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2004 APR 29 P 2:13

April 28, 2004

Secretary Magalie R. Salas
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

069

Subject: Cowlitz River Hydroelectric Project, FERC No. 2016 – Order Modifying and Approving Final Wildlife Management Plan Dated January 26, 1999

Dear Secretary:

On January 26, 1999, the City of Tacoma, Department of Public Utilities, Light Division (Tacoma Power) was ordered by the Federal Energy Regulatory Commission to file a monitoring report describing its implementation of the *Final Wildlife Management Plan* for the Cowlitz River Hydroelectric Project by May 1st annually. Enclosed please find an original and eight copies of the Cowlitz Wildlife Area Annual Report for 2003 (January 1 to December 31, 2003).

Section B requires that Tacoma Power submit in the monitoring report any significant changes to the plan for the Commission's approval. There were no significant changes proposed to the plan. Activities planned for 2004 are detailed in the report.

On March 15, 2004, draft copies of the Annual Report were submitted to the Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and Lewis County for a 30-day review and comment period. The only comment received during the review period was from the Washington Department of Fish and Wildlife. As author of much of the report, they wished to add photos in an appendix to the report. Transmittal letters, review comments and Tacoma's response are included in Appendix 8 of this filing.

If you have any questions or require further information, please contact Cindy Swanberg at (253) 502-8362 or Debbie Young at (253) 502-8340.

Sincerely,

for Patrick D. McCarty
Generation Manager

Enclosure

cc: Harry T. Hall, Portland Regional Director, FERC
David Mudd, Washington Department of Fish and Wildlife
Eugene Stagner, U.S. Fish and Wildlife Service
Lewis County Commissioners

COWLITZ WILDLIFE AREA
ANNUAL REPORT
2003

Submitted In Accordance with the
Wildlife Settlement Agreement

By

Mark Grabski
Washington Department of Fish and Wildlife
Cowlitz Wildlife Area Manager

Richard Vanderlip
Washington Department of Fish and Wildlife
Cowlitz Wildlife Area Assistant Manager

INTRODUCTION

The Cowlitz Wildlife Area (CWA) consists of lands owned by Tacoma Power (Tacoma) and managed by the Washington Department of Fish and Wildlife (WDFW) as wildlife mitigation for Mayfield and Mossyrock dams. Almost all mitigation lands (14,065 acres) are adjacent to Mayfield and Riffe Lakes. The only exceptions are small parcels located at Davis Lake east of Morton (Davis Lake Unit-243 acres), 280 acres near the Cowlitz Trout Hatchery (Cowlitz Trout Hatchery Unit), 418 acres south of Randle (Spears Unit), and 415 acres off Savio Road west of Randle (Kiona Creek Unit).

The area has a maritime climate characterized by cool dry summers and mild wet winters. The area receives approximately 60 inches of annual precipitation, the majority of which comes as rain from November through May. Summers are usually cool and dry, with less than 5% of the annual precipitation falling between the months of June and August. Annual snowfall on the Wildlife Area generally does not exceed 4 to 8 inches, while at higher elevations in the Cascades snowfall often exceeds 10 feet. During the summer months average daytime temperatures are in the 70s, with nights cooling to the 40s. Winter temperatures range from 20s to low 50s.

Commercial timberlands, private farms, residential areas, and developed recreational parks surround the CWA. The economies of the nearby communities are heavily dependent on the timber industry. The majority of the forested lands on the CWA were logged prior to dam construction. Most of these lands were reforested or allowed to re-vegetate naturally, and now support hardwood and coniferous forests.

FERC REPORTING REQUIREMENTS

In the order dated January 26, 1999, the Federal Energy Regulatory Commission (FERC) modified and approved the final Wildlife Management Plan for the Cowlitz Wildlife Area. As a requirