonar A.S. selectivity is dependent upon dosage, time of year, stage of growth, method of application and water movement. The following categories, controlled, partially controlled, and not controlled are provided to describe expected efficacy under ideal treatment conditions using higher to maximum label rates. Use of lower rates will increase selectivity of some species listed as controlled or partially controlled. Additional aquatic plants may be controlled, partially controlled, or tolerant to Sonar A.S. Consult an aquatic specialist prior to application of Sonar A.S. to determine a plant's susceptibility to Sonar A.S.

Vascular Aquatic Plants Controlled by Sonar A.S.

Floating Plants:
common duckweed (*Lemna minor*)

Emersed Plants:
spatterdock (*Nuphar luteum*)
water-lily (*Nymphaea* spp.)

Submersed Plants:
bladderwort (*Utricularia* spp.)
common coontail (*Ceratophyllum demersum*)
common elodea (*Elodea canadensis*)
egeria, Brazilian elodea (*Egeria densa*)
fanwort, cabomba (*Cabomba caroliniana*)
hydrilla (*Hydrilla verticillata*)
naiad (*Najas* spp.)
pondweed (*Potamogeton* spp., except Illinois pondweed)
watermilfoil (*Myriophyllum* spp., except variable-leaf milfoil)

Shoreline Grasses:
paragrass (*Urochloa mutica*)

Vascular Aquatic Plants Partially Controlled by Sonar A.S.

Floating Plants:
common watermeal (Wolffia columbiana)†

Emersed Plants:
alligatorweed (*Alternanthera philoxeroides*)
American lotus (*Nelumbo lutea*)
cattail (*Typha* spp.)
creeping waterprimrose (*Ludwigia peploides*)
parrotfeather (*Myriophyllum aquaticum*)
smartweed (*Polygonum* spp.)
spikerush (*Eleocharis* spp.)
waterpurslane (*Ludwigia palustris*)
watershield (*Brasenia schreberi*)

Submersed Plants:
Illinois pondweed (*Potamogeton illinoensis*)
limnophila (*Limnophila sessiliflora*)
tapegrass, American eelgrass (*Vallisneria americana*)
watermilfoil-variable-leaf milfoil (*Myriophyllum heterophyllum*)

Shoreline Grasses:
barnyardgrass (*Echinochloa crusgalli*)
giant cutgrass (*Zizaniopsis miliacea*)
reed canarygrass (*Philaris arundinaceae*)
southern watergrass (*Hydrochloa caroliniensis*)
torpedograss (*Panicum repens*)
†Partial control only with Sonar A.S. applied at the maximum labeled rate.

Vascular Aquatic Plants Not Controlled by Sonar A.S.

Floating Plants:
waterlettuce (*Pistia stratiotes*)

Emersed Plants:
American frogbit (*Limnobium spongia*)
arrowhead (*Sagittaria* spp.)
bacopa (*Bacopa* spp.)
big floatingheart, banana lily (*Nymphoides aquatica*)
bulrush (*Scirpus* spp.)
floating waterhyacinth (*Eichhornia crassipes*)
pickerelweed, lanceleaf (*Pontederia* spp.)
rush (*Juncus* spp.)
water pennywort (*Hydrocotyle umbellata*)

Shoreline Grasses:
maidencane (*Panicum hemitomon*)

Note: algae (chara, nitella, and filamentous species are not controlled by Sonar A.S.)

Mixing and Application Directions

The aquatic plants present in the treatment site should be identified prior to application to determine their susceptibility to Sonar A.S. It is important to determine the area (acres) to be treated and the average depth in order to select the proper application rate. Do not exceed the maximum labeled rate for a given treatment site per annual growth cycle.

Shake Sonar A.S. well before using. Add the recommended amount of Sonar A.S. to water in the spray tank during the filling operation. Agitate while filling and during spraying. Surface or subsurface application of the spray can be made with conventional spray equipment. Sonar A.S. can also be applied near the surface of the hydrosoil using weighted trailing hoses. A spray volume of 5 to 100 gallons per acre may be used. Sonar A.S. may also be diluted with water and the concentrated mix metered into the pumping system.

Tank Mix Recommendations

Sonar A.S. may be tank mixed with other aquatic herbicides and algaecides to enhance efficacy and plant selectivity. Refer to the companion herbicide or algaecide label for use directions, precautions, and restrictions on use.

Application to Ponds

Sonar A.S. may be applied to the entire surface area of a pond. For single applications, rates may be selected to provide 45 to 90 ppb to the treated water. Use the higher rate within the rate range where there is a dense weed mass, when treating more difficult to control species, and for ponds less than 5 acres in size with an average depth less than 4 feet. Application rates necessary to obtain these concentrations are shown in the following table. For additional application rate calculations, refer to page 6—Application Rate Calculation-Ponds, Lakes and Reservoirs. Split or multiple applications are recommended where dilution of treated water is anticipated; however, the sum of all applications must not exceed a total of 90 ppb per annual growth cycle.

Average Water Depth of Treatment Site (feet)	Quarts of Sonar A.S. per Treated Surface Acre to Achieve:			Fluid Ounces of Sonar A.S. Per Treated Surface Acre to Achieve:		
	45 ppb	to	90 ppb	45 ppb	to	90 ppb
1	0.12		0.24	3.8		7.7
2	0.24		0.49	7.7		15.7
3	0.37		0.73	11.8		23.4
4	0.49		0.98	15.7		31.4
5	0.61		1.22	19.5		39.0
6	0.73		1.46	23.4		46.7
7	0.85		1.70	27.2		54.4
8	0.98		1.95	31.4		62.4
9	1.10		2.19	35.2		70.1
10	1.22		2.44	39.0		78.1

Application to Lakes and Reservoirs

The following treatments are recommended for treating both whole lakes or reservoirs and partial areas of lakes or reservoirs (bays, etc.). For best results in treating partial lakes and reservoirs, Sonar A.S. treatment areas should be a minimum of 5 acres in size. Treatment of areas smaller than 5 acres or treatment of narrow strips such as boat lanes or shorelines may not produce satisfactory results due to dilution by untreated water. Rate ranges are provided as a guide to include a wide range of environmental factors, such as, target species, plant susceptibility, selectivity and other aquatic plant management objectives. Application rates and methods should be selected to meet the specific lake/reservoir aquatic plant management goals.

A. Whole Lake or Reservoir Treatments (Limited or No Water Discharge)

1. Single Application to Whole Lakes or Reservoirs

Where single applications to whole lakes or reservoirs are desired, apply Sonar A.S. at an application rate of 10 to 90 ppb. Application rates necessary to obtain these concentrations in treated water are shown in the following table. For additional rate calculations, refer to page 6—Application Rate Calculation-Ponds, Lakes, and Reservoirs. Choose an application rate to meet the aquatic plant management objective. **Where greater plant selectivity is desired such as when controlling Eurasian watermilfoil and curlyleaf pondweed, choose an application rate lower in the rate range.** For other plant species, SePRO recommends contacting an aquatic specialist in determining when to choose application rates lower in the rate range to meet specific plant management goals. Use the higher rate within the rate range where there is a dense weed mass or when treating more difficult to control plant species. Retreatments may be required to control more difficult to control species or in the event of a heavy rainfall event where dilution of the treatment concentration has occurred. In these cases, a second application or more may be required; however, the sum of all applications cannot exceed 150 ppb per annual growth cycle. Refer to the following Section (No. 2) Split or Multiple Applications for guidelines and maximum rate allowed.

Single Application of Sonar A.S.

Average Water Depth of Treatment Site (feet)	Quarts of Sonar A.S. per Treated Surface Acre to Achieve:			Fluid Ounces of Sonar A.S. Per Treated Surface Acre to Achieve:		
	10 ppb	to	90 ppb	10 ppb	to	90 ppb
1	0.03		0.24	1.0		7.7
2	0.05		0.49	1.6		15.7
3	0.08		0.73	2.6		23.4
4	0.11		0.98	3.2		31.4
5	0.14		1.22	4.5		39.0
6	0.16		1.46	5.1		46.7
7	0.19		1.70	6.1		54.4
8	0.22		1.95	7.0		62.4
9	0.24		2.19	7.6		70.1
10	0.27		2.44	8.6		78.1
11	0.30		2.68	9.6		86.0
12	0.32		2.93	10.2		93.8
13	0.35		3.17	11.2		101.4
14	0.38		3.42	12.1		109.4
15	0.41		3.66	13.1		117.1
16	0.43		3.90	13.8		124.8
17	0.46		4.15	14.7		132.2
18	0.49		4.39	15.7		140.5
19	0.51		4.63	16.3		148.2
20	0.54		4.88	17.3		156.2

2. Split or Multiple Applications to Whole Lakes or Reservoirs

To meet certain plant management objectives, split or multiple applications may be desired in making whole lake treatments. Split or multiple application programs are desirable when the objective is to use the minimum effective dose and, through the use of a water analysis, e.g. FasTEST, add additional Sonar A.S. to maintain this lower dose for the sufficient time to ensure efficacy and enhance selectivity. Water may be treated at an initial application of 6 to 50 ppb. Additional split applications should be conducted to maintain a sufficient concentration for a minimum of 45 days or longer. **In controlling Eurasian watermilfoil and curlyleaf pondweed and where greater plant selectivity is desired, choose an application rate lower in the rate range.** For other plant species, SePRO recommends contacting an aquatic specialist in determining when to choose application rates lower in the rate range to meet specific plant management goals. When utilizing split or multiple applications of Sonar A.S., the utilization of FasTEST is strongly recommended to determine the actual concentration in the water over time. For split or multiple applications, the sum of all applications must not exceed 150 ppb per annual growth cycle.

Note: In treating lakes or reservoirs that contain functioning potable water intakes and the application requires treating within 1/4 mile of a potable water intake, no single application can exceed 20 ppb. Additionally, the sum of all applications cannot exceed 150 ppb per annual growth cycle.

B. Partial Lake or Reservoir Treatments

Where dilution of Sonar A.S. with untreated water is anticipated, such as in partial lake or reservoir treatments, split or multiple applications may be used to extend the contact time to the target plants. The application rate and use frequency of Sonar A.S. in a partial lake is highly dependent upon the treatment area. Higher application rates may be required and frequency of applications will vary depending upon the potential of untreated water diluting the Sonar A.S. concentration in the treatment area. Use higher rates where greater dilution with untreated water is anticipated.

1. Treatment Areas Greater Than 1/4 Mile from a Functioning Potable Water Intake

For single applications, apply Sonar A.S. at application rates from 30 to150 ppb. Split or multiple applications may be made; however, the sum of all applications cannot exceed 150 ppb per annual growth cycle. Split applications should be conducted to maintain a sufficient concentration in the target area for a period of 45 days or longer. The use of FasTEST is recommended to maintain the desired concentration in the target area over time.

2. Treatment Areas Within 1/4 Mile of a Functioning Potable Water Intake

In treatment areas that are within 1/4 mile of a potable water intake, no single application can exceed 20 ppb. When utilizing split or multiple applications of Sonar A.S. for sites which contain a potable water intake, FasTEST is required to determine the actual concentration in the water. Additionally, the sum of all applications cannot exceed 150 ppb per annual growth cycle.

Application Rate Calculation - Ponds, Lakes and Reservoirs

The amount of Sonar A.S. to be applied to provide the desired ppb concentration of active ingredient in treated water may be calculated as follows:

Quarts of Sonar A.S. required per treated surface acre = Average water depth of treatment site (feet) **x** Desired ppb concentration of active ingredient **x** 0.0027

For example, the quarts per acre of Sonar A.S. required to provide a concentration of 25 ppb of active ingredient in water with an average depth of 5 feet is calculated as follows:

5 **x** 25 **x** 0.0027 = 0.33 quarts per treated surface acre

When measuring quantities of Sonar A.S., quarts may be converted to fluid ounces by multiplying quarts to be measured **x** 32. For example, 0.33 quarts **x** 32 = 10.5 fluid ounces.

Note: Calculated rates should not exceed the maximum allowable rate in quarts per treated surface acre for the water depth listed in the application rate table for the site to be treated.

Application to Drainage Canals and Irrigation Canals

Static Canals:

In static drainage and irrigation canals, Sonar A.S. should be applied at the rate of 1 to 2 quarts per treated surface acre.

Moving Water Canals:

The performance of Sonar A.S. will be enhanced by restricting or reducing water flow. In slow moving bodies of water use an application technique that maintains a concentration of 15-40 ppb in the target area for a minimum of 45 days. Sonar A.S. can be applied by split or multiple broadcast applications or by metering in the product to provide a uniform concentration of the herbicide based upon the flow pattern. The use of FasTEST is recommended to maintain the desired concentration in the target area over time.

Static or Moving Water Canals Containing a Functioning Potable Water Intake

In treating a static or moving water canal which contains a functioning potable water intake, applications of Sonar A.S. greater than 20 ppb must be made more than 1/4 mile from a functioning potable water intake. Applications less than 20 ppb may be applied within 1/4 mile from a functioning potable water intake; however, if applications of Sonar A.S. are made within 1/4 mile of a functioning potable water intake, the FasTEST must utilized to demonstrate that concentrations do not exceed 150 ppb at the functioning potable water intake.

Application Rate Calculation – Moving Water Drainage and Irrigation Canals

The amount of Sonar A.S. to be applied through a metering system to provide the desired ppb concentration of active ingredient in treated water may be calculated as follows:

1. Average flow rate (feet per second) **x** average canal width (ft.) **x** average canal depth (ft.) **x** 0.9 = CFS (cubic feet per second).
2. CFS **x** 1.98 = acre feet per day (water movement)
3. Acre feet per day **x** desired ppb **x** 0.0027 = Quarts of Sonar A.S. required per day

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 temperatures, 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 use 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 above 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.

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Specimen Label

SePRO

Sonar* PR

Precision Release

Herbicide

A herbicide for management of aquatic vegetation in fresh water ponds, lakes, reservoirs, potable water sources, drainage canals, irrigation canals and rivers.

Active ingredient:
fluridone: 1-methyl-3-phenyl-5-[3-(trifluoromethyl) phenyl]-4(1*H*)-pyridinone 5.0%
Inert ingredients 95.0%
Total 100.0%
(Contains 1.5 pounds active ingredient per 30-pound container.)

EPA Reg. No. 67690-12 EPA Est. No. 39578-TX-1
FPL 091802 SPC-342142

Precautionary Statements

Hazards to Humans and Domestic Animals

Keep Out of Reach of Children

CAUTION PRECAUCION

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

Harmful if Swallowed, Absorbed Through Skin, or if Inhaled

Avoid breathing of dust or contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

In case of emergency endangering health or the environment involving this product, call INFOTRAC at 1-800-535-5053.

Statement of Practical Treatments

	First Aid
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 poison control center or doctor for treatment advice.
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.
If swallowed	• Call a poison control center or doctor 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.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment	

Notice Statement: Read entire label before using. Use only according to label directions.

Environmental Hazards

Follow use directions carefully so as to minimize adverse effects on nontarget organisms. In order to avoid impact on threatened or endangered aquatic plant or animal species, users must consult their State Fish and Game Agency or the U.S. Fish and Wildlife Service before making applications.

Do not contaminate untreated water when disposing of equipment washwaters. Trees and shrubs growing in water treated with Sonar PR Precision Release may occasionally develop chlorosis. Do not apply in tidewater/brackish water.

Lowest rates should be used in shallow areas where the water depth is considerably less than the average depth of the entire treatment site, for example, shallow shoreline areas.

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Sonar* PR Precision Release Herbicide

Directions for Use

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.
Read all Directions Carefully Before Applying Sonar PR Precision Release.

Storage and Disposal

Do not contaminate water, food, or feed by storage or disposal.
Storage: Store in original container only. Do not store near feed or foodstuffs. In case of leak or spill, contain material and dispose as waste.
Pesticide Disposal: Wastes resulting from use of this product may be used according to label directions or disposed of at an approved waste disposal facility.
Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.

General Information

Sonar PR Precision Release herbicide is a selective systemic aquatic herbicide for management of aquatic vegetation in fresh water ponds, lakes, reservoirs, drainage canals, irrigation canals, and rivers. Sonar PR Precision Release is a pelleted formulation containing 5% fluridone. Sonar is absorbed from water by plant shoots and from hydrosoil by the roots of aquatic vascular plants. It is important to maintain Sonar in contact with the target plants for as long as possible. Rapid water movement or any condition which results in rapid dilution of Sonar in treated water will reduce its effectiveness. In susceptible plants, Sonar inhibits the formation of carotene. In the absence of carotene, chlorophyll is rapidly degraded by sunlight. Herbicidal symptoms of Sonar appear in seven to ten days and appear as white (chlorotic) or pink growing points. Under optimum conditions 30 to 90 days are required before the desired level of aquatic weed management is achieved with Sonar. Species susceptibility to Sonar PR Precision Release may vary depending on time of year, stage of growth and water movement. For best results, apply Sonar PR Precision Release prior to initiation of weed growth or when weeds begin active growth. Application to mature target plants may require higher application rates and may take longer to control.

Sonar PR Precision Release is not corrosive to application equipment.

The label provides recommendations on the use of a chemical analysis for the active ingredient. SePRO Corporation recommends the use of an Enzyme-Linked Immumoassay (ELISA Test) for the determination of the active ingredient concentration in the water. Contact SePRO Corporation for the utilization of this test, known as FasTEST, for the incorporation of this analysis in your treatment program. Other proven chemical analyses for the active ingredient may also be used. The chemical analysis, FasTEST, is referenced in this label as the preferred method for the rapid determination of the concentration of the active ingredient in the water.

Application rates are provided in pounds of Sonar PR Precision Release to achieve a desired concentration of the active ingredient in part per billion (ppb). The maximum application rate or sum of all application rates is 90 ppb in ponds and 150 ppb in lakes and reservoirs per annual growth cycle. This maximum concentration is the amount of product calculated as the target application rate, NOT determined by testing the residues of the active ingredient in the treated water.

General Use Precautions

- **Obtain Required Permits:** Consult with appropriate state or local water authorities before applying this product. Permits may be required by state or local public agencies.
- **NEW YORK STATE:** Application of Sonar PR is not permitted in waters less than two (2) feet deep.
- **Hydroponic Farming:** Do not use Sonar PR treated water for hydroponic farming.
- **Greenhouse and Nursery Plants:** Do not use Sonar PR treated water for irrigating greenhouse or nursery plants. Use of an approved assay should confirm that residues are <1 ppb.
- **WATER USE RESTRICTIONS FOLLOWING APPLICATIONS WITH SONAR PR PRECISION RELEASE (DAYS)**

Application Rate	Drinking†	Fishing	Swimming	Livestock/Pet Consumption	Irrigation††
Maximum Rate (150 ppb) or less	0	0	0	0	See irrigation instructions below

† Note below, under Potable Water Intakes, the information for application of Sonar PR within ¼ miles (1320) feet of a functioning potable water intake.
†† Note below, under Irrigation, specific time frames or fluridone residues that provide the widest safety margin for irrigating with fluridone treated water.

- **Potable Water Intakes:** Concentrations of the active ingredient fluridone up to 150 ppb are allowed in potable water sources; however, in lakes and reservoirs or other sources of potable water, DO NOT APPLY Sonar PR Precision Release at application rates greater than 20 ppb within one-fourth mile (1320 feet) of any functioning potable water intake. At application rates of 8-20 ppb, Sonar PR Precision Release MAY BE APPLIED where functioning potable water intakes are present. **Note: Existing potable water intakes which are no longer in use, such as those replaced by connections to potable water wells or a municipal water system, are not considered to be functioning potable water intakes.**

- **Irrigation:** Irrigation with Sonar PR Precision Release treated water may result in injury to the irrigated vegetation. SePRO Corporation recommends following these precautions and informing those who irrigate from areas treated with Sonar PR Precision Release of the irrigation time frames or water assay requirements presented in the table below. These time frames and assay recommendations are suggestions which should be followed to reduce the potential for injury to vegetation irrigated with water treated with Sonar PR Precision Release. Greater potential for crop injury occurs where Sonar PR Precision Release treated water is applied to crops grown on low organic and sandy soils.

	Days After Application		
Application Site	Established Tree Crops	Established Row Crops/ Turf/Plants	Newly Seeded Crops/Seedbeds or Areas to be Planted Including Overseeded Golf Course Greens
†Ponds and Static Canals	7	30	Assay required
Canals	7	7	Assay required
Rivers	7	7	Assay required
††Lakes and Reservoirs	7	7	Assay required

†For purposes of Sonar PR Precision Release labeling, a pond is

defined as a body of water 10 acres or less in size. A lake or reservoir is greater than 10 acres.
††In lakes and reservoirs where one-half or greater of the body of water is treated, use the pond and static canal irrigation precautions.

Where the use of Sonar PR Precision Release treated water is desired for irrigating crops prior to the time frames established above, the use of FasTEST assay is recommended to measure the concentration in the treated water. Where FasTEST has determined that concentrations are less than 10 parts per billion, there are no irrigation precautions for irrigating established tree crops, established row crops or turf. **For tobacco, tomatoes, peppers or other plants within the Solanaceae Family and newly seeded crops or newly seeded grasses such as overseeded golf course greens, do not use Sonar PR treated water if concentration are greater than 5 ppb. Furthermore, when rotating crops, do not plant members of the Solanaceae family in land that has been previously irrigated with fluridone concentrations in excess of 5 ppb. It is recommended that an aquatic specialist be consulted prior to commencing irrigation of these sites.**

Plant Control Information

Sonar PR Precision Release selectivity is dependent upon dosage, time of year, stage of growth, method of application, and water movement. The following categories, controlled, partially controlled, and not controlled are provided to describe expected efficacy under ideal treatment conditions using higher to maximum label rates. Use of lower rates will increase selectivity of some species listed as controlled or partially controlled. Additional aquatic plants may be controlled, partially controlled, or tolerant to Sonar PR Precision Release. Consult an aquatic specialist prior to application of Sonar PR Precision Release to determine a plant's susceptibility to Sonar PR Precision Release.

Vascular Aquatic Plants Controlled by Sonar PR Precision Release†

Submersed Plants:
bladderwort (*Utricularia* spp.)
common coontail (*Ceratophyllum demersum*)*
common Elodea (*Elodea canadensis*)*
egeria, Brazilian Elodea (*Egeria densa*)
fanwort, Cabomba (*Cabomba caroliniana*)
hydrilla (*Hydrilla verticillata*)
naiad (*Najas* spp.)*
pondweed (*Potamogeton* spp., except Illinois pondweed)*
watermilfoil (*Myriophyllum* spp. except variable-leaf milfoil)

Shoreline Grasses:
paragrass (*Urochloa* mutica)

†Species denoted by an asterisk are native plants that are often tolerant to Sonar at lower use rates. Please consult an aquatic specialist for recommended Sonar PR Precision Release use rates when selective control of exotic species is desired.

Vascular Aquatic Plants Partially Controlled by Sonar PR Precision Release:

Floating Plants:
Salvinia (*Salvinia* spp.)

Emersed Plants:
alligatorweed (*Alternanthera philoxeroides*)
American lotus (*Nelumbo lutea*)
cattail (*Typha* spp.)
creeping waterprimrose (*Ludwigia peploides*)
parrotfeather (*Myriophyllum aquaticum*)
smartweed (*Polygonum* spp.)
spatterdock (*Nuphar* luteum)
spikerush (*Eleocharis* spp.)
waterlily (*Nymphaea* spp.)
waterpurslane (*Ludwigia palustris*)
watershield (*Brasenia schreberi*)

Submersed Plants:
Illinois pondweed (*Potamogeton illinoensis*)
limnophila (*Limnophila sessiliflora*)
tapegrass, American eelgrass (*Vallisneria americana*)
watermilfoil--variable-leaf (*Myriophyllum heterophyllum*)

Shoreline Grasses:
barnyardgrass (*Echinochloa crusgalli*)
giant cutgrass (*Zizaniopsis miliacea*)
reed canarygrass (*Philaris arundinaceae*)
southern watergrass (*Hydrochloa caroliniensis*)
torpedograss (*Panicum repens*)

Vascular Aquatic Plants Not Controlled by Sonar PR Precision Release:

Floating Plants:
floating waterhyacinth (*Eichhornia crassipes*)
waterlettuce (*Pistia stratiotes*)

Emersed Plants:
American frogbit (*Limnobium spongia*)
arrowhead (*Sagittaria* spp.)
bacopa (*Bacopa* spp.)
big floatingheart, banana lily (*Nymphoides aquatica*)
bulrush (*Scirpus* spp.)
pickerelweed, lanceleaf (*Pontederia* spp.)
rush (*Juncus* spp.)
water pennywort (*Hydrocotyle* spp.)

Shoreline Grasses:
maidencane (*Panicum hemitomon*)

Note: algae (chara, nitella, and filamentous species are not controlled by Sonar PR Precision Release).

Application Directions

The aquatic plants present in the treatment site should be identified prior to application to determine their susceptibility to Sonar PR Precision Release. It is important to determine the area (acres) to be treated and the average depth in order to select the proper application rate. Do not exceed the maximum labeled rate for a given treatment site per annual growth cycle.

Application to Ponds

Sonar PR Precision Release may be applied to the entire surface area of a pond. For single applications, rates may be selected to provide 45 to 90 ppb to the treated water, although actual concentrations in treated water may be substantially lower at any point in time due to the slow-release formulation of this product. When treating for optimum selective control, lower rates may be applied for sensitive target species. Use the higher rate within the rate range where there is a dense weed mass, when treating more difficult to control species, and for ponds less than 5 acres in size with an average depth less than 4 feet. Application rates necessary to obtain these concentrations in treated water are shown in the following table. For additional application rate calculations, refer to page 5—Application Rate Calculations-Ponds, Lakes and Reservoirs. Split or multiple applications are recommended where dilution of treated water is anticipated; however, the sum of all applications should total 45 to 90 ppb and must not exceed a total of 90 ppb per annual growth cycle.

Average Water Depth of Treatment Site (feet)	Pounds of Sonar PR Precision Release per Treated Surface Acre 45 ppb	90 ppb
1	2.5	5
2	5	10
3	7.5	15
4	10	20
5	12.5	25
6	15	30
7	17	34
8	19.5	39
9	22	44
10	24.5	49

Application to Lakes and Reservoirs

The following treatments are recommended for treating both whole lakes or reservoirs and partial areas of lakes or reservoirs (bays, etc.). For best results in treating partial lakes and reservoirs, Sonar PR Precision Release treatment areas should be a minimum of 5 acres in size. Treatment of areas smaller than 5 acres or treatment of narrow strips such as boat lanes or shorelines may not produce satisfactory results due to dilution by untreated water. Rate ranges are provided as a guide to include a wide range of environmental factors, such as target species, plant susceptibility, selectivity and other aquatic plant management objectives. Application rates and methods should be selected to meet the specific lake/reservoir aquatic plant management goals.

A. Whole Lake or Reservoir Treatments (Limited or No Water Discharge)

1. Single Application to Whole Lakes or Reservoirs
Where single applications to whole lakes or reservoirs are desired, apply Sonar PR Precision Release at an application rate of 16 to 90 ppb. Application rates necessary to obtain these concentrations in treated water are shown in the following table. For additional rate calculations, refer to page 5—Application Rate Calculation-Ponds, Lakes and Reservoirs. Choose an application rate to meet the aquatic plant management objective. **Where greater plant selectivity is desired such as when controlling Eurasian watermilfoil and curlyleaf pondweed, choose an application rate lower in the rate range.** For other plant species, SePRO recommends contacting an aquatic specialist in determining when to choose application rates lower in the rate range to meet specific plant management goals. Use the higher rate within the rate range where there is a dense weed mass or when treating more difficult to control plant species or in the event of a heavy rainfall event where dilution has occurred. In these cases, a second application or more may be required; however, the sum of all applications cannot exceed 150 ppb per annual growth cycle. Refer to the following Section (No. 2) Split or Multiple Applications for guidelines and maximum rate allowed.

Average Water Depth of Treatment Site (feet)	Pounds of Sonar PR Precision Release Per Treated Surface Acre 16 ppb to 90 ppb
1	0.9 5
2	1.7 10
3	2.6 15
4	3.5 20
5	4.3 25
6	5.2 30
7	6.0 34
8	6.9 39
9	7.8 44
10	8.6 49
11	9.5 54
12	10.4 59
13	11.2 64
14	12.1 68
15	13.0 73
16	13.8 78
17	14.7 83
18	15.6 88
19	16.4 93
20	17.3 98

2. Split or Multiple Applications to Whole Lakes or Reservoirs
To meet certain plant management objectives, split or multiple applications may be desired in making whole lake treatments. Split or multiple application programs are desirable when the objective is to use the minimum effective dose and to maintain this lower dose for the sufficient time to ensure efficacy and enhance selectivity. Under these situations, use the lower rates (16 to 75 ppb) within the rate range. **In controlling Eurasian watermilfoil and curlyleaf pondweed and where greater plant selectivity is desired, choose an application rate lower in the rate range.** For other plant species, SePRO recommends contacting an aquatic specialist in determining when to choose application rates lower in the rate range to meet specific plant management goals. For split or repeated applications, the sum of all applications must not exceed 150 ppb per annual growth cycle.

Note:In treating lakes or reservoirs that contain potable water intakes and the application requires treating within 1/4 mile of a potable water intake, no single application can exceed 20 ppb. Additionally, the sum of all applications cannot exceed 150 ppb per annual growth cycle.

B. Partial Lake or Reservoir Treatments
Where dilution of Sonar PR Precision Release with untreated water is anticipated, such as in partial lake or reservoir treatments, split or multiple applications may be used to extend the contact time to the target plants. The application rate and use frequency of Sonar PR Precision Release in a partial lake is highly dependent upon the treatment area. Higher application rates may be required and frequency of applications will vary depending upon the potential of untreated water diluting the Sonar PR Precision Release concentration in the treatment area. Use higher rates where greater dilution with untreated water is anticipated.

1. Application Sites Greater Than 1/4 Mile from a Functioning Potable Water Intake
For single applications, apply Sonar PR Precision Release at application rates from 45 to150 ppb. Split or multiple applications may be made, however, the sum of all applications cannot

exceed 150 ppb per annual growth cycle. Split applications should be conducted to maintain a sufficient concentration in the target area for a period of 45 days or longer. The use of FasTEST is recommended to maintain the desired concentration in the target area over time.

2. Application Sites Within 1/4 Mile of a Functioning Potable Water Intake

In treatment areas that are within 1/4 mile of a potable water intake, no single application can exceed 20 ppb. When utilizing split or repeated applications of Sonar PR Precision Release for sites which contain a potable water intake, FasTEST is required to determine the actual concentration in the water. Additionally, the sum of all applications cannot exceed 150 ppb per annual growth cycle.

Application Rate Calculation - Ponds, Lakes and Reservoirs

The amount of Sonar PR Precision Release to be applied to provide the desired ppb concentration of active ingredient equivalents in treated water may be calculated as follows:

- Pounds of Sonar PR Precision Release required per treated acre = Average water depth of treatment site x Desired ppb concentration of active ingredient equivalents x 0.054

  For example, the pounds per acre of Sonar PR Precision Release required to provide a concentration of 25 ppb of active ingredient equivalents in water with an average depth of 5 feet is calculated as follows:

  5 x 25 x 0.054 = 6.75 pounds per treated surface acre.

Note: Calculated rates should not exceed the maximum allowable rate in pounds per treated surface acre for the water depth listed in the application rate table for the site to be treated.

Application to Drainage Canals, Irrigation Canals and Rivers

Static Canals:

In static drainage and irrigation canals, Sonar PR Precision Release should be applied at the rate of 20 to 40 pounds per surface acre.

Moving Water Canals and Rivers:

The performance of Sonar PR Precision Release will be enhanced by restricting or reducing water flow. In slow moving bodies of water use an application technique that maintains a concentration of 10 to 40 ppb in the applied area for a minimum of 45 days. Sonar PR Precision Release can be applied by split or multiple broadcast applications or by metering in the product to provide a uniform concentration of the herbicide based upon the flow pattern. The use of FasTEST is recommended to maintain the desired concentration in the target area over time.

Static or Moving Water Canals or Rivers Containing a Functioning Potable Water Intake

In treating a static or moving water canal or river which contains a functioning potable water intake, applications of Sonar PR Precision Release greater than 20 ppb must be made more than 1/4 mile from a functioning potable water intake. Applications less than 20 ppb may be applied within 1/4 mile from a functioning potable water intake; however, if applications of Sonar PR Precision Release are made within 1/4 mile from a functioning water intake, the FasTEST must be utilized to demonstrate that concentrations do not exceed 150 ppb at the potable water intake.

Application Rate Calculation – Drainage Canals, Irrigation Canals and Rivers

The amount of Sonar PR Precision Release to be applied through a metering system to provide the desired ppb concentration of active ingredient in treated water may be calculated as follows:

1. Average flow rate (feet per second) x average width (ft.) x average depth (ft.) x 0.9 = CFS (cubic feet per second)
2. CFS x 1.98 = acre feet per day (water movement)
3. Acre feet per day x desired ppb x 0.054 = pounds Sonar PR Precision Release required per day.

WARRANTY DISCLAIMER

SePRO Corporation warrants that the 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 temperatures, 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 as 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 losses or damages in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer above and this Limitation of Remedies can not 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 Limitations of Remedies in any manner.

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Specimen Label

SePRO

Sonar® Q

Herbicide

A herbicide for management of aquatic vegetation in fresh water ponds, lakes, reservoirs, potable water sources, drainage canals, irrigation canals and rivers.

Active Ingredient:

fluridone: 1-methyl-3-phenyl-5-[3-(trifluoromethyl) phenyl]-4(1*H*)-pyridinone	5.0%
Inert ingredients	95.0%
Total	100.0%

Contains .05 pounds active ingredient per pound.

Precautionary Statements

Hazards to Humans and Domestic Animals

Keep Out of Reach of Children

CAUTION PRECAUCION

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.)

Harmful if Swallowed, Absorbed Through Skin, or if Inhaled

Avoid breathing of dust or contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

In case of emergency endangering health or the environment involving this product, call **INFOTRAC** at **1-800-535-5053.**

Refer to inside of label booklet for additional precautionary information and Directions for Use.

FIRST AID	
In the 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 poison control center or doctor for treatment advice.
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.
If swallowed	• Call a poison control center or doctor 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 a 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.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	

Notice: Read the entire label before using. Use only according to label directions. **Before buying or using this product, read "Warranty Disclaimer", "Inherent Risks of Use" and "Limitation of Remedies" inside label booklet.**

Environmental Hazards

Follow use directions carefully so as to minimize adverse effects on nontarget organisms. In order to avoid impact on threatened or endangered aquatic plant or animal species, users must consult their State Fish and Game Agency or the U.S. Fish and Wildlife Service before making applications.

Do not contaminate untreated water when disposing of equipment washwaters. Trees and shrubs growing in water treated with Sonar Q may occasionally develop chlorosis. Do not apply in tidewater/brackish water.

Lowest rates should be used in shallow areas where the water depth is considerably less than the average depth of the entire treatment site, for example, shallow shoreline areas.

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FPL 092302

EPA Est. No. 39578-TX-1
SPC - 344146

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SePRO Corporation Carmel, IN 46032 U.S.A.

Sonar® Q Herbicide

Directions for Use

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Read all directions carefully before applying Sonar Q.

STORAGE AND DISPOSAL

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

Pesticide Storage: Store in original container only. Do not store near feed or foodstuffs. In case of leak or spill, contain material and dispose as waste.

Pesticide Disposal: Wastes resulting from use of this product may be used according to label directions or disposed of at an approved waste disposal facility.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.

General Information

Sonar Q herbicide is a selective systemic aquatic herbicide for management of aquatic vegetation in fresh water ponds, lakes, reservoirs, drainage canals, irrigation canals, and rivers. Sonar Q is a pelleted formulation containing 5% fluridone. Sonar is absorbed from water by plant shoots and from hydrosoil by the roots of aquatic vascular plants. It is important to maintain Sonar in contact with the target plants for as long as possible. Rapid water movement or any condition which results in rapid dilution of Sonar in treated water will reduce its effectiveness. In susceptible plants, Sonar inhibits the formation of carotene. In the absence of carotene, chlorophyll is rapidly degraded by sunlight. Herbicidal symptoms of Sonar appear in seven to ten days and appear as white (chlorotic) or pink growing points. Under optimum conditions 30 to 90 days are required before the desired level of aquatic weed management is achieved with Sonar. Species susceptibility to Sonar Q may vary depending on time of year, stage of growth and water movement. For best results, apply Sonar Q prior to initiation of weed growth or when weeds begin active growth. Application to mature target plants may require higher application rates and may take longer to control.

Sonar Q is not corrosive to application equipment.

The label provides recommendations on the use of a chemical analysis for the active ingredient. SePRO Corporation recommends the use of an Enzyme-Linked Immumoassay (ELISA Test) for the determination of the active ingredient concentration in the water. Contact SePRO Corporation for the utilization of this test, known as FasTEST,* for the incorporation of this analysis in your treatment program. Other proven chemical analyses for the active ingredient may also be used. The chemical analysis, FasTEST, is referenced in this label as the preferred method for the rapid determination of the concentration of the active ingredient in the water.

Application rates are provided in pounds of Sonar Q to achieve a desired concentration of the active ingredient in part per billion (ppb). The maximum application rate or sum of all application rates is 90 ppb in ponds and 150 ppb in lakes and reservoirs per annual growth cycle. This maximum concentration is the amount of product calculated as the target application rate, NOT determined by testing the residues of the active ingredient in the treated water.

General Use Precautions

- **Obtain Required Permits:** Consult with appropriate state or local water authorities before applying this product. Permits may be required by state or local public agencies.
- **NEW YORK STATE:** Application of Sonar Q is not permitted in waters less than two (2) feet deep.
- **Hydroponic Farming:** Do not use Sonar Q treated water for hydroponic farming.
- **Greenhouse and Nursery Plants:** Do not use Sonar Q treated water for irrigating greenhouse or nursery plants. Use of an approved assay should confirm that residues are <1 ppb.

Water use restrictions following applications with Sonar Q (days)

Application Rate	Drinking[1]	Fishing	Swimming	Livestock/Pet Consumption	Irrigation[11]
Maximum Rate (150 ppb) or less	0	0	0	0	See irrigation instructions below

[1] Note below, under Potable Water Intakes, the information for application of Sonar Q within 1/4 miles (1320) feet of a functioning potable water intake.

[11] Note below, under Irrigation, specific time frames or fluridone residues that provide the widest safety margin for irrigating with fluridone treated water.

- **Potable Water Intakes:** Concentrations of the active ingredient fluridone up to 150 ppb are allowed in potable water sources; however, in lakes and reservoirs or other sources of potable water, **DO NOT APPLY** Sonar Q at application rates greater than 20 ppb within one-fourth mile (1320 feet) of any functioning potable water intake. At application rates of 8-20 ppb, Sonar Q **MAY BE APPLIED** where functioning potable water intakes are present. **Note: Existing potable water intakes which are no longer in use, such as those replaced by connections to potable water wells or a municipal water system, are not considered to be functioning potable water intakes.**
- **Irrigation:** Irrigation with Sonar Q treated water may result in injury to the irrigated vegetation. SePRO Corporation recommends following these precautions and informing those who irrigate from areas treated with Sonar Q of the irrigation time frames or water assay requirements presented in the table below. These time frames and assay recommendations are suggestions which should be followed to reduce the potential for injury to vegetation irrigated with water treated with Sonar Q. Greater potential for crop injury occurs where Sonar Q treated water is applied to crops grown on low organic and sandy soils.

2

Days after application			
Application site	Established tree crops	Established row crops/ turf/plants	Newly seeded crop/seedbeds or areas to be planted including overseeded golf course greens
†Ponds and static canals	7	30	Assay required
Canals	7	7	Assay required
Rivers	7	7	Assay required
††Lakes and Reservoirs	7	7	Assay required

† For purposes of Sonar Q labeling, a pond is defined as a body of water 10 acres or less in size. A lake or reservoir is greater than 10 acres.

††In lakes and reservoirs where one-half or greater of the body of water is treated, use the pond and static canal irrigation precautions.

Where the use of Sonar Q treated water is desired for irrigating crops prior to the time frames established above, the use of FasTEST assay is recommended to measure the concentration in the treated water. Where FasTEST has determined that concentrations are less than 10 parts per billion, there are no irrigation precautions for irrigating established tree crops, established row crops or turf. **For tobacco, tomatoes, peppers or other plants within the Solanaceae Family and newly seeded crops or newly seeded grasses such as overseeded golf course greens, do not use Sonar Q treated water if concentration are greater than 5 ppb. Furthermore, when rotating crops, do not plant members of the Solanaceae family in land that has been previously irrigated with fluridone concentrations in excess of 5 ppb. It is recommended that an aquatic specialist be consulted prior to commencing irrigation of these sites.**

Plant Control Information

Sonar Q selectivity is dependent upon dosage, time of year, stage of growth, method of application, and water movement. The following categories, controlled, partially controlled, and not controlled are provided to describe expected efficacy under ideal treatment conditions using higher to maximum label rates. Use of lower rates will increase selectivity of some species listed as controlled or partially controlled. Additional aquatic plants may be controlled, partially controlled, or tolerant to Sonar Q. Consult an aquatic specialist prior to application of Sonar Q to determine a plant's susceptibility to Sonar Q.

Vascular Aquatic Plants Controlled by Sonar Q†

Submersed Plants:
bladderwort (*Utricularia* spp.)
common coontail (*Ceratophyllum demersum*)**
common Elodea (*Elodea canadensis*)**
egeria, Brazilian Elodea (*Egeria densa*)
fanwort, Cabomba (*Cabomba caroliniana*)
hydrilla (*Hydrilla verticillata*)
naiad (*Najas* spp.)**
pondweed (*Potamogeton* spp., except Illinois pondweed)**
watermilfoil (*Myriophyllum* spp. except variable-leaf milfoil)

Shoreline Grasses:
paragrass (*Urochloa mutica*)

†Species denoted by an double asterisk are native plants that are often tolerant to Sonar at lower use rates. Please consult an aquatic specialist for recommended Sonar Q use rates when selective control of exotic species is desired.

Vascular Aquatic Plants Partially Controlled by Sonar Q:

Floating Plants:
Salvinia (*Salvinia* spp.)

Emersed Plants:
alligatorweed (*Alternanthera philoxeroides*)
American lotus (*Nelumbo lutea*)
cattail (*Typha* spp.)
creeping waterprimrose (*Ludwigia peploides*)
parrotfeather (*Myriophyllum aquaticum*)
smartweed (*Polygonum* spp.)
spatterdock (*Nuphar luteum*)
spikerush (*Eleocharis* spp.)
waterlily (*Nymphaea* spp.)
waterpurslane (*Ludwigia palustris*)
watershield (*Brasenia schreberi*)

Submersed Plants:
Illinois pondweed (*Potamogeton illinoensis*)
limnophila (*Limnophila sessiliflora*)
tapegrass, American eelgrass (*Vallisneria americana*)
watermilfoil--variable-leaf (*Myriophyllum heterophyllum*)

Shoreline Grasses:
barnyardgrass (*Echinochloa crusgalli*)
giant cutgrass (*Zizaniopsis miliacea*)
reed canarygrass (*Philaris arundinaceae*)
southern watergrass (*Hydrochloa caroliniensis*)
torpedograss (*Panicum repens*)

Vascular Aquatic Plants Not Controlled by Sonar Q:

Floating Plants:
floating waterhyacinth (*Eichhornia crassipes*)
waterlettuce (*Pistia stratiotes*)

Emersed Plants:
American frogbit (*Limnobium spongia*)
arrowhead (*Sagittaria* spp.)
bacopa (*Bacopa* spp.)
big floatingheart, banana lily (*Nymphoides aquatica*)
bulrush (*Scirpus* spp.)
pickerelweed, lanceleaf (*Pontederia* spp.)
rush (*Juncus* spp.)
water pennywort (*Hydrocotyle* spp.)

Shoreline Grasses:
maidencane (*Panicum hemitomon*)

Note: algae (chara, nitella, and filamentous species are not controlled by Sonar Q)

Application Directions

The aquatic plants present in the treatment site should be identified prior to application to determine their susceptibility to Sonar Q. It is important to determine the area (acres) to be treated and the average depth in order to select the proper application rate. Do not exceed the maximum labeled rate for a given treatment site per annual growth cycle.

Application to Ponds

Sonar Q may be applied to the entire surface area of a pond. For single applications, rates may be selected to provide 45 to 90 ppb to the treated water, although actual concentrations in treated water may be substantially lower at any point in time due to the slow-release formulation of this product. When treating for optimum selective control, lower rates may be applied for sensitive target species. Use the higher rate within the rate range where there is a dense weed mass, when treating more difficult to control species, and for ponds less than 5 acres in size with an average depth less than 4 feet. Application rates necessary to obtain these concentrations in treated water are shown in the following table. For additional application rate calculations, refer to page 5—Application Rate Calculations - Ponds, Lakes and Reservoirs. Split or multiple applications are recommended where dilution of treated water is anticipated; however, the sum of all applications should total 45 to 90 ppb and must not exceed a total of 90 ppb per annual growth cycle.

Application Rates	
Average water depth of treatment site (feet)	**Pounds of Sonar Q per treated surface acre 45 ppb to 90 ppb**
1	2.5 5
2	5 10
3	7.5 15
4	10 20
5	12.5 25
6	15 30
7	17 34
8	19.5 39
9	22 44
10	24.5 49

Application to Lakes and Reservoirs

The following treatments are recommended for treating both whole lakes or reservoirs and partial areas of lakes or reservoirs (bays, etc.). For best results in treating partial lakes and reservoirs, Sonar Q treatment areas should be a minimum of 5 acres in size. Treatment of areas smaller than 5 acres or treatment of narrow strips such as boat lanes or shorelines may not produce satisfactory results due to dilution by untreated water. Rate ranges are provided as a guide to include a wide range of environmental factors, such as target species, plant susceptibility, selectivity and other aquatic plant management objectives. Application rates and methods should be selected to meet the specific lake/reservoir aquatic plant management goals.

Whole Lake or Reservoir Treatments (Limited or No Water Discharge)

1. Single Application to Whole Lakes or Reservoirs

Where single applications to whole lakes or reservoirs are desired, apply Sonar Q at an application rate of 16 to 90 ppb. Application rates necessary to obtain these concentrations in treated water are shown in the following table. For additional rate calculations, refer to page 5—Application Rate Calculation - Ponds, Lakes and Reservoirs. Choose an application rate to meet the aquatic plant management objective. **Where greater plant selectivity is desired such as when controlling Eurasian watermilfoil and curlyleaf pondweed, choose an application rate lower in the rate range.** For other plant species, SePRO recommends contacting an aquatic specialist in determining when to choose application rates lower in the rate range to meet specific plant management goals. Use the higher rate within the rate range where there is a dense weed mass or when treating more difficult to control plant species or in the event of a heavy rainfall event where dilution has occurred. In these cases, a second application or more may be required; however, the sum of all applications cannot exceed 150 ppb per annual growth cycle. Refer to the following Section (No. 2) Split or Multiple Applications for guidelines and maximum rate allowed.

Application Rates	
Average water depth of treatment site (feet)	**Pounds of Sonar Q per treated surface acre 16 ppb to 90 ppb**
1	0.9 5
2	1.7 10
3	2.6 15
4	3.5 20
5	4.3 25
6	5.2 30
7	6.0 34
8	6.9 39
9	7.8 44
10	8.6 49
11	9.5 54
12	10.4 59
13	11.2 64
14	12.1 68
15	13.0 73
16	13.8 78
17	14.7 83
18	15.6 88
19	16.4 93
20	17.3 98

2. Split or Multiple Applications to Whole Lakes or Reservoirs

To meet certain plant management objectives, split or multiple applications may be desired in making whole lake treatments. Split or multiple application programs are desirable when the objective is to use the minimum effective dose and to maintain this lower dose for the sufficient time to ensure efficacy and enhance selectivity. Under these situations, use the lower rates (16 to 75 ppb) within the rate range. **In controlling Eurasian watermilfoil and curlyleaf pondweed and where greater plant selectivity is desired, choose an application rate lower**

in the rate range. For other plant species, SePRO recommends contacting an aquatic specialist in determining when to choose application rates lower in the rate range to meet specific plant management goals. For split or repeated applications, the sum of all applications must not exceed 150 ppb per annual growth cycle.

Note: In treating lakes or reservoirs that contain potable water intakes and the application requires treating within 1/4 mile of a potable water intake, no single application can exceed 20 ppb. Additionally, the sum of all applications cannot exceed 150 ppb per annual growth cycle.

A. Partial Lake or Reservoir Treatments
Where dilution of Sonar Q with untreated water is anticipated, such as in partial lake or reservoir treatments, split or multiple applications may be used to extend the contact time to the target plants. The application rate and use frequency of Sonar Q in a partial lake is highly dependent upon the treatment area. Higher application rates may be required and frequency of applications will vary depending upon the potential of untreated water diluting the Sonar Q concentration in the treatment area. Use higher rates where greater dilution with untreated water is anticipated.

1. Application Sites Greater Than 1/4 Mile from a Functioning Potable Water Intake
For single applications, apply Sonar Q at application rates from 45 to150 ppb. Split or multiple applications may be made, however, the sum of all applications cannot exceed 150 ppb per annual growth cycle. Split applications should be conducted to maintain a sufficient concentration in the target area for a period of 45 days or longer. The use of FasTEST is recommended to maintain the desired concentration in the target area over time.

2. Application Sites Within 1/4 Mile of a Functioning Potable Water Intake
In treatment areas that are within 1/4 mile of a potable water intake, no single application can exceed 20 ppb. When utilizing split or repeated applications of Sonar Q for sites which contain a potable water intake, FasTEST is required to determine the actual concentration in the water. Additionally, the sum of all applications cannot exceed 150 ppb per annual growth cycle.

Application Rate Calculation - Ponds, Lakes and Reservoirs

The amount of Sonar Q to be applied to provide the desired ppb concentration of active ingredient equivalents in treated water may be calculated as follows:

- Pounds of Sonar Q required per treated acre = Average water depth of treatment site x Desired ppb concentration of active ingredient equivalents x 0.054

For example, the pounds per acre of Sonar Q required to provide a concentration of 25 ppb of active ingredient equivalents in water with an average depth of 5 feet is calculated as follows:

5 x 25 x 0.054 = 6.75 pounds per treated surface acre.

Note: Calculated rates should not exceed the maximum allowable rate in pounds per treated surface acre for the water depth listed in the application rate table for the site to be treated.

Application to Drainage Canals, Irrigation Canals and Rivers

Static Canals:
In static drainage and irrigation canals, Sonar Q should be applied at the rate of 20 to 40 pounds per surface acre.

Moving Water Canals and Rivers:
The performance of Sonar Q will be enhanced by restricting or reducing water flow. In slow moving bodies of water use an application technique that maintains a concentration of 10 to 40 ppb in the applied area for a minimum of 45 days. Sonar Q can be applied by split or multiple broadcast applications or by metering in the product to provide a uniform concentration of the herbicide based upon the flow pattern. The use of FasTEST is recommended to maintain the desired concentration in the target area over time.

Static or Moving Water Canals or Rivers Containing a Functioning Potable Water Intake:
In treating a static or moving water canal or river which contains a functioning potable water intake, applications of Sonar Q greater than 20 ppb must be made more than 1/4 mile from a functioning potable water intake. Applications less than 20 ppb may be applied within 1/4 mile from a functioning potable water intake; however, if applications of Sonar Q are made within 1/4 mile from a functioning water intake, the FasTEST must be utilized to demonstrate that concentrations do not exceed 150 ppb at the potable water intake.

Application Rate Calculation - Drainage Canals, Irrigation Canals and Rivers

The amount of Sonar Q to be applied through a metering system to provide the desired ppb concentration of active ingredient in treated water may be calculated as follows:

1. Average flow rate (feet per second) **x** average width (ft.) **x** average depth (ft.) **x** 0.9 = CFS (cubic feet per second)

2. CFS **x** 1.98 = acre feet per day (water movement)

3. Acre feet per day **x** desired ppb **x** 0.054 = pounds Sonar Q required per day

Warranty Disclaimer

SePRO Corporation warrants that the 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 temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner or application, or other factors, all of which are beyond the control of SePRO Corporation as 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 losses or damages in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer above and this Limitation of Remedies can not 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 Limitations of Remedies in any manner.

Specimen Label

Dow AgroSciences™

DMA* 4 IVM

Herbicide

*Trademark of Dow AgroSciences LLC

Contains Dimethylamine Salt of 2,4-D†

For selective control of many broadleaf weeds in, forests, non-cropland, non-crop turf, and aquatic areas. Also for control of trees by injection.

Active Ingredient:	
2,4-Dichlorophenoxyacetic acid, dimethylamine salt †	46.3%
Inert Ingredients	53.7%
Total Ingredients	100.0%

2,4-dichlorophenoxyacetic acid †† - 38.4% - 3.8 lb/gal
†† Isomer Specific by AOAC Method No. 978.05 (15th Edition)

† Salts are the least volatile forms of 2,4-D and do not release enough vapors from treated areas to reduce yield of adjacent susceptible crops.

EPA Reg. No. 62719-3

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.)

Precautionary Statements

Hazards to Humans and Domestic Animals

Corrosive • Causes Irreversible Eye Damage • Harmful If Swallowed, Inhaled or Absorbed Through The Skin.

Do not get in eyes, on skin, or on clothing. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks
- Protective eyewear
- **Note: For containers of over 1 gallon, but less than 5 gallons:** Mixer and loaders who do not use a mechanical system (such as probe and pump or spigot) to transfer the contents of this container must wear coveralls or chemical-resistant apron in addition to other required PPE.

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, use detergent and hot water. Keep and wash PPE separately from other laundry. After each day of use, clothing or PPE must not be reused until it has been cleaned.

Engineering Controls Statements

For containers of 5 gallons or more: A mechanical system (such as probe and pump or spigot) must be used for transferring the contents of this container. If the contents of a non-refillable pesticide container are emptied, the probe must be rinsed before removal. If the mechanical system is used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4)], the handler PPE requirements may be reduced or modified as specified in the WPS.

When handlers use enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protections Standard (WPS) for agricultural pesticides [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.

First Aid

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 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.

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 the 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

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

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

Environmental Hazards

This product is toxic to aquatic invertebrates. Drift or runoff may adversely affect aquatic invertebrates and non-target plants. For terrestrial uses, do not apply directly to water, to areas where surface water is present, or to intertidal area below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

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 and 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.

Notice: Read the entire label. Use only according to label directions. **Before buying or using this product, read "Warranty Disclaimer" and "Limitation of Remedies" elsewhere on this label.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

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

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
- Waterproof gloves
- Shoes plus socks
- 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.
Entry Restrictions for Non-WPS Uses: When this product is applied to non-cropland areas, non-crop turf, by tree injection method only in forest sites, and when applied in aquatic areas, do not allow people (other than applicator) or pets on treatment area during application. Do not enter into treated areas until sprays have dried.

Storage and Disposal

Do not contaminate water, food, or feed by storage or disposal.
Storage: Keep container tightly closed when not in use. If exposed to subfreezing temperatures, the product should be warmed to at least 40°F and mixed thoroughly before using.
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 (Metal): Triple rinse (or equivalent). 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.
Container Disposal (Plastic containers 5-gals or less): Triple rinse (or equivalent). Then dispose of in a sanitary landfill, or by incineration, or, if allowed by local authorities, by burning. If burned stay out of smoke.
General: Consult federal, state, or local disposal authorities for approved alternative procedures.

General Information

DMA* 4 IVM herbicide is intended for selective control of many broadleaf weeds in forests, non-cropland, non-crop turf areas, and aquatic areas.

Apply DMA 4 IVM as a water or oil-water spray during warm weather when target weeds or woody plants are actively growing. Application under drought conditions will often give poor results. Use low spray pressure to minimize drift. Generally, the lower dosages recommended on this label will be satisfactory for young, succulent growth of susceptible weed species. For less susceptible species and under conditions where control is more difficult, use higher recommended rates. Deep-rooted perennial weeds such as Canada thistle and field bindweed and many woody plants usually require repeated applications for satisfactory control. Consult your State Agricultural Experiment stations or Extension Service Weed Specialists for recommendations from this label that best fit local conditions.

General Use Precautions and Restrictions

Be sure that use of DMA 4 IVM conforms to all application regulations.

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

Excessive amounts of 2,4-D in the soil may temporarily inhibit seed germination and plant growth.

Avoiding Injury to Non-target Plants

Spray drift produced during application is the responsibility of the applicator and care should be taken to minimize off-target movement of spray during application. A drift control agent suitable for agricultural use may be used with this product to aid in reducing spray drift. If used, follow all use recommendations and precautions on the product label.

Do not apply where drift may be a problem due to proximity to susceptible crops or other desirable broadleaf plants. Do not apply DMA 4 IVM directly to, or otherwise permit contact with cotton, flowers, fruit trees, grapes, ornamentals, vegetables, or other desirable plants which are susceptible to 2,4-D herbicides. Do not permit spray mist containing 2,4-D to contact susceptible plants since even very small quantities of the spray, which may not be visible, can cause severe injury during both active growth or dormant periods. Do not use in greenhouses.

Avoid Movement of Treated Soil: Avoid conditions under which soil from treated areas may be moved or blown to areas containing susceptible plants. Wind-blown dust containing 2,4-D may produce visible symptoms when deposited on susceptible plants, however, serious plant injury is unlikely. To minimize potential movement of 2,4-D on wind-blown dust, avoid treatment of powdery dry or light sandy soils until soil is settled by rainfall or irrigation or irrigate soon after application.

Do not store or handle other agricultural chemicals with the same containers used for DMA 4 IVM. Do not apply other agricultural chemicals or pesticides with equipment used to apply DMA 4 IVM unless equipment has been thoroughly cleaned to remove all traces of 2,4-D.

Spray Drift Management (Aerial Application)

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 to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

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

In certain states, additional regulations may be applicable to aerial application of this product.

The applicator should be familiar with and take into account the information covered in the following Aerial Drift Reduction Advisory Information section.

Aerial Spray Drift Advisory Information

Importance of 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 Inversion section of this label).

Controlling Droplet Size:

- **Volume-**Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows product larger droplets.
- **Pressure-**Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. 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 backwards, parallel to the airstream will produce larger droplets than other orientations. Significant deflection from the 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 larger droplets than other nozzle types.
- **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-**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 cross-wind, 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 2-10 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 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 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 smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a connected cloud (under low wind conditions) indicates an inversion, while smoke that moves upwards 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, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Mixing

Mix DMA 4 IVM only with water, unless otherwise directed on this label. Add about half the water to the mixing tank, then add the DMA 4 IVM with agitation, and finally the rest of the water with continuing agitation.

Note: Adding oil, wetting agent, or other surfactant to the spray mixture may increase effectiveness on weeds, but also may reduce selectivity to crops resulting in crop damage.

Tank Mixing: When tank mixing, read and follow the label of each tank mix product used for precautionary statements, directions for use, weeds controlled, and geographic and other restrictions. Use in accordance with the most restrictive of label limitations and precautions. No label dosages should be exceeded. Do not tank mix this product with any product containing a label prohibition against tank mixing with 2,4-D.

Tank Mix Compatibility Testing: A jar test is recommended prior to tank mixing to ensure compatibility of this product and other pesticides. Use a clear glass quart jar with lid and mix the tank mix ingredients in their relative proportions. Invert the jar containing the mixture several times and observe the mixture for approximately 1/2 hour. If the mixture balls-up, forms flakes, sludges, jels, oily films or layers, or other precipitates, it is not compatible and the tank mix combination should not be used.

Sprayer Clean-Out
To avoid injury to desirable plants, equipment used to apply this product should be thoroughly cleaned before re-use or applying other chemicals.

1. Rinse and flush application equipment thoroughly after use at least three times with water. Dispose of all rinse water by application to treatment area or apply to non-cropland area away from water supplies.
2. During the second rinse, add 1 qt of household ammonia for every 25 gallons of water. Circulate the solution through the entire system so that all internal surfaces are contacted (15-20 min). Let the solution stand for several hours, preferably overnight.
3. Flush the solution out of the spray tank through the boom.
4. Rinse the system twice with clean water, recirculating and draining each time.
5. Remove nozzles and screens and clean separately.
6. If equipment is to be used to apply another pesticide or agricultural chemical to a 2,4-D susceptible crop, additional steps may be required to remove all traces of 2,4-D, including cleaning of disassembled parts and replacement of hoses or other fittings that may contain absorbed 2,4-D.

Application

Apply with calibrated air or ground equipment using sufficient spray volume to provide adequate coverage of target weeds or as otherwise directed in specific use directions. For broadcast application, use a spray volume of 3 or more gallons per acre by air and 10 or more gallons per acre for ground equipment. Where states have regulations which specify minimum spray volumes, they should be observed. In general, spray volume should be increased as crop canopy, height and weed density increase in order to obtain adequate spray coverage. **Do not apply less than 3 gallons total spray volume per acre.**

Rate Ranges and Application Timing
Generally, the lower dosages given will be satisfactory for young, succulent growth of sensitive weed species. For less sensitive species and under conditions where control is more difficult, the higher dosages will be needed. Apply DMA 4 IVM during warm weather when weeds are young and actively growing.

Spot Treatments
To prevent misapplication, spot treatments should be applied with a calibrated boom or with hand sprayers using a fixed spray volume per 1,000 sq ft as indicated below.

Hand-Held Sprayers: Hand-held sprayers may be used for spot applications of DMA 4 IVM. Care should be taken to apply the spray uniformly and at a rate equivalent to a broadcast application. Application rates in the table are based on the application rate for an area of 1,000 sq ft. Mix the amount of DMA 4 IVM (fl oz or ml) corresponding to the desired broadcast rate in 1 to 3 gallons of spray. To calculate the amount of DMA 4 IVM required for larger areas, multiply the table value (fl oz or ml) by the thousands of sq ft to be treated. An area of 1000 sq ft is approximately 10.5 X 10.5 yards (strides) in size.

Rate Conversion Table for Spot Treatment:

Label Broadcast Rate (pt/acre)							
1/2	2/3	3/4	1	2	3	4	8
Equivalent Amount of DMA 4 IVM per 1000 sq ft							
1/5 fl oz † (5.5 ml)	1/4 fl oz (7.3 ml)	1/3 fl oz (8.3 ml)	3/8 fl oz (11 ml)	3/4 fl oz (22 ml)	1 fl oz (33 ml)	1 1/2 fl oz (44 ml)	3 fl oz (88 ml)

† Conversion factors: 1fl oz = 29.6 (30) ml

Weeds Controlled

Annual or Biennial Weeds

Beggarticks †
Bittercress, smallflowered
bitterweed
broomweed, common †
burdock, common
buttercup, smallflowered †
carpetweed
cinquefoil, common
cinquefoil, rough
cocklebur, common
coffeeweed
copperleaf, Virginia
croton, Texas
croton, woolly
flixweed
galinsoga
geranium, Carolina
hemp, wild
horseweed (marestail)
jewelweed
jimsonweed
knotweed †
kochia
lambsquarters, common
lettuce, prickly †
lettuce, wild
lupines
mallow, little †
mallow, Venice †
marshelder
morningglory, annual
morningglory, ivy
morningglory, woolly
mousetail
mustards (except blue mustard)
parsnip, wild
Pennycress, field
Pepperweed †
pigweeds (Amaranthus spp.) †
poorjoe
primrose, common
purslane, common
pusley, Florida
radish, wild
ragweed, common
ragweed, giant
rape, wild
rocket, yellow
salsify, common †
salsify, western †
shepherdspurse
sicklepod
smartweed (annual species) †
sneezeweed, bitter
sowthistle, annual
sowthistle, spiny
spanishneedles
sunflower
sweetclover
tansymustard
thistle, bull
thistle, musk †
thistle, Russian (tumbleweed) †
velvetleaf
vetches

Perennial Weeds

Alfalfa †
artichoke, Jerusalem †
aster, many-flower †
Austrian fieldcress †
bindweed (hedge, field and European) †
blue lettuce
blueweed, Texas
broomweed
bullnettle †
carrot, wild †
catnip
chicory
clover, red †
coffeeweed
cress, hoary †
dandelion †
docks †
dogbanes †
goldenrod
eveningprimrose, cutleaf
garlic, wild †
hawkweed, orange †
healal
ironweed, western
ivy, ground †
Jerusalem-artichoke
loco, bigbend
nettles (including stinging) †
onion, wild †
pennywort
plantains
ragwort, tansy †
sowthistle, perennial
thistle, Canada †
vervains †
waterplantain
wormwood

† These weeds are only partially controlled and may required repeat applications and/or use of higher recommended rates of this product even under ideal conditions of application.

Specific Use Directions

Forestry, and Non-cropland, Uses

Agricultural Use Requirements for Forest Use (Except Tree Injection Use): For use in forests, follow PPE and Reentry instructions in the "Agricultural Use Requirements" section under the "Directions for Use" heading of this label.

Agricultural Use Requirements for Forestry (Tree Injection Only) and Non-cropland Areas: When this product is applied to non-cropland areas, non-crop turf, and by tree injection in forest sites, follow reentry requirements given in the "Non-Agricultural Use Requirements" section under the "Directions for Use" heading of this label.

Forestry Uses

Forest site preparation, forest roadsides, brush control, established conifer release (including Christmas trees and reforestation areas)

Treatment Site Method of Application	DMA 4 IVM	Specific Use Directions
Annual Weeds **Biennial and perennial broadleaf weeds and susceptible woody plants**	2 to 4 pt/acre 4 to 8 pt/acre	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 flower stalks appear. For difficult to control perennial broadleaf weeds and woody species, use up to 1 gallon DMA 4 IVM and 1 to 4 qt. Garlon* 3A herbicide per acre. For conifer release, make application in early spring before budbreak of conifers when weeds are small and actively growing.
Spot Treatment to control broadleaf weeds	See Instructions for "Spot Treatment"	**Note:** To control broadleaf weeds in small areas with a hand sprayer, use an application rate equivalent to the recommended broadcast rate and spray to thoroughly wet all foliage. See rate conversion table and instructions for "Spot Treatment" and use of hand-held sprayers under "Application".
Conifer Release: Species such as white pine, ponderosa pine, jack pine, red pine, black spruce, white spruce, red spruce, and balsam fir	1 1/2 to 3 qt/acre	To control competing hardwood species such as alder, aspen, birch, hazel, and willow, apply from mid to late summer when growth of conifer trees has hardened off and woody plants are still actively growing. Apply with ground or air equipment, using sufficient spray volume to ensure complete coverage. Because this treatment may cause occasional conifer injury, do not apply if such injury cannot be tolerated.
Directed Spray: Conifer plantations including pine	4 qt/100 gal	Apply when brush or weeds are actively growing by directing the spray so as to avoid contact with conifer foliage and injurious amounts of spray. Apply in oil, oil-water, or water carrier in a spray volume of 10 to 100 gallons per acre.
Basal Spray (May also be used in noncropland)	8 qt/100 gal or	Thoroughly wet the base and root collar of all stems until the spray begins to accumulate around the root collar at the ground line. Wetting stems with the mixture may also aid in control.
Surface of Cut Stumps (May also be used in noncropland)	2.6 fl oz/gal of water	Apply as soon as possible after cutting trees. Thoroughly soak the entire stump with the 2,4-D mixture including cut surface, bark and exposed roots.
Frill and Girdle (May also be used in noncropland)		Cut frills (overlapping V-shaped notches cut downward through the bark in a continuous ring around the base of the tree) using an axe or other suitable tool. Treat freshly cut frills with as much of the 2,4-D mixture as they will hold.
Tree Injection Application (May also be used noncropland)	(1 to 2 ml per injection site)	To control unwanted hardwood trees such as elm, hickory, oak, and sweetgum in forests and other non-crop areas, apply by injecting at a rate of 1 ml of undiluted DMA 4 IVM per inch of trunk diameter at breast height (DBH) as measured approximately 4 1/2 ft above the ground. Make injections as close to the root collar as possible and the injection bit must penetrate the inner bark. Applications may be made throughout the year, but for best results apply between May 15 and October 15. Maples should not be treated during the spring sap flow. For hard to control species such as ash, maple, and dogwood use 2 ml of undiluted DMA 4 IVM per injection site or double the number of 1 ml injections. **Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is directly injected into agricultural plants.**

Precautions and Restrictions:

- Do not allow sprays to contact conifer shoot growth (current year's new growth) or injury may occur.
- Do not apply to nursery seed beds.
- For conifer release, do not use on plantations where pine or larch are among the desired species.
- For broadcast applications, do not apply more than 8.42 pt/acre of DMA 4 IVM (4.0 lb of acid equivalent) per 12 month period.

Non-cropland Areas

Such as fencerows, hedgerows, roadsides, drainage ditches, rights-of way, utility power lines, railroads, airports, and other non-crop areas

Treatment Site Method of Application	DMA 4 IVM (pt/acre)	Specific Use Directions
Annual broadleaf weeds **Biennial and perennial broadleaf weeds and susceptible woody plants**	2 to 4 4 to 8	Apply when annual weeds are small and growing actively before the bud stage. Biennial and perennial weeds should be rosette to bud stage, but not flowering at the time of application. For difficult to control perennial broadleaf weeds and woody species, tank mix up to 1 gallon DMA 4 IVM plus 1 to 4 qt. Garlon* 3A herbicide per acre. **For ground application:** (High volume) apply a total of 100 to 400 gal per acre; (low volume) apply a total of 10 to 100 gal per acre. **For helicopter:** Apply a total of 5 to 30 gal per acre spray volume.
Spot Treatment to control broadleaf weeds	See Instructions for "Spot Treatment"	**Note:** To control broadleaf weeds in small areas with a hand sprayer, use an application rate equivalent to the broadcast rate recommended for this treatment site and spray to thoroughly wet all foliage. See rate conversion table and instructions for "Spot Treatment" and use of hand-held sprayers under "Application".
Tree Injection Application		See instructions for tree injection application in "Forestry Uses" section.
Southern wild rose Broadcast application Spot treatment	 up to 4 1 gal/100 gal of spray	Broadcast: Apply in a spray volume of 5 or more gallons per acre by aircraft or 10 or more gallons per acre by ground equipment. Apply when foliage is well developed. Thorough coverage is required. Use 1 gallon of DMA 4 IVM plus 4 to 8 fluid ounces of an agricultural surfactant per 100 gallons of water. Two or more treatments may be required.

Precautions and Restrictions:

- Do not apply to newly seeded areas until grass is well established.
- Bentgrass, St. Augustine, clover, legumes and dichondra may be severely injured or killed by this treatment.
- Do not apply more than 8.42 pt/acre of DMA 4 IVM (4.0 lb of acid equivalent) per use season.
- Do not reapply to a treated area within 30 days of a previous application.
- If grazing of meat or dairy animals or hay harvest is desired in non-crop areas, do not apply more than 4.21 pt/acre of DMA 4 IVM (2.0 lb of acid equivalent) and do not harvest forage for hay within 7 days of application.

Non-crop Turf Areas

Includes cemeteries and parks, airfields, roadsides, vacant lots, and drainage ditch banks

Use Requirements for Ornamental Turf Areas: When this product is applied to ornamental turf areas, follow PPE and reentry instructions in the "Non-agricultural Use Requirements" section of this label.

Treatment Site (Application Timing)	DMA 4 IVM (pt/acre)	Specific Use Directions
Ornamental Turf **(Postemergence)** Seedling grass (five-leaf stage or later) Well-established grasses Biennial and perennial broadleaf weeds	 3/4 to 1 2 to 4 4	Apply when weeds are small and actively growing. For best results, apply when soil moisture is adequate for active weed growth. Deep-rooted perennial weeds such as bindweed and Canada thistle may require repeat applications. Do not apply to newly seeded grasses until well established (five-leaf stage or later) and then use a maximum of 1 pt/acre. Cool season grasses are tolerant of higher rates.

Precautions, Restrictions:

- Do not use on creeping grasses such as bent except as a spot treatment.
- Do not use on injury-sensitive southern grasses such as St. Augustinegrass.
- Do not use on dichondra or other herbaceous ground covers. Legumes may be damaged or killed.
- Do not reapply within 21 days of a previous application.
- **Reseeding:** Delay reseeding at least 30 days following application. Preferably, with spring application, reseed in the fall and with fall application, reseed in the spring.
- Do not apply more than 2 broadcast applications per year per treatment site (does not include spot treatments).

Aquatic Uses

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.

Control of Weeds and Brush on Banks of Irrigation Canals and Ditches

Target Plants	DMA 4 IVM (pt/acre)	Specific Use Directions
Annual Weeds **Biennial and perennial broadleaf weeds and susceptible wood plants**	2 to 4 4	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 flower 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 DMA 4 IVM 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.
- Do not use on small canals (less than 10 cfs) where water will be used for drinking purposes.
- Do not apply more than 8.42 pt/acre (4.0 lb of acid equivalent) per use season.

Aquatic Weed Control in Ponds, Lakes, Reservoirs, Marshes, Bayous, Drainage Ditches, Canals, Rivers and Streams that are Quiescent or Slow Moving, Including Programs of the Tennessee Valley Authority

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 such use.

Emergent and Floating Aquatic Weeds: Including Water hyacinth *(Eichornia crassipe)*

Application Rate: 2 to 4 qt/acre.

Specific Use Directions

Application Timing: Spray weed mass only. Apply when water hyacinth plants are actively growing. Repeat application as necessary to kill regrowth and plants missed in previous operation. Use 4 qt/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 1 gallon of DMA 4 IVM per acre using standard boom systems using a minimum spray volume of 5 gallons per acre. For Microfoil® drift control spray systems, apply DMA 4 IVM in a total spray volume of 12 to 15 gallons per acre.

Submerged Aquatic Weeds: Including Eurasian Water Milfoil *(Myriophyllum spicatum)*

Treatment Site	Maximum Application Rate [1]	Specific Use Directions
Aquatic Weed Control in Ponds, Lakes, Reservoirs, Marshes, Bayous, Drainage Ditches, Canals, Rivers and Streams that are Quiescent or Slow Moving, Including Programs of the Tennessee Valley Authority	2.84 gallons (10.8 lb of acid equivalent) per acre foot	**Application Timing:** For best results, 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. **Subsurface Application:** Apply DMA 4 IVM 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. **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. **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® drift control spray systems, apply DMA 4 IVM in a total spray volume of 12 to 15 gallons per acre. Apply to attain a concentration of 2 to 4 ppm (see table below).

[1] DMA 4 IVM contains 3.8 lb of acid equivalent per gallon of product.

Amount to Apply to Attain a Concentration of 2 to 4 ppm			
Surface Area	Average Depth (ft)	2,4-D Acid Equivalent to Apply (lb/acre)	Amount of DMA 4 IVM to Apply (gal/acre)
1 acre	1	5.4 to 10.8	1.42 to 2.84
	2	10.8 to 21.6	2.84 to 5.68
	3	16.2 to 32.4	4.26 to 8.53
	4	21.6 to 43.2	5.68 to 11.37
	5	27.0 to 54.0	7.10 to 14.21

Precautions and Restrictions for Aquatic Use:

- Do not treat areas that are not infested with aquatic weeds.
- Do not exceed 10.8 lb of acid equivalent (2.84 gallons) per acre foot of treated water.
- Do not apply within 1500 ft of an active potable or irrigation water intake.
- **Wind Speed:** Do not apply when wind speed is at or above 10 mph when making ground or surface applications. Do not aerially apply when wind speed is greater than 5 mph. Wind speed restrictions do not apply for subsurface applications used in submerged aquatic weed control programs.
- **Dissolved Oxygen Ratio:** Fish require oxygen dissolved in water for life processes and a favorable water-oxygen ratio must be maintained. Decaying weeds use up dissolved oxygen in water. Fish kill resulting from decaying plant material can be prevented by: (1) treating the entire area when the weed mass is sparse and the rate of decomposition will not be sufficient to disturb the water-oxygen ratio; or (2) If application is delayed until there is a dense weed mass, treat no more than one-half of a lake or pond at one time. For large bodies of weed-infested water, apply product in lanes, leaving buffers strips at least 100 feet wide which can be treated in 4 to 5 weeks or when vegetation in treated lanes has decomposed. During the growing season, decomposition of treated strips will usually occur in 2 to 3 weeks.
- **Irrigation:** Unless an approved assay indicates that the 2,4-D concentration is 100 ppb (0.1 ppm) acid or less, do not use water from treated areas for; (1) irrigation other than non-crop areas or those crops or plants labeled for direct application of 2,4-D; or (2) mixing sprays for agricultural or ornamental plants.
- **Potable Water:** Unless an approved assay indicates that the 2,4-D concentration is 70 ppb (0.07 ppm) acid or less, do not use water from treated areas for potable water (drinking water).
- **Other Uses of Treated Water:** Except as stated above, there are no restrictions on use of water from treated areas for fishing, watering of livestock, or other domestic purposes.

Warranty Disclaimer

Dow AgroSciences 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. Dow AgroSciences 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. Crop 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 temperatures, 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 Dow AgroSciences 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 Dow AgroSciences' 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.

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

The terms of the Warranty Disclaimer above and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

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EPA-accepted 10/13/2000

Label Code: D02-141-001

Initial Printing

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AQUA-KLEEN®

A SELECTIVE HERBICIDE For Controlling Certain Unwanted Aquatic Plants

ACTIVE INGREDIENT:	
Butoxyethyl Ester of 2,4-Dichlorophenoxyacetic Acid*	27.6%
OTHER INGREDIENTS:	72.4%
TOTAL	100.0%

*Isomer Specific AOAC Method,
Equivalent to 2,4-Dichlorophenoxyacetic Acid 19.0%

EPA Registration No. 228-378-4581 EPA Establishment No. 228-IL-1

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID:

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.

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.

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.

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

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.

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

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 Water milfoil (Myriophylium spp.) Water stargrass (Heteranthera dubia)	100 to 200	5
SLIGHTLY TO MODERATELY RESISTANT WEEDS Bladderwort (Utriculana spp.) White water lily (Nymphaea spp.) Yellow water lily or (Nuphar spp.) spatterdock* Water shield (Brasenia spp.) Water chestnut (Trapa natans) Coontail* (Ceratophyllum demersum)	150 to 200	7½ to 10

*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 or 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.

EMERGENCY TELEPHONE NUMBERS:

CHEMTREC: (800) 424-9300

MEDICAL: (303) 623-5716

Rocky Mountain Poison Control Center

WARRANTY AND DISCLAIMER

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5-F106S-01 A1 (1/01) Made and Printed in U.S.A.

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Specimen Label

Herbicide

Aquatic Sites: For control of emersed, 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.

Active Ingredient:

triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, triethylamine salt	44.4%
Inert Ingredients	55.6%
Total	100.0%

Acid 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.)

Precautionary Statements

Hazards to Humans and Domestic Animals

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
- 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, use detergent and hot water. Keep and wash PPE separately from other laundry.

FIRST AID	
In the 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 poison control center or doctor for treatment advice.
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.
If swallowed	• Call a poison control center or doctor 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 a unconscious person.

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

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.

Refer to inside of label booklet for additional precautionary information including Personal Protective Equipment (PPE), User Safety Recommendations and Directions for Use including Storage and Disposal.

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.**

In case of emergency endangering health or the environment involving this product, call **INFOTRAC at 1-800-535-5053.** If you wish to obtain additional product information, visit our web site at www.sepro.com.

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

EPA Reg. No. 62719-37-67690 EPA Est. No. 464-MI-1
FPL 012203 SPC - 381116

*Trademark of Dow AgroSciences LLC manufactured for:
SePRO Corporation Carmel, IN 46032, U.S.A.

Renovate® 3 Herbicide

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.

Environmental Hazards

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.

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
- 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.

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.

Container Disposal for Refillable Containers: Seal all openings which have been opened during use. Return the empty container to a collection site designated by SePRO Corporation. If the container has been damaged and cannot be returned according to the recommended procedures, contact SePRO Corporation at 1-800-419-7779 to obtain proper handling instructions.

Container Disposal (Metal): Do not reuse container. Triple rinse (or equivalent). 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.

Container Disposal (Plastic): Do not reuse container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

General: Consult federal, state, or local disposal authorities for approved alternative procedures.

General Information

For Aquatic and Wetland Sites

Renovate[†] 3 herbicide is recommended for control of emersed, 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

In Arizona: The state of Arizona has not approved Renovate[†] 3 for use on plants grown for commercial production, specifically forests grown for commercial timber production, or on designated grazing areas.

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.

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 used to transport irrigation water. It is permissible to treat 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 mistblower 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 as 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 cross-wind, 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 2-10 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 by Renovate 3

Woody Plant Species

alder	cascara	maples
arrowwood	ceanothus	mulberry
ash	cherry	oaks
aspen	Chinese Tallow	poison ivy
bear clover (bearmat)	chinquapin	poison oak
beech	choke cherry	poplar
birch	cottonwood	salt-bush (*Baccharis* spp.)
blackberry	crataegus (hawthorn)	sweetgum
blackgum	locust	waxmyrtle
Brazilian pepper	Maleleuca (seedlings)	willow

Annual and Perennial Broadleaf Weeds

burdock	ligodium	tropical sodaapple
Canada thistle	plantain	vetch
curly dock	smartweed	wild lettuce
elephant ear	tansy ragwort	

Aquatic Weeds

alligatorweed	milfoil species	purple loosestrife
American lotus	nuphar (spatterdock)	waterhyacinth
American frogbit	parrotfeather*	waterlily
Aquatic sodaapple	pickerelweed	waterprimose
Eurasian watermilfoil	pennywort	

*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 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 ot 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 triclopyr (8 quarts of Renovate 3) per acre per annual growing season.

Use of a non-ionic surfactant in the spray mixture is recommended 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
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 triclpyr (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 of a non-ionic surfactant in the spray mixture is recommended. 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 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, it is recommended that an approved non-ionic aquatic surfactant be added 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.

Renovate 3 Application Rate (quart/acre)				
	Setback Distance (ft)			
Area Treated (acres)	2 qt/acre	4 qt/acre	6 qt/acre	8 qt/acre
< 4	0	200	400	500
> 4 - 8	0	200	700	900
> 8 - 16	0	200	700	1000
> 16	0	200	900	1300

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. Higher rates in the rate range are recommended 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 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.

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.

Concentration of Triclopyr Acid in Water (ppm ae)					
	Gallons of Renovate 3 per surface acre at specified depth				
Water Depth (feet)	0.75 ppm	1.0 ppm	1.5 ppm	2.0 ppm	2.5 ppm
1	0.7	0.9	1.4	1.8	2.3
2	1.4	1.8	3.3	3.6	4.6
3	2.1	2.9	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

APPENDIX D: Other Information

WDOE Water Rights Listing for Loon Lake

WDNR Natural Heritage Program letter *

WDFW Priority Habitats and Species Report for Loon Lake *

Report on the use of 2,4-D for selective control of an early infestation of Eurasian watermilfoil in Loon Lake, Washington (Parsons et al. 2001) *

Report on recreational threats to nesting waterbird habitat in the Loon Lake wetlands (Poleschook and Gumm 2002)

* Not included in digital file of this document.

Washington Department of Ecology, Water Right Tracking System

Surface Water Rights for Loon Lake, Stevens County, WA. WRIA 59.

Report Date: 3/12/2004 *Reported By: CDUS461*

File #	First Primary Holder	Purpose	Location
G3-161435CL	PATTON JOHN E	DG	30.0N 41.0E 34
G3-162014CL	PATTERSON A V	DG	30.0N 41.0E 34
G3-162016CL	PATTERSON A V	DG	30.0N 41.0E 34
G3-159796CL	NELSON EARL	IR,DG	29.0N 41.0E 03
G3-159797CL	NELSON EARL	IR,DG	29.0N 41.0E 03
G3-156231CL	SWANSON DONALD E	DG	30.0N 41.0E 34
G3-156232CL	ROSS WALTER J	IR,DG	30.0N 41.0E 34
G3-156234CL	ROSS WALTER J	DG	30.0N 41.0E 34
G3-155642CL	GAUTHIER IRENE M	DG	30.0N 41.0E 34
G3-153773CL	TROUTMAN PETER W	DG	30.0N 41.0E 33
G3-151855CL	BRUNDIGE EMMA	DG	29.0N 41.0E 03
G3-151720CL	LAKE SHORE HOMES CORP	DG	29.0N 41.0E 03
G3-151721CL	LAKE SHORE HOMES CORP	DG	29.0N 41.0E 03
G3-151722CL	LAKE SHORE HOMES CORP	DG	29.0N 41.0E 02
G3-150704CL	ERLANDSON EVAN D	DG	29.0N 41.0E 10
G3-144567CL	MORGAN HAYDN P	DG	30.0N 41.0E 33
G3-141761CL	STEWART CHARLES B	IR,DG	29.0N 41.0E 03
S3-140943CL	SNIDER TRUCKING SERV INC	No ID	30.0N 41.0E 33
G3-141058CL	STELTING CLAYTON A	DG	29.0N 41.0E 03
G3-139910CL	MILLER RONALD F	DG	29.0N 41.0E 03
G3-139935CL	MCQUEEN DAN C	IR,DG	29.0N 41.0E 10
G3-136494CL	CONLEY WILLIAM	ST,IR	29.0N 41.0E 02
G3-136495CL	CONLEY WILLIAM	ST,IR	29.0N 41.0E 02
G3-136599CL	SCHERFEUBERG B D	DG	30.0N 41.0E 34
G3-135737CL	POND HARRIET K	IR,DG	29.0N 41.0E 11
G3-126387CL	PUTHOFF DARRELL J	DG	30.0N 41.0E 34
G3-126388CL	PUTHOFF DARRELL J	IR	30.0N 41.0E 34
G3-126752CL	BLACKWELL VERA M	DG	30.0N 41.0E 33
G3-125312CL	GILMORE LUCY H	DG	29.0N 41.0E 03
G3-122568CL	OLSEN VIRGIL	IR,DG	30.0N 41.0E 34
G3-119923CL	HASKINS MAYNERD W	IR,DG	29.0N 41.0E 10
G3-118893CL	BEAN GARY C ETAL	IR,DG	30.0N 41.0E 34
G3-115834CL	QUALLS C M	DG	30.0N 41.0E 33
G3-114726CL	HAWSON ALBERT E	IR,DG	30.0N 41.0E 34
G3-114727CL	HAWSON ALBERT E	IR,DG	30.0N 41.0E 34
G3-114730CL	MICHAELS HELEN A	DG	30.0N 41.0E 34
G3-109434CL	MEYER DONALD D	ST,IR	29.0N 41.0E 04
G3-109658CL	NEWELL BRUCE H	DG	29.0N 41.0E 10
G3-107003CL	MAC NAUGHTON D S	IR,DG	30.0N 41.0E 33
G3-107724CL	DEACONESS HOSPITAL	DG	30.0N 41.0E 33
G3-106630CL	LANCASTER ELAINE	DG	30.0N 41.0E 33
G3-100716CL	JONES WM H SR	DG	29.0N 41.0E 03
G3-100902CL	FRUCI ROGER	IR,DG	30.0N 41.0E 34
G3-100903CL	FRUE ROGER	IR,DG	30.0N 41.0E 34
G3-097528CL	SMITH C L	DG	30.0N 41.0E 34
G3-096843CL	LELIEFELD HAROLD B	DG	30.0N 41.0E 34
G3-096069CL	MASSENDER JACK L	DG	30.0N 41.0E 34
G3-092756CL	HENSEL ARTHUR P	DG	30.0N 41.0E 34
G3-092757CL	HENSEL ARTHUR P	IR	30.0N 41.0E 34
G3-091790CL	GOEDEN GERALD M	DG	29.0N 41.0E 03
G3-090524CL	FIELDS WILLIAM M	DG	29.0N 41.0E 02
G3-089527CL	MC GIVERN CHARLES C	DG	29.0N 41.0E 11
G3-088039CL	RAFTIS JIM	IR,DG	30.0N 41.0E 34
G3-086828CL	PATTERSON MELVIN J.	DG	30.0N 41.0E 34
G3-087350CL	DAVIS ANNA V.	DG	30.0N 41.0E 34
G3-087351CL	DAVIS ANNA V.	IR	30.0N 41.0E 34

File #	First Primary Holder	Purpose	Location
G3-087708CL	KOCH FREDRICK H.	DG	30.0N 41.0E 34
G3-087938CL	HOOVER MERLYN E.	DG	29.0N 41.0E 03
G3-086074CL	WANECEK ROBERT F.	DG	30.0N 41.0E 33
G3-086323CL	GILMORE LUCY H	DG	29.0N 41.0E 03
G3-086402CL	BARCLAY CLIFFORD	DG	30.0N 41.0E 34
G3-086403CL	BARCLAY CLIFFORD	DG	30.0N 41.0E 34
G3-083506CL	SAMPSON RAYMOND R.	DG	29.0N 41.0E 03
G3-083507CL	SAMPSON RAYMOND R.	DG	29.0N 41.0E 03
G3-083836CL	MCWHORTER GLADYS C.	DG	29.0N 41.0E 10
G3-084397CL	THOMPSON MAMIE L.	DG	30.0N 41.0E 33
G3-084540CL	FLUMAN ERVIN L.	DG	30.0N 41.0E 34
G3-083100CL	BADT ROY J.	DG	30.0N 41.0E 34
G3-080607CL	OTTEN JAKE E.	DG	29.0N 41.0E 10
G3-078023CL	BIDDLE ALBERT	DG	30.0N 41.0E 34
G3-076690CL	HERIGSTAD ELDON	DG	29.0N 41.0E 10
G3-075739CL	SMITT CONRAD	DG	29.0N 41.0E 10
G3-075129CL	DRY JOHN D.	DG	29.0N 41.0E 10
G3-075131CL	COATES KENNETH J.	DG	30.0N 41.0E 33
G3-074321CL	NELSON CLARENCE E.	DG	29.0N 41.0E 03
G3-074410CL	RENZ DONALD W.	DG	30.0N 41.0E 34
G3-072846CL	REPP WALTER	DG	29.0N 41.0E 03
G3-071924CL	TINSLEY WILSON S.	DG	29.0N 41.0E 10
G3-070939CL	STEEN W. C.	DG	29.0N 41.0E 03
G3-068488CL	FAULKNER ROBERT J.	DG	30.0N 41.0E 33
G3-065280CL	RUSTAD PAUL E.	DG	30.0N 41.0E 34
G3-062932CL	ELDAHL MILTON	DG	29.0N 41.0E 11
G3-059980CL	BIEKER ROBERT A.	DG	30.0N 41.0E 34
G3-060012CL	HANNA GORDON L.	DG	29.0N 41.0E 03
G3-060921CL	JONES DEL M.	DG	29.0N 41.0E 03
G3-060974CL	FREEMAN W. C.	DG	29.0N 41.0E 02
G3-059757CL	BERG ALAN L.	DG	29.0N 41.0E 03
G3-058130CL	SANTORA RALPH T.	DG	30.0N 41.0E 34
G3-058420CL	HOWARD LLOYD A.	DG	30.0N 41.0E 34
G3-057165CL	MOE HARLOW O.	DG	30.0N 41.0E 34
G3-057248CL	RULE JOHN A.	DG	29.0N 41.0E 03
G3-057589CL	MEYER GEORGE & SONS	DG	29.0N 41.0E 02
G3-053800CL	LUITEN BINA G.	DG	30.0N 41.0E 34
G3-052065CL	RHODES MARIE	ST	30.0N 41.0E 34
G3-051295CL	COON CHARLES E.	DG	30.0N 41.0E 34
G3-051296CL	COON CHARLES E.	DG	30.0N 41.0E 34
G3-050113CL	RUSTAD PAUL E.	DG	30.0N 41.0E 34
G3-047123CL	JONES CHARLOTTE A.	DG	29.0N 41.0E 03
G3-047247CL	HOFFMAN EDWARD C.	DG	29.0N 41.0E 11
G3-047954CL	FELTON RICHARD	ST,DG	29.0N 41.0E 11
G3-048034CL	WITT FLORENCE	DG	29.0N 41.0E 04
G3-046847CL	EVANS LEWIS N.	DG	30.0N 41.0E 33
G3-045293CL	SICILIA FRANCES C.	DG	29.0N 41.0E 03
G3-045003CL	GALIPEAU ANNA M.	DG	30.0N 41.0E 34
G3-043309CL	COLOMB ROBERT W.	DG	29.0N 41.0E 11
G3-043635CL	DOUGLAS MARIE H.	DG	29.0N 41.0E 04
G3-043770CL	ECKER HELEN	DG	29.0N 41.0E 03
G3-043976CL	ROHDA CHARLES M JR.	DG	30.0N 41.0E 34
G3-044061CL	ELLIS INEX V.	DG	30.0N 41.0E 34
G3-042414CL	ROBERTS THOMAS	DG	29.0N 41.0E 03
G3-042415CL	ROBERTS THOMAS	DG	29.0N 41.0E 03
G3-042567CL	JUSTICE JAMES T.	DG	30.0N 41.0E 34
G3-042658CL	LOON LAKE CEMETERY ASSOC.	No ID	30.0N 41.0E 34
G3-040213CL	MURPHY JAMES B.	DG	30.0N 41.0E 34
G3-039445CL	KEELER SUZANNE F.	DG	30.0N 41.0E 34
G3-038879CL	EGGER PETER P.	DG	29.0N 41.0E 02

File #	First Primary Holder	Purpose	Location
G3-037576CL	GRAYS GENE I.	DG	30.0N 41.0E 34
G3-037583CL	HUTCHINS ROBERT W.	DG	29.0N 41.0E 03
G3-037763CL	SONNER WILLIAM M.	DG	30.0N 41.0E 33
G3-036553CL	DENNY WALTER D.	DG	30.0N 41.0E 33
G3-037281CL	SCHULTZ GLEN W.	DG	30.0N 41.0E 34
G3-036120CL	SCHONFELD G. F.	DG	29.0N 41.0E 03
G3-034150CL	MCRAYDE W. F.	DG	30.0N 41.0E 33
G3-034600CL	ELLIS M D.	DG	30.0N 41.0E 33
G3-032834CL	PHILLIPS HESTER M.	DG	30.0N 41.0E 34
G3-032988CL	FOX CARL E.	DG	30.0N 41.0E 34
G3-032989CL	FOX CARL E.	DG	30.0N 41.0E 34
G3-030138CL	PEARSON HOWARD	DG	29.0N 41.0E 03
G3-030333CL	PECNICK MAUDE E.	DG	30.0N 41.0E 34
G3-028736CL	SACCO CLYDE H.	IR	30.0N 41.0E 34
S3-028737CL	SACCO CLYDE H.	DG	30.0N 41.0E 34
G3-028880CL	LEMONIER JOHN P.	DG	30.0N 41.0E 34
S3-026701CL	DRINKARD FRANCIS K.	DG	29.0N 41.0E 04
G3-026850CL	MCVAY J. D. EST OF	ST,IR	30.0N 41.0E 33
G3-026851CL	MCVAY J. D. EST OF	ST,IR	30.0N 41.0E 33
G3-025159CL	JONES DON V.	DG	29.0N 41.0E 11
G3-025660CL	KOPET JEROME C.	DG	29.0N 41.0E 10
S3-025661CL	KOPET JEROME C.	DG	29.0N 41.0E 10
G3-025682CL	JOHNSON SYDNEY W.	DG	29.0N 41.0E 02
S3-025026CL	TAUSCH RICHARD G.	DG	29.0N 41.0E 10
G3-020940CL	DESMOND WILLIAM R.	DG	29.0N 41.0E 10
G3-021164CL	ZIMMERMAN WILLIAM K.	DG	30.0N 41.0E 34
G3-021181CL	NEBERGALL E. F.	IR	30.0N 41.0E 34
G3-021182CL	NEBERGALL E. F.	DG	30.0N 41.0E 34
G3-021878CL	ALLEN V. W.	DG	29.0N 41.0E 03
S3-021935CL	FISHER DONALD D.	DG	29.0N 41.0E 03
G3-020368CL	ROLLY WILMER	DG	29.0N 41.0E 03
S3-018661CL	ANDERSON C. WILLIAM	DG	29.0N 41.0E 04
S3-018894CL	CONNICK JOHN R.	DG	29.0N 41.0E 03
G3-019193CL	LEHAN MARGARET	DG	29.0N 41.0E 10
G3-017343CL	BEALS MELVYN E.	DG	29.0N 41.0E 03
G3-017125CL	DAVIS WALTER Z.	DG	30.0N 41.0E 34
G3-014752CL	LIVINGSTON NORMAN W.	DG	29.0N 41.0E 10
S3-015032CL	SCARPELLI NICHOLAS P.	DG	29.0N 41.0E 04
S3-012894CL	BRIDGE CARL R.	DG	29.0N 41.0E 03
G3-013279CL	CHINDAHL LEONARD	DG	29.0N 41.0E 02
S3-009352CL	BIDDLE BETTY	DG	29.0N 41.0E 11
S3-009353CL	BIDDLE BETTY	ST,DG	29.0N 41.0E 11
G3-009739CL	NASON JULIA K.	DG	29.0N 41.0E 10
S3-010135CL	KEMP FRANK	DG	29.0N 41.0E 03
S3-009114CL	BIDDLE BETTY	ST,IR	29.0N 41.0E 02
G3-006934CL	WEBER KATHRINE	DG	30.0N 41.0E 34
G3-006935CL	PARKS W. M.	DG	30.0N 41.0E 34
G3-006936CL	RANSBOTTOM WM.	DG	30.0N 41.0E 34
G3-006937CL	RANSBOTTOM WM.	DG	30.0N 41.0E 34
G3-006938CL	RANSBOTTOM WM.	IR	30.0N 41.0E 34
G3-005698CL	HOLTZCLAW ERNEST R.	DG	29.0N 41.0E 03
G3-001414CL	SHERFEY LEO I.	DG	30.0N 41.0E 33
G3-048905CL	RUSSELL ROY J.	DG	30.0N 41.0E 34
G3-20027CWRIS	Granite Point Park Co Inc	IR,DM	29.0N 41.0E 02
G3-*02616CWRIS	GETTMAN H	IR	29.0N 41.0E 11
S3-149052CL	RUSSELL SIGNE J	DG	29.0N 41.0E 11
S3-087616CL	HOEFT CLARENCE	DG	29.0N 41.0E 10
S3-087707CL	KOCH FREDRICK H.	IR	30.0N 41.0E 34
S3-087937CL	HOOVER MERLYN E.	IR	29.0N 41.0E 03
S3-068489CL	FAULKNER ROBERT J.	No ID	30.0N 41.0E 33

File #	First Primary Holder	Purpose	Location
S3-064538CL	FONES R. O.	DG	29.0N 41.0E 03
S3-057592CL	MEYER GEO.	DG	29.0N 41.0E 02
S3-057593CL	MEYER GEORGE	DG	29.0N 41.0E 02
S3-157255CL	BLIZZARD HARRY W	DG	29.0N 41.0E 10
CS3-*12051C	Meyer Donald		29.0N 41.0E 02
S3-24994PWRIS	WEIGET L A & J D	DS	29.0N 41.0E 04
S3-25291PWRIS	WILLIAMS ETHAN A	DS	29.0N 41.0E 03
S3-22408PWRIS	HIDER N L	DS	29.0N 41.0E 04
S3-*16990PWRIS	FLATHERS B B	DS	30.0N 41.0E 34
S3-*20273PWRIS	CROSSMAN F A	DS	30.0N 41.0E 33
S3-*12714PWRIS	LUHR ALVIN W	IR	30.0N 41.0E 34
S3-*15852PWRIS	WUESTHOFF ROBERT M	DM	29.0N 41.0E 04
S3-28109AWRIS	BLAINE DEL W	DS	29.0N 41.0E 04
S3-26299AWRIS	DESMOND WILLIAM R	DS	29.0N 41.0E 10
S3-20490AWRIS	BEALS MELVYN EVERRET	IR,FR	29.0N 41.0E 03
S3-22808AWRIS	STEEN WILLIAM ET UX	DS	29.0N 41.0E 03
S3-22853AWRIS	CARTER RONALD E	DS	29.0N 41.0E 03
S3-23190AWRIS	ANDREWS GEO E	DS	30.0N 41.0E 33
S3-24096AWRIS	LUITEN BINA G	DS	30.0N 41.0E 34
S3-*20193AWRIS	LOON LAKE PARK CO	DM	30.0N 41.0E 33
S3-159798CL	NELSON EARL	IR,DG	29.0N 41.0E 03
S3-159799CL	NELSON EARL	IR,DG	29.0N 41.0E 03
S3-152057CL	GUYOR JAMES G	DG	30.0N 41.0E 33
S3-150703CL	ERLANDSON EVAN D	IR	29.0N 41.0E 10
S3-149148CL	FISHER KENNETH M	IR	29.0N 41.0E 10
S3-141059CL	STELTING CLAYTON A	DG	29.0N 41.0E 03
S3-139985CL	BIGGAR GLADYS M	DG	29.0N 41.0E 03
S3-138108CL	OLSEN CHARLES W	DG	29.0N 41.0E 04
S3-128504CL	LEIPHAM DARYL L	DG	29.0N 41.0E 03
S3-128808CL	GORMAN JOHN F	DG	30.0N 41.0E 33
S3-114731CL	MICHAELS HELEN A	IR	30.0N 41.0E 34
S3-113526CL	CAMPBELL KEITH H	DG	30.0N 41.0E 33
S3-114097CL	NOLDEN M P	DG	29.0N 41.0E 03
S3-112820CL	CORLISS ELIZABETH E	DG	30.0N 41.0E 33
S3-111633CL	CROSSETT ELVINA	DG	30.0N 41.0E 34
S3-110392CL	RANKIN FRED F	IR,DG	29.0N 41.0E 10
S3-104867CL	LITTLE JAMES C	DG	29.0N 41.0E 04
S3-104351CL	MRS GEORGE MEYER & SONS	IR	29.0N 41.0E 02
S3-100717CL	JONES WM H SR	IR,DG	29.0N 41.0E 03
S3-100055CL	KOEHLER HAROLD C	IR,DG	30.0N 41.0E 34
S3-097183CL	HAMMER M H	DG	29.0N 41.0E 04
S3-095134CL	TIMM ROBERT D	DG	30.0N 41.0E 33
S3-093466CL	FITZPATRICK LEONARD J	DG	30.0N 41.0E 33
S3-093668CL	JENSEN HOWARD C	DG	30.0N 41.0E 33
S3-093059CL	DRY JOHN	IR,DG	29.0N 41.0E 10
S3-086092CL	LIENIG A. R.	DG	30.0N 41.0E 34
S3-083214CL	LIEHRMAN FRANK J.	DG	29.0N 41.0E 02
G3-081874CL	MILLER ROBERT H.	DG	30.0N 41.0E 34
S3-078736CL	SISTY CLOYD J.	No ID	30.0N 41.0E 33
S3-077501CL	WILLIAMS FRANKLIN E.	DG	29.0N 41.0E 04
S3-078284CL	ROBERTS WILLIAM D.	DG	29.0N 41.0E 03
S3-075749CL	WALKER RUSSELL	DG	29.0N 41.0E 03
S3-065233CL	PETERS EUGENE C.	DG	29.0N 41.0E 04
S3-065385CL	RICHARDSON RALPH S.	DG	30.0N 41.0E 33
S3-064346CL	BOWERMAN F. E.	DG	29.0N 41.0E 10
S3-059979CL	BIEKER ROBERT A.	DG	30.0N 41.0E 34
S3-060973CL	FREEMAN W. C.	DG	29.0N 41.0E 02
S3-059150CL	HOWARD LLOYD A.	DG	30.0N 41.0E 34
S3-057588CL	MEYER GEORGE & SONS	DG	29.0N 41.0E 02
S3-057591CL	MEYER GEO.	DG	29.0N 41.0E 02

File #	First Primary Holder	Purpose	Location
S3-056384CL	CARTER M. J.	DG	30.0N 41.0E 33
S3-056385CL	CARTER M. J.	DG	30.0N 41.0E 33
G3-053842CL	HENRIKSEN RICHARD S.	DG	30.0N 41.0E 34
S3-053956CL	BURGER FRANK	DG	29.0N 41.0E 03
S3-054658CL	BROOKS BRADSHAW	DG	29.0N 41.0E 03
S3-053025CL	DORAN GILBERT F.	DG	29.0N 41.0E 10
S3-052116CL	OLSON OLIVER J.	DG	29.0N 41.0E 03
S3-052515CL	WIESE RAY G.	DG	29.0N 41.0E 10
S3-051420CL	GATES CHARLES L.	DG	30.0N 41.0E 33
S3-049771CL	SHAW ORPH C.	DG	29.0N 41.0E 04
S3-048623CL	NICODEMUS MINNIE	DG	29.0N 41.0E 03
S3-047349CL	GRAYE GENE I.	DG	30.0N 41.0E 34
S3-047583CL	ESLICK MILES P.	DG	30.0N 41.0E 33
S3-048033CL	WITT FLORENCE	DG	29.0N 41.0E 04
S3-045004CL	GALIPEAU ANNA M.	DG	30.0N 41.0E 34
S3-043754CL	PERRY LEV L.	DG	29.0N 41.0E 10
S3-042566CL	JUSTICE JAMES T.	DG	30.0N 41.0E 34
S3-041665CL	FOLLEVAAG GENORA E. MRS.	DG	30.0N 41.0E 33
S3-041793CL	ESKEBERG JACK W.	DG	29.0N 41.0E 03
S3-040435CL	RUX VIRGIL R.	DG	29.0N 41.0E 04
S3-038359CL	HAYNES EUGENE JACK	DG	29.0N 41.0E 03
S3-037584CL	HUTCHINS ROBERT W.	DG	29.0N 41.0E 03
S3-037059CL	ROBERTSON EMMA SCOTT	DG	30.0N 41.0E 34
S3-037239CL	TAFT JAMES W.	DG	30.0N 41.0E 33
S3-035453CL	GOEDEN GERALD M.	No ID	29.0N 41.0E 03
S3-035570CL	NELSON NORMA E	DG	29.0N 41.0E 03
S3-034388CL	SIPE STEVEN R.	DG	29.0N 41.0E 11
S3-034696CL	PEARSON PHILIP A.	DG	29.0N 41.0E 03
S3-033887CL	WILLEY MARTIN	DG	29.0N 41.0E 04
S3-033921CL	KOLBET EDWARD C.	DG	29.0N 41.0E 04
S3-032756CL	SPRUTE RICHARD H.	DG	29.0N 41.0E 10
S3-032833CL	PHILLIPS HESTER M.	DG	30.0N 41.0E 34
S3-27551CWRIS	EMERSON ROBERT A	DS	29.0N 41.0E 04
S3-26298CWRIS	DESMOND WILLIAM R	DS	29.0N 41.0E 10
S3-26573CWRIS	FJELLMAN LEONARD R	DS	29.0N 41.0E 04
S3-26624CWRIS	PECNICK MAUDE E	DS	30.0N 41.0E 34
S3-25584CWRIS	SOLBERG HOLLOWAY M	DS	29.0N 41.0E 04
S3-25674CWRIS	PRUFER MARVENE G	DS	30.0N 41.0E 34
S3-24787CWRIS	ROHDA CHARLES M JR	DS	30.0N 41.0E 34
S3-24788CWRIS	NEEL ASHLEY W	DS	29.0N 41.0E 03
S3-24795CWRIS	CHRISTENSON ALTON W	DS	30.0N 41.0E 33
S3-24796CWRIS	KNOWLTON MYRTLE D	DM	29.0N 41.0E 11
S3-24797CWRIS	MILLER ROBERT H	DS	30.0N 41.0E 34
S3-24804CWRIS	STRATTON ALLEN F	DS	29.0N 41.0E 10
S3-24808CWRIS	FRANZ CLARENCE L	DS	30.0N 41.0E 33
S3-24809CWRIS	STACHOFSKY GEO ET UX	DS	29.0N 41.0E 10
S3-24812CWRIS	PAULSEN ALVIN	DS	29.0N 41.0E 03
S3-24870CWRIS	THORNTON HARRY E	DS	29.0N 41.0E 03
S3-25012CWRIS	BUEGHLY KEITH ET UX	DS	29.0N 41.0E 04
S3-25044CWRIS	TESSIER MARGUERITE	DS	30.0N 41.0E 33
S3-25317CWRIS	CARTER M J	DS	30.0N 41.0E 33
S3-23993CWRIS	AILIE CHARLES	DS	29.0N 41.0E 04
S3-23994CWRIS	RAFTIS JAMES P	DS	30.0N 41.0E 34
S3-24023CWRIS	FIELD JOAN E	DS	30.0N 41.0E 34
S3-24063CWRIS	HOEFT MRS CLARENCE	DS	29.0N 41.0E 10
S3-24067CWRIS	HURLEY JOHN H	DS	29.0N 41.0E 04
S3-24078CWRIS	WILSON WALTER H	DS	29.0N 41.0E 03
S3-24107CWRIS	LITTLE JAMES C	DS	29.0N 41.0E 04
S3-24126CWRIS	HINES ALGIE C	DS	30.0N 41.0E 33
S3-24235CWRIS	BOWERMAN F E	DS	29.0N 41.0E 10

File #	First Primary Holder	Purpose	Location
S3-23571CWRIS	MORGAN HAYDON P	FR,DS	30.0N 41.0E 33
S3-23673CWRIS	TOURTELLOTTE THOMAS	DS	29.0N 41.0E 04
S3-23724CWRIS	MILLER RONALD ET UX	DS	29.0N 41.0E 03
S3-23736CWRIS	WILLEY MARTIN R & M	DS	29.0N 41.0E 04
S3-23748CWRIS	BRUNDIGE EMMA	DS	29.0N 41.0E 03
S3-23768CWRIS	CHEEK LESLIE L	DS	30.0N 41.0E 33
S3-23769CWRIS	CARLSON ELLEN B	DS	29.0N 41.0E 04
S3-23780CWRIS	WEBSTER CHARLES F	DS	29.0N 41.0E 03
S3-23832CWRIS	BROUILLARD LYLE L	DS	29.0N 41.0E 10
S3-23956CWRIS	BIGGAR GLADYS M	DM	29.0N 41.0E 03
S3-23162CWRIS	JOHNSON LYLE F ET UX	DS	29.0N 41.0E 03
S3-23177CWRIS	OSTNESS ARLEEN	DS	30.0N 41.0E 33
S3-23184CWRIS	BLEVINS DUANE R	DS	29.0N 41.0E 02
S3-23185CWRIS	ZIMMERMAN WILLIAM	DS	30.0N 41.0E 34
S3-23285CWRIS	FIELD JOAN	DS	30.0N 41.0E 34
S3-23288CWRIS	DELISLE DAVID J	DM	29.0N 41.0E 03
S3-23318CWRIS	HUBBELL FRED T	DS	29.0N 41.0E 03
S3-23323CWRIS	JOHNSON JOE R	DS	30.0N 41.0E 34
S3-23340CWRIS	RANKIN FRED F	DS	29.0N 41.0E 10
S3-23346CWRIS	YOUNGBLOOD WM E	DS	30.0N 41.0E 34
S3-23360CWRIS	MCKENNA M J	DS	29.0N 41.0E 03
S3-23421CWRIS	FRUCI ROGER ET UX	DM	30.0N 41.0E 34
S3-23437CWRIS	MASSENDER JACK L	DS	30.0N 41.0E 34
S3-23446CWRIS	MEESKE F L	DS	30.0N 41.0E 33
S3-23458CWRIS	SCOTT WESLEY ET UX	DS	29.0N 41.0E 10
S3-23485CWRIS	MACNAUGHTON D S	DS	30.0N 41.0E 33
S3-23487CWRIS	REETZ JOSEPH C	DS	29.0N 41.0E 10
S3-23496CWRIS	OHME FRANK W	DS	30.0N 41.0E 33
S3-22718CWRIS	HESLER STANLEY L	DS	29.0N 41.0E 03
S3-22721CWRIS	JOHNS HAROLD R	DS	29.0N 41.0E 03
S3-22755CWRIS	ROBINSON FRANK J	DS	29.0N 41.0E 04
S3-22776CWRIS	SACCO CLYDE H	DS	30.0N 41.0E 34
S3-22821CWRIS	JOHNSON BRUCE C ETUX	DS	30.0N 41.0E 33
S3-22831CWRIS	HOWERTON ROY M	DS	29.0N 41.0E 04
S3-22865CWRIS	COATES FRANK M	DS	30.0N 41.0E 33
S3-22911CWRIS	FONES RAYMOND C	FR,DS	29.0N 41.0E 03
S3-22913CWRIS	MILLER ROBT W	DS	29.0N 41.0E 04
S3-22918CWRIS	PEARSON PHILLIP A	DS	29.0N 41.0E 03
S3-22932CWRIS	JACOBS LOWELL ET UX	DS	29.0N 41.0E 10
S3-22936CWRIS	NELSON J MELVIN	DS	30.0N 41.0E 33
S3-22958CWRIS	BARCLAY PATRICK ETUX	DS	29.0N 41.0E 04
S3-22959CWRIS	THOMPSON MAMIE L	DS	30.0N 41.0E 33
S3-22966CWRIS	SADLER R E ET AL	DS	29.0N 41.0E 10
S3-23065CWRIS	FLUMAN ERVIN L	DS	30.0N 41.0E 34
S3-23069CWRIS	CRAIG HAROLD R	DS	29.0N 41.0E 04
S3-23088CWRIS	ROSS STERLING ET UX	DS	30.0N 41.0E 33
S3-23161CWRIS	ZARKIN PHILLIP	DS	29.0N 41.0E 03
S3-22219CWRIS	BROWN RICHARD	DS	29.0N 41.0E 03
S3-22221CWRIS	CHARLTON MARGUERITE	FR,DS	29.0N 41.0E 03
S3-22335CWRIS	KEMP FRANK	DS	29.0N 41.0E 03
S3-22340CWRIS	ROBERTS MAJOR ET UX	DS	29.0N 41.0E 04
S3-22382CWRIS	MORGAN CHARLES E	DS	29.0N 41.0E 03
S3-22452CWRIS	DAVIS ROY	DS	29.0N 41.0E 04
S3-22455CWRIS	KETTEL ERNEST W	DS	29.0N 41.0E 03
S3-22456CWRIS	JONES CHARLOTTE	DS	29.0N 41.0E 03
S3-22523CWRIS	BARNES EMIL R	FR,DS	29.0N 41.0E 10
S3-22528CWRIS	FIELD DELBERT	DS	29.0N 41.0E 03
S3-22533CWRIS	TEWINKEL JOSEPH M	DS	30.0N 41.0E 33
S3-22545CWRIS	SEIVERS N C ET UX	DS	29.0N 41.0E 03
S3-22640CWRIS	ROBBINS ROLLAND L	DS	29.0N 41.0E 03

File #	First Primary Holder	Purpose	Location
S3-22674CWRIS	HOLDEN GAIL K	DS	30.0N 41.0E 33
S3-22683CWRIS	BURGER FRANK F	DM	29.0N 41.0E 03
S3-21508CWRIS	GILBERT H W	DS	29.0N 41.0E 10
S3-21617CWRIS	SCARCELLO SAM F	DS	29.0N 41.0E 03
S3-21684CWRIS	ROBBINS ROY R	DM	29.0N 41.0E 02
S3-21702CWRIS	FELICE VICTOR F	DS	29.0N 41.0E 04
S3-21850CWRIS	COATS WILLIAM C	DS	29.0N 41.0E 03
S3-21935CWRIS	ATKINSON RICHARD J	DS	29.0N 41.0E 04
S3-21965CWRIS	BAKER CECIL H	DS	29.0N 41.0E 03
S3-21984CWRIS	DOUGLAS MARIE H	DS	29.0N 41.0E 04
S3-21986CWRIS	ECKER HELEN	DS	29.0N 41.0E 03
S3-21992CWRIS	PALMER OREN K	DS	29.0N 41.0E 04
S3-22027CWRIS	RILEY JOHN M JR	DS	30.0N 41.0E 33
S3-22035CWRIS	BURGER JAMES CHAS	DS	29.0N 41.0E 03
S3-22094CWRIS	CARUSO GEORGE	DS	29.0N 41.0E 04
S3-22106CWRIS	KILGORE WILLIAM ETUX	DS	29.0N 41.0E 03
S3-20701CWRIS	SCHANZENBACH W ET UX	DS	29.0N 41.0E 10
S3-21070CWRIS	DRINKARD FRANCIS K	DS	29.0N 41.0E 04
S3-21132CWRIS	CONNICK JOHN RICHARD	DS	29.0N 41.0E 03
S3-21134CWRIS	TAUSCH RICHARD G	DS	29.0N 41.0E 10
S3-21265CWRIS	MALOOF MARY	DS	30.0N 41.0E 34
S3-21318CWRIS	SCHMIDT RAYMOND H	DS	29.0N 41.0E 03
S3-21393CWRIS	BRIDGE CARL R	DS	29.0N 41.0E 03
S3-20608CWRIS	ANDERSON WILLIAM ETU	FR,DS	29.0N 41.0E 04
S3-01455CWRIS	SHERFEY LEO I	DS	30.0N 41.0E 33
S3-01458CWRIS	GARDNER NELLIE M	DS	29.0N 41.0E 10
S3-01459CWRIS	LARSON A W & D	DS	29.0N 41.0E 04
S3-01473CWRIS	LANG NORMAN L	DS	29.0N 41.0E 03
S3-01474CWRIS	REYNOLDS FRED O	DS	29.0N 41.0E 03
S3-*14890CWRIS	MCRAYDE W F	IR	30.0N 41.0E 33
S3-*15341CWRIS	DENNY W D	IR	30.0N 41.0E 33
S3-*12874CWRIS	RICHARDSON G E	DS	30.0N 41.0E 34
S3-*12051C	Meyer George	IR	29.0N 41.0E 02
S3-*11092CWRIS	JUST P H	IR	29.0N 41.0E 10
S3-*06368CWRIS	MCVAY J D	IR	30.0N 41.0E 33
S3-*06594CWRIS	JUST P H	IR	29.0N 41.0E 10
S3-98001288CL	MILLHORN WILLIAM	IR	30.0N 41.0E 34
S3-161434CL	PATTON JOHN E	DG	30.0N 41.0E 34
S3-123727CL	CLAWSON KENNETH W	DG	29.0N 41.0E 03
S3-058760CL	CURTISS LEVERN W.	DG	30.0N 41.0E 34

File #	First Primary Holder	Purpose	Location
53-23874CWRIS	HOLDEN GAIL K	DS	29.0N 41.0E 33
53-23883CWRIS	BURDEN FRANK P	DM	29.0N 41.0E 03
53-23886CWRIS	OLDER R W	DS	29.0N 41.0E 10
53-23887CWRIS	PEARCE LLC BRUT	DS	29.0N 41.0E 03
53-23888CWRIS	PEDERSEN ROY R	DM	29.0N 41.0E 02
53-23889CWRIS	PELOT VICTOR F	DS	29.0N 41.0E 04
53-23890CWRIS	COATS WILLIAM C	DS	29.0N 41.0E 03
53-23891CWRIS	ATKINSON RICHARD J	DS	29.0N 41.0E 04
53-23892CWRIS	BAKER CECIL H	DS	29.0N 41.0E 03
53-23894CWRIS	DOUGLAS MARIE H	DS	29.0N 41.0E 04
53-23895CWRIS	ECKER HELEN	DS	29.0N 41.0E 03
53-23896CWRIS	PALMER CHERYL K	DS	29.0N 41.0E 04
53-23897CWRIS	RILEY JOHN H JR	DS	29.0N 41.0E 33
53-23898CWRIS	BURTON JAMES CHAS	DS	29.0N 41.0E 03
53-23899CWRIS	CARLSO GEORGE	DS	29.0N 41.0E 04
53-23900CWRIS	GLOORE WILLIAM ETUX	DS	29.0N 41.0E 03
53-23901CWRIS	SCHANZE ISAAC W ET UX	DS	29.0N 41.0E 10
53-23902CWRIS	DINKARO FRANCIS K	DS	29.0N 41.0E 04
53-23903CWRIS	CONNICK JOHN RICHARD	DS	29.0N 41.0E 03
53-23904CWRIS	TAUBSCH RICHARD G	DS	29.0N 41.0E 10
53-23905CWRIS	MALCOLM MARY	DS	29.0N 41.0E 34
53-23906CWRIS	SCHAFFTY RAYMOND H	DS	29.0N 41.0E 03
53-23907CWRIS	PRIDGE CARL R	DS	29.0N 41.0E 03
53-23908CWRIS	LIDER DON WILLIAM ETU	RR DS	29.0N 41.0E 04
53-01742CWRIS	BRERTY LEO I	DS	29.0N 41.0E 33
53-01743CWRIS	GARDNER NELLIE M	DS	29.0N 41.0E 10
53-01745CWRIS	LARSON A W & D	DS	29.0N 41.0E 04
53-01747CWRIS	LONG NORMAN L	DS	29.0N 41.0E 03
53-01748CWRIS	REYMOLDS FRED O	DS	29.0N 41.0E 03
53-74880CWRIS	MCRAYDE W F	RR	29.0N 41.0E 33
53-74881CWRIS	DENNY W D	RR	29.0N 41.0E 33
53-74884CWRIS	RICHARDSON G E	DS	29.0N 41.0E 34
53-74885C	Name Change	RR	29.0N 41.0E 02
53-74886CWRIS	DUSTER R	RR	29.0N 41.0E 10
53-74887CWRIS	MCVAY J D	RR	29.0N 41.0E 33
53-74888CWRIS	DUSTER H	RR	29.0N 41.0E 10
53-88801CWCL	MILLHORN WILLIAM	RR	29.0N 41.0E 34
53-16742CL	PATTON JOHN E	DS	29.0N 41.0E 34
53-12272CL	CLAWSON KENNETH W	DS	29.0N 41.0E 03
53-02870CL	CURTISS LEVERN W	DS	29.0N 41.0E 34

WASHINGTON STATE DEPARTMENT OF
Natural Resources

DOUG SUTHERLAND
Commissioner of Public Lands

November 14, 2003

David Lamb
Loon Lake Management District
709 W Euclid Ave
Spokane WA 99205

SUBJECT: Integrated Aquatic Vegetation Management Plan for Loon Lake (T30N R41E S33,34; T29N R41E S02-04,10,11)

We've searched the Natural Heritage Information System for information on significant natural features in your project area. Currently, we have no records for rare plants or high quality native ecosystems in the vicinity of your project.

The information provided by the Washington Natural Heritage Program is based solely on existing information in the database. In the absence of field inventories, we cannot state whether or not a given site contains high quality ecosystems or rare plant species; there may be significant natural features in your study area of which we are not aware.

The Washington Natural Heritage Program is responsible for information on the state's rare plants as well as high quality ecosystems. For information on animal species of concern, please contact Priority Habitats and Species, Washington Department of Fish and Wildlife, 600 Capitol Way N, Olympia WA 98501-1091, or by phone (360) 902-2543.

Please visit our internet website at http://www.dnr.wa.gov/nhp for more information. Lists of rare plants and their status, as well as rare plant fact sheets, are available for download from the site. Please feel free to call me at (360) 902-1667 if you have any questions, or by e-mail at sandra.moody@wadnr.gov.

Sincerely,

Sandy Swope Moody

Sandy Swope Moody, Environmental Review Coordinator
Washington Natural Heritage Program

Asset Management & Protection Division, PO Box 47014, Olympia WA 98504-7014
FAX 360-902-1789

WASHINGTON STATE DEPARTMENT OF
Natural Resources
DOUG SUTHERLAND
Commissioner of Public Lands

November 14, 2003

David Lamb
Loon Lake Management District
709 W Euclid Ave
Spokane WA 99205

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Sincerely,

Sandy Swope Moody, Environmental Review Coordinator
Washington Natural Heritage Program

Asset Management & Protection Division, PO Box 47014, Olympia WA 98504-7014
FAX 360-902-1789

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WASHINGTON DEPARTMENT OF FISH AND WILDLIFE - HABITATS AND SPECIES REPORT
IN THE VICINITY OF T30R41E SECTION 33
Report Date: October 29, 2003

Information About Priority Habitats and Species Polygons

Priority Habitats and Species (PHS) polygons are labeled with a unique number and "+" symbol, roughly in the center of the polygon on the map. This PHS Poly number refers to a list of form numbers and species and habitat codes contained in the PHS Polygon Cross Reference Report (listed below). The form numbers refer to the attached PHS Polygon Report. This report details each species or habitat depicted as a polygon on the map. For a complete description of the codes used in this report please refer to the Fish and Wildlife Map Products document. This document may be viewed on our web site at http://www.wa.gov/wdfw/hab/release.htm.

Priority Habitats and Species Polygon - Summary Habitat and Species List:

This report and the accompanying maps may contain some species or habitats that are not considered priority by the agency. YES under the "PHS" column in the table below indicates that the species is considered a priority and is on the Priority Habitats and Species List and/or the Species of Concern List. NO under the "PHS" column indicates the species/habitat is not considered an agency priority.

PHS	State Status	PHS Code	Common Name	Species Use	Species Use Description
YES	SS	GAIM	COMMON LOON	RC	REGULAR CONCENTRATION
YES		ODVIO	NORTHWEST WHITE-TAILED DEER	RC	REGULAR CONCENTRATION
YES	SM	POGR	RED-NECKED GREBE	B	BREEDING OCCURRENCE
YES		WET	WETLANDS		

Priority Habitats and Species Polygon Cross Reference Report:

Form number 900000 indicates presence of PHS is unknown or the area was not mapped. Form numbers 909998, 909997, or 909996 indicate compilation errors.

PHS Poly#	Form#	PHS Code*Species Use
2	900000	*-
3	903049	WET*-
4	912554	GAIM*RC-
5	912554-912556	GAIM*RC-POGR*B-
6	912554-912556	GAIM*RC-POGR*B-
7	900222	ODVIO*RC-
8	912554-912556	GAIM*RC-POGR*B-
9	903049	WET*-
10	912554-912556	GAIM*RC-POGR*B-

Information About Wildlife Heritage Point Report

Wildlife Heritage points on the map can be referenced to this report by noting the quadpt number where the point occurs on the map, and then looking up the information listed below. This report is sorted by the quadpt number and provides details on each species depicted on the map. For a complete description of the codes used in this report, please refer to the Fish and Wildlife Map Products document. This document may be viewed on our web site at http://www.wa.gov/wdfw/hab/release.htm.

Wildlife Heritage Point - Summary Species List:

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PHS	State Status	Species Code	Common Name	Species Use	Species Use Description
YES	ST	HALE	BALD EAGLE	B	BREEDING OCCURRENCE
YES	SM	POGR	RED-NECKED GREBE	B	BREEDING OCCURRENCE

Wildlife Heritage Point Report:

Quadpt#: 4811715001 Species Code: POGR Species Use: B Common Name: RED-NECKED GREBE
Year: 1991 Class: SA Accuracy: C Scientific Name: PODICEPS GRISEGENA
State Status: SM Federal Status: Priority: YES WDFW Region: 1
Township - Range - Section: T29N R41E S03 Occurrence#: 9 Sequence#: 1
General Description: RED-NECKED GREBE NEST. 3 EGGS-80; NOT SEARCHED BUT LOCALS INDICATE GREBES ALSO NEST AT S END OF LK. VERY LITTLE UNDEVELOPED SHORELINE LEFT ON LK-91;

Quadpt#: 4811715005 Species Code: POGR Species Use: B Common Name: RED-NECKED GREBE
Year: 1994 Class: SA Accuracy: C Scientific Name: PODICEPS GRISEGENA
State Status: SM Federal Status: Priority: YES WDFW Region: 1
Township - Range - Section: T30N R41E S34_NEOFSW Occurrence#: 43 Sequence#: 1
General Description: RED-NECKED GREBE NEST.

Quadpt#: 4811715011 Species Code: POGR Species Use: B Common Name: RED-NECKED GREBE
Year: 1993 Class: SA Accuracy: C Scientific Name: PODICEPS GRISEGENA
State Status: SM Federal Status: Priority: YES WDFW Region: 1

Township - Range - Section: T29N R41E S02 SWOFSW Occurrence#: 53 Sequence#: 1
General Description: RED-NECKED GREBE NEST ON LOON PLATFORM, LOON LAKE.

Quadpt#: 4811716006 Species Code: POGR Species Use: B Common Name: RED-NECKED GREBE
Year: 1991 Class: SA Accuracy: C Scientific Name: PODICEPS GRISEGENA
State Status: SM Federal Status: Priority: YES WDFW Region: 1
Township - Range - Section: T30N R41E S33 NEOFSW Occurrence#: 9 Sequence#: 2
General Description: RED-NECKED GREBE NEST NEAR BOAT LAUNCH WITH GREBE ON NEST, NW SHORE-91;

Quadpt#: 4811716009 Species Code: POGR Species Use: B Common Name: RED-NECKED GREBE
Year: 1994 Class: SA Accuracy: C Scientific Name: PODICEPS GRISEGENA
State Status: SM Federal Status: Priority: YES WDFW Region: 1
Township - Range - Section: T30N R41E S33 NEOFSW Occurrence#: 41 Sequence#: 1
General Description: RED-NECKED GREBE NEST.

Quadpt#: 4811716011 Species Code: POGR Species Use: B Common Name: RED-NECKED GREBE
Year: 1994 Class: SA Accuracy: C Scientific Name: PODICEPS GRISEGENA
State Status: SM Federal Status: Priority: YES WDFW Region: 1
Township - Range - Section: T29N R41E S04 SWOFNE Occurrence#: 42 Sequence#: 1
General Description: RED-NECKED GREBE NEST.

Quadpt#: 4811716013 Species Code: HALE Species Use: B Common Name: BALD EAGLE
Year: 2000 Class: SA Accuracy: C Scientific Name: HALIAEETUS LEUCOCEPHALUS
State Status: ST Federal Status: FT Priority: YES WDFW Region: 1
Township - Range - Section: T30N R41E S33 SWOFSE Occurrence#: 1304 Sequence#: 1
General Description: BALD EAGLE NEST IN LIVE PONDEROSA PINE (36 IN DBH) GROWING THROUGH THE DECK OF A HOUSE (DECK BUILT AROUND THE TREE). HOUSES ARE VERY DENSE HERE, AS WELL AS ALL AROUND LAKE, BUT PINE FOREST COVER THROUGHOUT ARE PROVIDES SECURITY.

Quadpt#: 4811716015 Species Code: HALE Species Use: B Common Name: BALD EAGLE
Year: 2002 Class: SA Accuracy: C Scientific Name: HALIAEETUS LEUCOCEPHALUS
State Status: ST Federal Status: FT Priority: YES WDFW Region: 1
Township - Range - Section: T30N R41E S33 SWOFSE Occurrence#: 1304 Sequence#: 2
General Description: BALD EAGLE NEST IN FLAT-TOPPED PINE GROWING OUT OF SHORT LOOP SIDE ROAD UPHILL FROM MAIN ACCESS ROAD. LEANS TOWARDS BEACH SO CAN ALMOST DRIVE UNDER IT. DRIVE IN DEAD END RD PAST WDFW BOAT LAUNCH TO TURN AROUND AT CHRISTENSEN HOME.

Codes Used In Wildlife Heritage Point Report

Quadpt# : Unique sequential number for a point based on a US Geological 7.5-minute quadrangle.

Species Code : Code which identifies the species. List of codes are available in the documentation.

Species Use : Criteria that identifies how the area is used by the indicated species. List of codes are available in the documentation.

Common Name : Common name of the species.

Year : Year of the observation.

Class : Code that separates animals into general groups.
AA = Artifical animal (e.g., nest platforms).
GA = Game animal.
SA = Special animal (e.g., state listed and monitor species).

Accuracy : Mapping accuracy.
C = Accurate to within 1/4 mile radius and confirmed by a reliable source.
U = Accurate to within 1/4 mile radius and unconfirmed by a reliable source.

Scientific Name : Scientific name of the species.

State Status : State listing status.
SE = State endangered. SC = State candidate.
ST = State threatened. SM = State monitor.
SS = State sensitive.

Federal Status : Federal listing status.
FE = Federal endangered. FC = Federal candidate.
FT = Federal threatened. FCo = Federal concern.

Priority : Species and habitats that are considered to be priorities for conservation and management by Washington Department of Fish and Wildlife (WDFW). For a copy of the most current Priority Habitats and Species List contact WDFW PHS Section at (360)902-2543, or it is available on our web site at http://www.wa.gov/hab/wdfw/hab/phspage.htm
YES = Indicates that the species is considered a WDFW priority and is on the Priority Habitat and Species List and/or Species of Concern List.
NO = Indicates that the species is not a WDFW priority.

WDFW Region : This contains the WDFW administrative region number 1-6.

Township - Range - Section : The legal description of the species occurrence.

Occurrence# : An ascension catalog number that combined with sequence number identifies a unique record within a species.

Priority Habitats and Species Polygon Report

Form#: 900222 PHS Code: ODVIO Species Use: RC Common Name: NORTHWEST WHITE-TAILED DEER
Season:WSUF Definition: 1 Accuracy: 1 Scientific Name: ODOCOILEUS VIRGINIANUS OCHROURUS
State Status: Federal Status: Priority: YES Site Name: EAST LOON LAKE
General Description: WHITE-TAILED DEER WINTER RANGE MODERATE USE AREA, GENERALLY RESIDENT POPULATION USE AREA

Source: KONEN, LARRY, WDW SPOKANE REGIONAL OFFICE
Source Date: 90 Source Code: PROF
Synopsis: PATROL DISTRICT SITE REVIEWS AND FIELD CONTACTS WITH LOCAL RESIDENTS FROM 1981 T HROUGH 1989.

Form#: 903049 PHS Code: WET Species Use: Common Name: WETLANDS
Season: Definition: Accuracy: 0 Scientific Name:
State Status: Federal Status: Priority: YES Site Name: LOON LAKE WETLANDS
General Description: WETLANDS WITH SPRING USE BY LOONS AND POTENTIAL LOON NESTING. RED-NECKED GREBE N ESTING. WATERFOWL NESTING. GREAT BLUE HERON FURAGING AREAS.

Source: STEVE ZENDER, ALLEN PALMANTEER, JOHN ANDREWS WDFW 1974 TO PRESENT
Source Date: 100594 Source Code: PROF
Synopsis: PROFESSIONAL KNOWLEDGE AND FIELD OBSERVATION. EDIT POLYGON BOUNDARIES.

Source: ZENDER, STEVE WDW
Source Date: 91 Source Code: PROF
Synopsis: FIELD OBSERVATIONS AND KNOWLEDGE OF SPECIES OCCURRENCE SINCE 1974.

Form#: 912554 PHS Code: GAIM Species Use: RC Common Name: COMMON LOON
Season: S Definition: 1 Accuracy: 1 Scientific Name: GAVIA IMMER
State Status: SS Federal Status: Priority: YES Site Name: LOON LAKE AND DEER LAKE
General Description: COMMON LOON CONCENTRATIONS IN SPRING MIGRATION

Source: ZENDER, STEVE AND BECKY HARLESS WDFW 1994
Source Date: 092994 Source Code: DRIVE
Synopsis: INFORMATION SUBMITTED TO NON-GAME DATA BASE. BOAT AND DRIVE SURVEYS IN APRIL AND MAY OF 1993 AND 94.

Form#: 912556 PHS Code: POGR Species Use: B Common Name: RED-NECKED GREBE
Season: SU Definition: 1 Accuracy: 1 Scientific Name: PODICEPS GRISEGENA
State Status: SM Federal Status: Priority: YES Site Name: STEVENS COUNTY LAKES
General Description: RED-NECKED GREBE BREEDING AREAS

Source: STEVE ZENDER WDFW 1984 TO 1994
Source Date: 092994 Source Code: NEST
Synopsis: INFORMATION SUBMITTED TO NATURAL HERITAGE DATA BASE FROM SURVEYS CONDUCTED OVER 10 YEAR PERIOD.

(3)

Codes Used In Priority Habitat and Species Polygon Report

Form# : Unique number that links the information in the reports to features on the map.

PHS Code : Code that identifies the priority habitat or species. List of codes are available in the documentation.

Species Use : Criteria that identifies how the area is used by the indicated species. List of codes are available in the documentation.

Common Name : Common name of the species or habitat.

Season : Season of species use.
W = Winter use. S = Spring use.
U = Summer use. F = Fall use.
S = Severe winter use.

Definition : Identifies the definitions or criteria used to classify the area as a priority. List of codes are available in the documentation.

Accuracy : Mapping accuracy of the line delineation as determined by the mapper.
1 = Accurate within a 1/4 mile. 3 = Location known to within one mile.
2 = Accurate within a 1/2 mile. 4 = Location known to general locality only.

Scientific Name : Scientific name of the species.

State Status : State listing status.
SE = State endangered. SC = State candidate.
ST = State threatened. SM = State monitor.
SS = State sensitive.

Federal Status : Federal listing status.
FE = Federal endangered. FC = Federal candidate.
FT = Federal threatened. FCo = Federal concern.

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YES = Indicates that the species is considered a WDFW priority and is on the Priority Habitat and Species List and/or Species of Concern List.
NO = Indicates that the species is not a WDFW priority.

Site Name : Name assigned to the area based generally on a local place name.

General Description : Description about the area, including how it is used and why it is important.

Source : Source of information; single or multiple sources may be cited.

Source Date : Date of source of information.

Source Code : Code identifying the source of information.

Synopsis : Brief narrative describing content of source of information.

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY ANADROMOUS AND RESIDENT FISH PRESENCE REPORT FROM THE STREAMNET DATABASE
FOR TOWNSHIP T30R41E, SECTION 33
Report Date: October 29, 2003

Information About The Fish Presence Report

The fish information in this report only includes information that Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. This information only documents the location of important fish resources to the best of our knowledge. It is not a complete inventory of the fish species in the state. Fish are identified as priority by WDFW if they meet one of three criterion as listed in the Priority Habitats and Species List. The list is available by contacting WDFW Priority Habitats and Species section at (360)902-2543, or it is available on our web site at http://www.wa.gov/wdfw/hab/phspage.htm. To insure appropriate use of this information, users are encouraged to consult with WDFW biologists.

State status information is not available in the StreamNet database for these species. Please see WDFW Species of Concern List for current status. For a copy of this list, contact WDFW Endangered Species Section at (360)902-2515, or it is available on our web site at http://www.wa.gov/wdfw/wlm/diversity/soc/soc.htm.

Priority Anadromous Fish Presence:

Code	Common Name	Stream Name	Stream LLID	Record Date	Source

Priority Resident Fish Presence:

Code	Common Name	Stream Name	Stream LLID	Record Date	Source
RBT	Rainbow Trout	Sheep Creek	1177629481208	04/18/90	WDFW Staff
RBT	Rainbow Trout	Stream name(s) not in database	1176623480661	04/18/90	WDFW Staff
RBT	Rainbow Trout	Stream name(s) not in database	1176762480763	04/18/90	WDFW Staff

Codes Used In The Fish Presence Report

Code : WDFW fish species code from the StreamNet database.

Common Name : Common name of fish species.

Stream Name : Stream name.

Stream LLID : Latitude and longitude location of stream.

Record Date : Date the information was entered into the StreamNet database.

Source : Name of the individual and/or organization that provided the information.

(5)

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The Use of 2,4-D for Selective Control of an Early Infestation of Eurasian Watermilfoil in Loon Lake, Washington

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ABSTRACT

A patchy distribution of Eurasian watermilfoil (*Myriophyllum spicatum* L.) in Loon Lake was treated with the herbicide 2,4-D during July 1998. Aquatic plant biomass and frequency data were collected before treatment, and six weeks and one year after treatment. Aqueous concentrations of 2,4-D increased to 1 to 2 mg/l within one day of treatment, and were below detection limits by one week after treatment. Macrophyte data were analyzed to assess the herbicide's impacts on Eurasian watermilfoil as well as the rest of the aquatic plant community. Results showed a significant decrease in Eurasian watermilfoil biomass and frequency in treated areas 6 weeks after treatment, which continued through the one year post-treatment samples. No other plant species were significantly affected by the herbicide application.

Key words: aquatic plants, herbicides, biomass, frequency, *Myriophyllum spicatum* L., native plants.

INTRODUCTION

Eurasian watermilfoil is not native to North America, and is considered to be highly invasive in temperate climates outside its native range. It will tolerate a wide range of environmental conditions, and tends to quickly grow to the surface in the spring where it branches extensively and forms a dense mat (Nichols and Shaw 1986, Smith and Barko 1990, Madsen 1998). It is extremely difficult to control after it has been introduced to a waterbody due to its effective means of spreading through fragmentation and stolons (Aiken et al. 1979, Smith and Barko 1990, Madsen and Smith 1997). Dominance of a waterbody by Eurasian watermilfoil causes both environmental and economic impacts. Environmental impacts include a reduction in the biodiversity and frequency of native aquatic plant species, and impacts to the water quality such as lowered dissolved oxygen and changes to the nutrient cycling in the littoral zone (Aiken et al. 1979, Nichols and Shaw 1986, Frodge et al. 1991, Madsen et al. 1991). These impacts can alter the habitat value for invertebrates, fish and waterfowl (Newroth 1985, Dibble and Harrel 1997, Dibble et al. 1997). The dense vegetation at the surface also creates a nuisance for boaters and a swimming hazard (Newroth 1985, Smith and Barko 1990). This can lead to a reduction in the tourism important to many lake communities (Slipke et al. 1998). The burden of paying for control efforts usually falls on government agencies or local communities, and can run to hundreds of thousands of dollars.

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In Washington State, Eurasian watermilfoil is the most widespread invasive aquatic weed with known populations in more than 100 lakes and rivers (Parsons 1998). Once a population has grown beyond just a few plants, we have found that Eurasian watermilfoil is nearly impossible to eradicate using physical methods such as hand pulling or placement of benthic barriers. In small lakes (less than 150 ha), herbicides have been used on a whole lake basis to eradicate the plant or at least provide control for several years (Parsons 1998). However, until recently, no tool was permitted in Washington to manage intermediate levels of this plant in larger lakes where treating the entire littoral zone is not feasible.

The herbicide 2,4-D (2,4-dichlorophenoxy acetic acid) has been used in other parts of the United States to effectively and selectively treat small Eurasian watermilfoil patches (approximately 10,000 acres per year are treated with 2,4-D for Eurasian watermilfoil control in the United States (Lembi 1996)). Several studies have demonstrated the selectivity of 2,4-D against Eurasian watermilfoil at low doses and short exposure times (Killgore 1984, Miller and Trout 1985, Carpentier et al. 1988, Green and Westerdahl 1988, Bird 1993). Broad-leaf dicotyledonous species such as Eurasian watermilfoil are more susceptible to 2,4-D than narrow leaf monocots (Lembi 1996, Madsen 2000). The herbicide works by mimicking the plant hormone auxin. This affects the plant's respiration and food reserves, and causes excessive growth, cell division, and death (Christopher and Bird 1992, Sprecher and Netherland 1995). Once applied in the environment, 2,4-D tends to rapidly dissipate depending on the degree of water movement, temperature, pH, and the substrate present (Joyce and Ramey 1986). Both UV light and microorganisms living in the water and sediments will convert the herbicide to carbon dioxide, water, and chlorine (Aly and Faust 1964, Hemmett and Faust 1969, Joyce and Ramey 1986).

In 1998 the State Legislature directed the Department of Ecology to conduct a demonstration project using the herbicide 2,4-D on a pioneering population of Eurasian watermilfoil in Loon Lake, located in northeast Washington (Figure 1). The objective of this study was to document the impact of 2,4-D on the aquatic plant community in Loon Lake, and to test its effectiveness at controlling a pioneering Eurasian watermilfoil population.

METHODS AND MATERIALS

Site Description. Loon Lake is located in the mountainous northeast corner of Washington State about 100 km (60 miles) north of Spokane at latitude 48°3' 20" north and longitude 117°38' 30" west (Figure 1). It is 445 hectares (1,100 acres) with 12.7 km (7.9 miles) of shoreline at an elevation of 726 m (2,381 feet). The maximum depth is 30.5 m (100 feet), mean depth 14 m (46 feet) (Dion et al. 1976). It is an oligo-mesotrophic lake with moderate levels of nutrients and generally good water clarity (Smith et al. 2000). Loon Lake hosts a diverse plant and animal community, with at least 28 species of aquatic macrophytes growing to 6.7 m (22 feet) deep (Table 1). According to regional fisheries biologists, species present include rainbow trout (*Oncorhynchus mykiss*), eastern brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), lake trout (Mackinaw) (*Salvelinus namaycush*), kokanee salmon (*Oncorhynchus nerka*) and warm water species

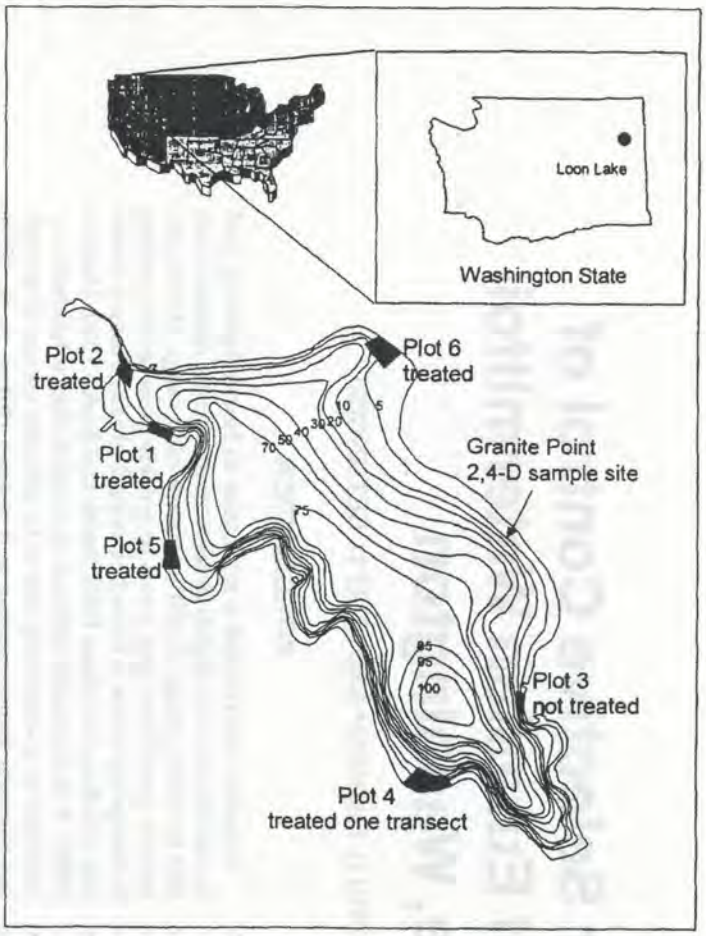

Figure 1. Loon Lake, Washington. Location of 6 study plots. Depth contour intervals marked in feet.

such as largemouth bass (*Micropterus salmoides*), pumpkinseed sunfish (*Lepomis gibbosus*), and yellow perch (*Perca flavescens*) (C. Vail, Regional Fish Biologist, personal communication). The shoreline is about 85% developed with seasonal and year-round residences. The remaining 15% is mostly wetlands.

Eurasian watermilfoil was first found in Loon Lake in September 1996, at which time its distribution was limited to the northwest corner and a few other scattered patches around the lake. In the summer of 1997, diver hand-pulling and benthic barriers were used in an attempt to reduce the population. However, by the end of the summer it was evident that the Eurasian watermilfoil was continuing to spread beyond a level that divers could contain. At the time of this study the Eurasian watermilfoil was spreading, but still limited to small patches within about 24 ha, mainly in the northern half of the lake and in water less than three m deep.

Herbicide Application. Treatment occurred on the morning of July 8, 1998 using the granular 2,4-D formulation Aqua-Kleen® (2,4-D BEE (butoxy ethyl ester), 19% acid equivalent). A total of 2,722 kg was applied over approximately 24 ha containing Eurasian watermilfoil (112 kg/ha of product, 21 kg/ha acid equivalent) using a granular blower and cyclone spreaders mounted on an airboat. This application rate was calculated to attain the 1 to 2 mg/l target concentra-

TABLE 1. AQUATIC PLANT SPECIES IN LOON LAKE, WA. GROWTH FORMS ARE INDICATED BY E, EMERGENT; F, FLOATING-LEAVED; AND S, SUBMERSED. TYPE IS DEFINED AS M, MONOCOT; AND D, DICOT.

Scientific name	Common name	Growth form	Type
Brasenia schreberi Gmel.	watershield	f	d
Ceratophyllum demersum L.	coontail	s	d
Chara sp.	muskgrass	s	macroalgae
Eleocharis sp.	spikerush	s	m
Eleocharis palustris (L.) R. & S.	common spikerush	e	m
Elodea canadensis Rich.	common elodea	s	m
Fontinalis sp.	aquatic moss	s	moss
Megalodonta beckii Greene	water marigold	s	d
Myriophyllum sibiricum Kom.	northern watermilfoil	s	d
Myriophyllum spicatum L.	Eurasian watermilfoil	s	d
Najas flexilis (Willd.) R. and S.	common naiad	s	m
Nitella sp.	stonewort	s	macroalgae
Nuphar polysepala Engelm.	spatterdock	f	d
Nymphaea odorata Ait.	fragrant waterlily	f	d
Polygonum amphibium L.	water smartweed	f	d
Potamogeton amplifolius Tucker.	large-leaf pondweed	s	m
Potamogeton gramineus L.	grass-leaved pondweed	s	m
Potamogeton illinoensis Morong.	Illinois pondweed	s	m
Potamogeton natans L.	floating leaf pondweed	s	m
Potamogeton praelongus Wulf.	whitestem pondweed	s	m
Potamogeton richardsonii (Ben.) R.	Richardson's pondweed	s	m
Potamogeton robbinsii Oakes	Robbins' pondweed	s	m
Potamogeton sp.	thin leaved pondweed	s	m
Potamogeton zosteriformis Fern.	eel-grass pondweed	s	m
Ranunculus aquatilis L.	water buttercup	s	d
Schoenoplectus sp. Syn. *Scirpus* sp.	bulrush	e	m
Stuckenia pectinata (L) Börner Syn. *Potamogeton pectinatus* L.	sago pondweed	s	m
Utricularia vulgaris L.	bladderwort	s	d
Vallisneria americana Michx.	water celery	s	m
Zosterella dubia (Jacq) Small Syn. *Heteranthera dubia* (Jacq) MacM.	water star-grass	s	m

tion for 24 to 48 hours recommended for severe injury or complete control of Eurasian watermilfoil (Green and Westerdahl 1988). Treatment took place in early July to coincide with the window during which Eurasian watermilfoil is most susceptible to control efforts (May to July in northern latitudes) (Madsen 1997).

Water samples were collected before treatment, and three hours, one day, three days, one week, two weeks and three weeks after treatment for analysis of 2,4-D concentrations. Four areas treated with 2,4-D were chosen for sample collection; three within aquatic macrophyte data collection plots, and one at Granite Point where Eurasian watermilfoil was growing, but no plot was located (Figure 1). At each site, duplicate samples were taken from the upper and lower one third of the water column at the treatment area center, and at 50 m and 100 m from the lakeward edge of the treatment area. All collection site locations were recorded with positions from a Global Positioning System (GPS) Unit. The samples were frozen and shipped to the analytical chemistry laboratory at the U.S. Army Engineers Lewisville Aquatic Ecosystem Research Facility in Lewisville, TX. Residue analyses were conducted using approved procedures (APHA 1976) with a detection limit of 0.005 mg/l.

Aquatic Plant Community. The aquatic plant community was assessed before treatment and at six weeks and one year after treatment using the following three methods: 1) biomass sampling in six study plots; 2) line intercept frequency sampling for six study plots; and 3) point intercept frequency sampling for the whole lake. These three different methods were used to evaluate in-plot versus whole-lake changes, and species abundance (biomass) versus diversity and distribution (frequency) within the plots.

The six study plots set up for the biomass and line intercept frequency sampling were established based on knowledge of the Eurasian watermilfoil distribution from a spring 1998 survey (Winterowd and Lamb In Press). Four plots to be treated with herbicide were located in areas with the densest known growths of Eurasian watermilfoil, and two plots were located in areas thought to be free of Eurasian watermilfoil for the no-treatment control (Figure 1). Although for scientific purposes it would have been preferable to establish control plots in areas with Eurasian watermilfoil, this was not done to accommodate the project's goal of treating all Eurasian watermilfoil within the lake. One transect from the untreated plot 4 ended up too close to a treatment area to be considered untreated. Therefore, plot 4 was split during statistical analyses and the treated transect was added to the treatment group.

Within each plot, two 100-m transects marked at 1-m intervals were established within the area of plant growth (less than 6.7 m deep). The transect lines were perpendicular to shore unless the zone of plant growth was too narrow, in

which case they were curved. Careful notes and GPS points were used to ensure that the transects were in the same locations during all three data collection efforts.

Biomass. During all three sampling periods, ten biomass samples were collected in each plot (five along each transect line). The sample points were located at stratified-random distances along and away from the transect lines; each sample was located randomly at 20-m intervals and between 1 to 5 m away from the line.

Sample collection and processing followed methods described by Madsen (1993). The samples were collected by a diver using SCUBA gear and a 0.1 m^2 frame made of PVC pipe. The diver placed the frame on the sediment at the predetermined sample site and collected all shoot biomass within the frame. Plants were placed in a mesh bag, carried to a nearby boat, and transferred to a labeled plastic bag. On shore the samples were rinsed, trimmed to remove any remaining roots, sorted by species, and placed into preweighed and numbered paper bags. Samples were allowed to air dry until the end of each four-day sample period when the paper bags were returned to the lab and dried in a forced air oven at 60C to a constant weight. They were then reweighed to 0.01 g accuracy. The resulting data were entered into a relational database and analyzed both as individual species and grouped as monocots or dicots. A one way Analysis of Variance (ANOVA) was used for the analysis after performing a $\log_{10} + 1$ transformation to approximate a normal distribution. The resultant p-values were adjusted using a Bonferroni correction to account for multiple comparisons. Post-hoc analysis determined which of the comparisons were significant.

Line Intercept Plant Frequency. This method utilized the same transect lines used for biomass sampling (see previous section), and the data were gathered simultaneously. All species observed crossing the vertical plane made between the transect line and the lake bottom were recorded by a snorkeler at one m intervals (Madsen 1999). Data were gathered the length of the transect where the plants could be seen from the surface or with a quick dive.

The data were entered into a relational database and Chi-square two-by-two analyses (Zar 1984) were performed on species present in at least 5% of the sample intervals. Comparisons of the presence-absence data were made separately for the treated and untreated plots. Three combinations of the sample dates were analyzed: before treatment (June 1998) with 6 weeks after treatment (August 1998), before treatment with one year after treatment (June 1999), and 6 weeks after treatment with one year after treatment. The probability was adjusted using a Bonferroni correction to account for multiple comparisons.

Point Intercept Plant Frequency. Plant samples were gathered at points on a 50 × 50 m grid developed for the littoral zone using a Geographical Information System (GIS) (Madsen 1999). A GPS was used to find these points as Universal Transverse Mercator (UTM) coordinates in the field. At each point two samples were gathered from the starboard side of the boat. If the sample site was in shallow water, the plant species were recorded from an area of approximately 1 m^2 using visual observation. In deeper water, plants were sampled using two metal leaf rakes bolted back-to-back with the handles removed and replaced with a 30-m marked rope. This sampler was thrown twice, sampling approximately 0.5 m^2 each time. All recovered species were recorded.

Data were analyzed using the same methods used for the line-intercept frequency data (see previous section). Only species observed in at least 15 samples were included.

RESULTS AND DISCUSSION

Herbicide Application. No herbicide residue was detected in the water samples collected before treatment. Results from the 2,4-D residue analysis from samples collected up to one week after treatment are provided in Table 2. The herbicide concentrations increased to the targeted level of between 1 to 2 mg/l in treated areas within one day of treatment, then generally diminished by 3 days after treatment and were not detectable by 1 week after treatment or thereafter. Plot 5 had the lowest concentrations, probably due to springs located in the area that enhanced herbicide dissipation. There was little herbicide detected off-site in samples collected 100 m from the treatment areas. This pattern of rapid dissipation is typical for aquatic 2,4-D applications (Lim 1976, Killgore 1984, Carpentier et al. 1988). However, the Eurasian watermilfoil in all areas where 2,4-D residues were measured were exposed to a concentration and exposure time sufficient to cause severe injury or to provide complete control (at least 1 mg/l for 36 hours, or 2 mg/l for 24 hours) (Green and Westerdahl 1988).

Aquatic Plant Community Biomass. A total of 24 species were found in the biomass samples. Whitestem pondweed and Richardson's pondweed were combined due to difficulty in distinguishing the two species; several of these plants were observed with intermediate characteristics which led us to suspect hybridization. Plant distribution was very patchy, with several samples containing no measurable plant matter, and other samples with as many as seven different species. Total biomass per sample ranged from 0.1 to 1,396.4 g/m^2 dry weight, with an average of 37 g/m^2 dry weight. The most abundant and commonly collected plant was Robbins' pondweed, found in 48% of the biomass samples. Table 3 lists the mean biomass for the most common species collected, divided into pretreatment, six weeks post-treatment, one year post-treatment and treated versus untreated plots.

Eurasian watermilfoil demonstrated the only significant decrease in plant biomass by six weeks after treatment, with a 98% reduction during this time interval. One year after treatment the biomass in treated plots was still reduced by 87% compared to pretreatment levels (Table 3). Killgore (1984) had similar results on Lake Osoyoos in north-central Washington, where there was a 91% reduction in Eurasian watermilfoil biomass 28 days after treatment, and an 86% decrease by 84 days after treatment using a similar application rate of the same 2,4-D formulation. Getsinger and Westerdahl (1984) achieved 60 to 70% Eurasian watermilfoil control by 28 days after treatment, and a 50 to 60% reduction in the original biomass by day 56 when using a similar application rate (22 kg acid equivalent/ha) of a different 2,4-D formulation (14-ACE-B) in Lake Seminole, Florida. The rebound in Eurasian watermilfoil biomass experienced in these other studies, and evident in this study by one year after treatment, indicate that additional measures will need to be taken to

TABLE 2. AQUEOUS 2,4-D RESIDUE LEVELS (MG/L) IN LOON LAKE, WA, 1998. ALL VALUES ARE AVERAGES OF TWO ANALYSES PER SAMPLE, AND THE AVERAGE OF DUPLICATE SAMPLES AT EACH COLLECTION SITE. TIME INTERVALS ARE AFTER TREATMENT. SAMPLE ID DESIGNATION: U—FROM THE UPPER ⅓, L—FROM THE LOWER ⅓ OF THE WATER COLUMN. N.D. IS NOT DETECTABLE.

Sample area	Sample location	Sample ID	3 hours	1 day	3 days	1 week
Plot 2	treatment area	U3	0.676	1.377	0.613	N.D.
		L3	0.931	1.577	1.236	N.D.
	50 m outside	U3	0.039	0.052	0.100	N.D.
		L3	N.D.	0.074	0.300	N.D.
	100 m outside	U3	N.D.	0.162	N.D.	N.D.
		L3	N.D.	N.D.	0.157	N.D.
Plot 5	treatment area	U3	0.282	N.D.	N.D.	N.D.
		L3	1.262	N.D.	N.D.	N.D.
	50 m outside	U3	N.D.	N.D.	N.D.	N.D.
		L3	N.D.	N.D.	N.D.	N.D.
	100 m outside	U3	N.D.	N.D.	N.D.	N.D.
		L3	N.D.	N.D.	N.D.	N.D.
Plot 6	treatment area	U3	0.235	0.628	N.D.	N.D.
		L3	0.130	1.421	N.D.	N.D.
	50 m outside	U3	0.218	0.259	0.739	N.D.
		L3	N.D.	0.735	0.743	N.D.
	100 m outside	U3	N.D.	0.110	0.522	N.D.
		L3	N.D.	N.D.	N.D.	N.D.
Granite Point not located with in a sample plot	treatment area	U3	1.817	0.374	N.D.	N.D.
		L3	1.427	0.181	N.D.	N.D.
	50 m outside	U3	N.D.	N.D.	N.D.	N.D.
		L3	N.D.	N.D.	N.D.	N.D.
	100 m outside	U3	N.D.	N.D.	N.D.	N.D.
		L3	N.D.	N.D.	N.D.	N.D.

maintain reduced Eurasian watermilfoil biomass in Loon Lake. Other researchers have reached similar conclusions. In Minnesota 2,4-D has been widely used to attempt to control Eurasian watermilfoil spread. They have concluded that it may slow the spread of Eurasian watermilfoil through the lake, but will not halt it (Crowell 1999). Gibbons and Gibbons (1985) reached a similar conclusion in a study using a different formulation of 2,4-D in the Pend Oreille River in northeast Washington. They found that two applications of the herbicide over the growing season produced better Eur-

TABLE 3. MEAN BIOMASS (G/M²) AND BONFERRONI ADJUSTED ANOVA RESULTS (P-VALUE) FROM SELECTED SPECIES IN TREATED AND UNTREATED PLOTS, LOON LAKE, WA 1998-1999. SIGNIFICANTLY DIFFERENT COMPARISONS ARE INDICATED BY LETTERS.

	Untreated plots				Treated plots			
Species	June 98 n = 15	Aug 98 n = 15	June 99 n = 15	P-value	June 98 n = 45	Aug 98 n = 45	June 99 n = 45	P-value
	biomass (g/m²)				biomass (g/m²)			
Chara	10.39	17.60	7.22	0.631	1.33	14.46	2.37	0.084
Elodea canadensis	29.63	19.49	23.47	0.650	5.42	8.04	17.46	0.684
Megalodonta beckii	5.08	20.81	0.79	0.294	1.38 ab	8.37 a	0.48 b	0.013
Myriophyllum sibiricum	7.16	4.87	0.00	0.114	2.55	1.20	0.21	0.161
Myriophyllum spicatum	0.00	0.01	2.01	0.134	6.58 a	0.16 b	0.83 ab	0.009
Najas flexilis	0.00	1.20	0.01	0.180	0.03	0.54	0.22	0.112
Potamogeton amplifolius	12.03	35.73	11.39	0.574	7.44	20.20	10.91	0.367
Potamogeton gramineus	0.00	0.00	0.00	—	0.46	2.06	0.16	0.092
Potamogeton praelongus + *Potamogeton richardsonii*	4.05	31.14	1.49	0.097	3.36	4.35	3.24	0.819
Potamogeton robbinsii	21.20	16.34	29.62	0.864	86.57	59.84	43.98	0.857
Potamogeton zosteriformis	2.25	0.01	0.98	0.394	0.27	0.13	0.60	0.514
Utricularia vulgaris	0.00	0.00	0.00	—	0.51	1.75	7.60	0.410
Vallisneria americana	0.41 ab	3.92 a	0.10 b	0.031	0.31 a	4.75 b	0.15 a	0.007
Zosterella dubia	0.30	0.57	0.37	0.798	0.18	1.04	0.06	0.068

n = number of samples.

asian watermilfoil control than a single application at both low and high herbicide concentration levels. That application frequency may also improve results at Loon Lake.

Among the other dicotyledonous species, water marigold was the only one to show a significant change in any of the three comparisons for the treated and untreated plots (Table 3). It decreased significantly in the treated plots between August 98 and June 99 ($p = 0.013$). This is probably a seasonal effect, since most aquatic plants in temperate climates attain peak biomass toward the end of summer (Westlake 1965).

None of the monocot species' biomass was affected by the herbicide. Water celery was the only one to change significantly, with an increase in August relative to the two June samples (Table 3). This pattern was also demonstrated by the majority of other species, and is most likely due to seasonal growth patterns. Exceptions to this pattern were common elodea, Robbins' pondweed, and eel-grass pondweed. These species showed a decrease in August (possibly due to early growth and senescence compared to the species that peaked in August), or an increase in biomass over time. In a study where Eurasian watermilfoil was the dominant species before treatment, Miller and Trout (1985) observed that native species, especially the algae muskgrass and the monocot common naiad, increased after treatment when compared to control areas. Similarly, Sprecher et al. (1998) observed no significant reduction in the monocot sago pondweed when exposed to up to 2 mg/l 2,4-D for 24 hours.

When the flowering vascular plants were grouped as either monocots or dicots neither group showed a significant difference between the dates ($p > 0.05$) (Table 4). The herbicide's selectivity for dicots would lead one to expect this group to decrease in treated plots. The peak dicot biomass in August increased less in the treated plots than in the untreated plots, but this was partially due to the significant decrease in Eurasian watermilfoil over this time period.

Line Intercept Plant Frequency. Species were recorded and analyzed at a total of 2,475 transect intervals for all observation periods (before and after treatment, treated and untreated plots). A total of 24 different species were identified on the transect surveys. Large-leaf pondweed was the most frequently observed plant, and several, such as water smartweed and Richardson's pondweed were uncommon in the transects. Two species, northern watermilfoil and water marigold, were combined due to the difficulty experienced in differentiating them under water. Along many of the transects the species assemblage was diverse, with many 1-m intervals containing up to 7 different species. Twelve percent of intervals contained no plants. These were mostly located in areas where the transects crossed benthic barriers placed the previous year for Eurasian watermilfoil control, or in areas of sandy substrate.

TABLE 4. MEAN BIOMASS (G/M²) OF MONOCOTS AND DICOTS AND BONFERRONI ADJUSTED ANOVA RESULTS, LOON LAKE, WA 1998-1999.

Treated Plots	June 98	Aug 98	June 99	P-value
Monocots	104.98	102.48	77.38	.735
Dicots	11.77	13.40	12.31	.453
Untreated Plots				
Monocots	69.97	108.40	67.43	.874
Dicots	12.33	25.69	2.80	.284

Results from the Chi-square analysis in percent present for the three sample dates and P-values for the three comparisons are given for the most common species in Table 5 and Table 6. Eurasian watermilfoil showed a significant decrease in frequency in the treated plots between the pretreatment sample collection and both the six week post-treatment, and one year post-treatment sample collection. This is the only species that showed a significant decrease throughout both post-treatment collection periods. By one year after treatment there was a low frequency of Eurasian watermilfoil in the untreated plots, indicating that this species was continuing to spread. These data corroborate results from the biomass data.

The other common dicots along the transects were northern watermilfoil, water marigold and bladderwort. The combination of northern watermilfoil and water marigold showed a significant decrease in the one year post-treatment data (Tables 5 and 6). It is not known why this decrease occurred, but the fact that it was evident in both the treated and untreated plots would indicate that it was not a result of the herbicide, but probably due to different growing conditions between the years. The bladderwort showed just the opposite effect, with a significant increase one year post-treatment in the treated plots (Table 5). These results are similar to what was found with the biomass data.

Of the monocots, eel-grass pondweed showed a significant decrease in frequency by 6 weeks after treatment in the untreated plots (Table 6). This could be due to an early senescence of this species, since it usually grows and blooms early in the season (Borman et al. 1997). It was present again at a high frequency by June 1999. A similar pattern of higher biomass in the June samples is also present in the eel-grass pondweed data from the treated plots. Three species, common naiad, Robbins' pondweed and water celery were present at a significantly higher frequency during the August sampling than either of the June samplings in the treated plots (Table 5), probably due to a seasonal growth pattern. Other species (sago pondweed in treated plots and large leaf pondweed in untreated plots) showed a significantly higher frequency one year post-treatment (Tables 5 and 6). Again, this is likely due to factors other than the herbicide treatment, such as variability in growing conditions from year to year.

Point Intercept Plant Frequency. We sampled a total of 602 points and observed 28 different species during the point intercept frequency survey. As with the biomass data, whitestem pondweed and Richardson's pondweed were combined due to suspected hybridization. The collection frequency of Eurasian watermilfoil was not significantly different using this lake-wide sampling method among any of the sampling dates (Table 7), in contrast to what was found with the line-intercept survey method and the biomass data. This is probably due to the fact that treatment plots for the line intercept and biomass methods were located in areas known to contain the highest concentrations of Eurasian watermilfoil, and also were areas where the herbicide was applied. In contrast, the point intercept method sampled the entire littoral zone including areas where the Eurasian watermilfoil was sparsely distributed, and left untreated. The fact that Eurasian watermilfoil was

TABLE 5. MACROPHYTE FREQUENCY AND RESULTS FROM CHI-SQUARE ANALYSIS OF LINE-INTERCEPT DATA, 2,4-D TREATED PLOTS IN LOON LAKE, WA, 1998-1999.

	% present			P-value		
Species	June 98	Aug 98	June 99	June 98 with Aug 98	June 98 with June 99	Aug 98 with June 99
No plants	13	13	12	0.931	0.358	0.401
Chara	21	20	20	0.601	0.549	0.937
Elodea canadensis	5	6	7	0.248	0.175	0.833
Megalodonta beckii + *Myriophyllum sibiricum*	19	20	12	0.599	**0.001***	**0.000***
Myriophyllum spicatum	17	5	4	**0.000***	**0.000***	0.429
Najas flexilis	3	11	4	**0.000***	0.310	**0.000***
Potamogeton amplifolius	27	31	27	0.147	0.977	0.137
Potamogeton gramineus	10	12	12	0.259	0.344	0.957
Potamogeton robbinsii	17	30	20	**0.000***	0.171	**0.000***
Potamogeton zosteriformis	3	2	7	0.357	0.006	**0.000***
Stuckenia pectinata	8	7	14	0.487	**0.000***	**0.000***
Utricularia vulgaris	5	8	14	0.020	**0.000***	**0.000***
Vallisneria americana	3	17	5	**0.000***	0.082	**0.000***

*Bonferroni corrected significance of $P \leq 0.004$.

only present in three to six percent of the samples from the whole littoral zone is evidence of its early stage of invasion.

The significant differences seen in the whole-lake frequency of common naiad and water celery were probably due to seasonal increases in seed or rhizome sprouting, since the highest frequency for both was seen in the August samples (Table 7). The increase of large-leaf pondweed in June 1999 could have been due to an annual fluctuation. A similar increase of this species was seen from the line intercept data in the untreated plots (Table 6).

In conclusion, the 2,4-D herbicide application in Loon Lake significantly reduced both the biomass and frequency of Eurasian watermilfoil in the treatment plots during the year of treatment. One year after treatment Eurasian watermilfoil frequency in treated plots remained significantly lower than pre-treatment levels. The other plant species growing in the lake did not show any significant reductions in biomass or frequency as a result of the herbicide treatment. Thus, the application rate and formulation of 2,4-D used in this study selectively controlled Eurasian watermilfoil in Loon Lake without significantly impacting the native aquatic plant species. However, one year after treatment the Eurasian watermilfoil was increasing again slightly, so continued management activities will be required to keep its growth in Loon Lake under control.

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TABLE 6. MACROPHYTE FREQUENCY AND RESULTS FROM CHI-SQUARE ANALYSIS OF LINE-INTERCEPT DATA, UNTREATED PLOTS, LOON LAKE, WA, 1998-1999.

	% present			P-value		
Species	June 98	Aug 98	June 99	June 98 with Aug 98	June 98 with June 99	Aug 98 with June 99
No plants	12	13	5	0.732	0.036	0.013
Chara	45	46	44	0.876	0.892	0.762
Elodea canadensis	10	18	15	0.053	0.217	0.450
Megalodonta beckii + *Myriophyllum sibiricum*	30	35	17	0.358	0.008	**0.000***
Myriophyllum spicatum	0	0	1	—	0.189	0.164
Najas flexilis	1	6	1	0.010	0.654	0.015
Potamogeton amplifolius	35	32	52	0.561	**0.004***	**0.000***
Potamogeton gramineus	1	5	1	0.080	0.474	0.015
Potamogeton robbinsii	5	15	17	**0.004***	**0.001***	0.647
Potamogeton zosteriformis	27	6	28	**0.000***	0.932	**0.000***
Stuckenia pectinatus	0	0	2	—	0.107	0.088
Utricularia vulgaris	1	0	0	0.189	0.280	0.737
Vallisneria americana	2	6	3	0.076	0.618	0.162

*Bonferroni corrected significance of $P \leq 0.004$.

TABLE 7. MACROPHYTE FREQUENCY AND RESULTS OF CHI-SQUARE ANALYSIS ON THE POINT INTERCEPT FREQUENCY DATA, LOON LAKE, WA, 1998-1999.

	% present			P-value		
Species	June 98 n = 195	Aug 98 n = 198	June 99 n = 20-9	June 98 with Aug 98	June 98 with June 99	Aug 98 with June 99
No plants	12	13	11	0.688	0.803	0.510
Brasenia schreberi	11	11	15	0.958	0.177	0.159
Ceratophyllum demersum	2	3	7	0.753	0.024	0.046
Chara	41	32	32	0.073	0.077	0.959
Elodea canadensis	19	27	29	0.068	0.031	0.747
Megalodonta beckii	14	17	13	0.528	0.673	0.286
Myriophyllum sibiricum	24	24	22	0.974	0.701	0.676
Myriophyllum spicatum	6	5	3	0.621	0.265	0.535
Najas flexilis	4	15	9	**0.000***	0.065	0.041
Potamogeton amplifolius	16	23	33	0.115	**0.000***	0.021
Potamogeton gramineus	5	7	4	0.300	0.694	0.148
Potamogeton natans	7	6	4	0.510	0.138	0.409
Potamogeton praelongus + *Potamogeton richardsonii*	15	20	13	0.206	0.670	0.087
Potamogeton robbinsii	28	34	33	0.154	0.245	0.777
Potamogeton zosteriformis	5	4	8	0.438	0.277	0.049
Stuckenia pectinata	2	4	4	0.372	0.293	0.876
Vallisneria americana	6	14	5	0.009	0.699	**0.002***
Zosterella dubia	5	10	6	0.063	0.636	0.152

*Bonferroni corrected significance of $P \leq 0.003$.

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Recreational Threats to Nesting Waterbird Habitat in the Loon Lake Wetlands

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Loon Lake has three wetlands that are nesting and breeding habitat for a large number of wildlife species. Sadly, the quality of this habitat is declining at an alarming rate. Our long-term observations lead us to believe that the decline in the habitat quality of Loon Lake wetlands is due to the rapid increase in the recreational activities of high-speed boating, water skiing/tubing, and jet skiing, within and in close proximity to these wetlands. People that enjoy these recreational activities are increasingly utilizing the calmer waters of the Loon Lake embayments (see map), exactly where the wetlands are located, because of the calmer wave conditions they provide. Often, the recreational traffic in the embayments becomes heavy and even dangerous, especially to nesting waterbirds, and people in small watercraft. The waves generated are enormous, and the resultant sound levels are very high, when the embayments are heavily utilized. As residents of Loon Lake, we are alarmed at these changes to the wetlands and the rate that they are taking place. The observed recent decline in the number of nest sites of a relevant indicator species, the red-necked grebe, indicates this change is very rapid, and without intervention, this species and likely others will be eradicated from nesting at Loon Lake.

All images by Daniel Poleschook, Jr. and Virginia R. Gumm

Left. Parent red-necked grebe with young chick in the northeast wetland of Loon Lake. High-speed watercraft are a serious threat to the safety of waterbirds is such situations.
Center. A red-necked grebe on nest within the northeast wetland of Loon Lake. The nest is in a stand of yellow wild iris that grows near the shoreline of this wetland. High waves produced by fast-moving watercraft are a serious threat to nesting sites like this one.
Right. A red-necked grebe on nest in a bulrush stand, within the northeast wetland of Loon Lake. High-speed watercraft crossing through this wetland have produced waves large enough to wash over nests like this, dislodging the eggs into the water.

The following is a partial list of the wildlife inhabitants of the Loon Lake wetlands, which all lake residents and visitors enjoy. * = Observed breeding in or nearby Loon Lake wetlands

Table 1. Breeding*, Resident, and Migratory Wildlife Species of Loon Lake Wetlands

American coot*	common loon	lesser scaup	ring-necked duck
American white pelican	common merganser	mallard*	ruddy duck*
bald eagle*	common snipe*	Mandarin duck	spotted sandpiper
beaver*	eared grebe	muskrat*	tundra swan
California gull	great blue heron	osprey*	turtles*
Canada goose*	hooded merganser	redhead duck	western grebe
cinnamon teal	horned grebe	red-necked grebe*	wood duck*
common goldeneye*	killdeer*	red-winged blackbird*	yellow-headed blackbird*

Large amounts of high-speed boating, water skiing/tubing and jet skiing in proximity to wetlands is disruptive to nesting waterbirds because of the large waves and high noise levels that are produced. Wetland nesting species benefit from and actually require some sort of sanctuary. The opposite is produced by large amounts of recreational traffic near the wetlands. We have witnessed large waves from these activities washing over red-necked grebe nests, dumping the eggs into the water. Red-necked grebe adults and chicks frequently have to dive rapidly to safety from rapidly approaching watercraft. There have been numerous near misses in these encounters. If fatalities have not already occurred from these incidents, it is only a matter of time until there are. The northeast wetland is repeatedly cut across by these recreational activities—at full speed! The overall result: The number of nesting sites of red-necked grebes is now less than one-third the numbers of only a few years ago. A direct correlation appears to exist: Two to three times the former levels of high speed boating, water skiing/tubing, and jet skiing have resulted in one-third as many nest sites of red-necked grebes.

Is this a consequence we are willing to accept? What counter-active measures should be emplaced to prevent this decline? The answers are simple:

1. No, we are not willing to see the decline of the Loon Lake wetlands progress further.
2. Loon Lake wetlands need to be designated and protected as habitats of local significance. Shoreline development adjacent to these wetlands should not be allowed.
3. Enforced wakeless-speed buffer zones within and 300 feet adjacent to these wetlands will help arrest the habitat decline in the three wetlands. The accompanying map indicates the locations of these wetlands. The map shows lines that provide 300-ft. buffer zones to the three wetlands. Marked buoys (anchored) indicating "nesting habitat" and "wakeless speed limits" should be set along these lines. Wakeless speeds in these buffer zones need to be enforced during the period of waterbird nesting and rearing young, from May 1 through September 1 of each year.
4. Educate the users of Loon Lake about the locations and sensitivities of the wetlands with signs at boat launches, and with presented informational programs in the community and local schools.

Many other locations in Washington and other states have adopted wakeless-speed limits for watercraft in and around wetland habitat, with great success. This needs to happen at Loon Lake, and soon. Decline in the numbers of nest sites of red-necked grebes in Loon Lake's three wetlands is the indicator that suggests

these wetlands are in trouble. The following table shows how much decline in the number of nest sites of red-necked grebes has taken place:

Table 2: Decline of Nest Sites of Red-necked Grebes in the Loon Lake Wetlands

Loon Lake Wetland	Former (1985-1999) Number of Nest Sites	Recent (2000 & 2001) Number of Nest Sites
Northeast	5 to 7	1
Southwest	2 to 3	0 and 1
Northwest	5 to 7	3 and 4

The most compelling evidence that high-speed boating, water skiing/tubing, and jet skiing are responsible for the decrease in nest sites of the red-necked grebe, is that the decline in the number of red-necked grebe nest sites has taken place during the exact years of dramatically increased levels of these recreational activities within and near the three Loon Lake wetlands. If a species is eradicated from a nesting lake, it is not likely to ever return. We are not advocating that these recreational activities be otherwise limited. We are suggesting these activities need not and should not take place in and near the nesting habitat of the Loon Lake wetlands. The suggested wakeless-speed areas are overall a very small part of Loon Lake, comprising less than 5%. The three wetlands are the only place that most of the breeding waterbird species can nest on Loon Lake. Over 95% of the remainder of Loon Lake would still be available for the mentioned recreational activities. Designating the Loon Lake wetlands as habitats of local significance, and the establishing of buffer zones around Loon Lake wetlands, in effect, would help tremendously in the continued preservation of the wetlands. That seems to be a reasonable trade-off.

What can you do to help this crisis? The following steps would be beneficial:
1. Inform the Washington Department of Fish and Wildlife, the Washington Department of Ecology and the Stevens County Planning Commission of this problem, and what you feel should be done about it.
2. Educate others about the quietness necessary in the three Loon Lake wetlands.
3. If you enjoy high-speed boating, water skiing/tubing, and/or jet skiing, please be sensitive to the special needs of the wildlife residents of the Loon Lake wetlands.

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March 30, 2002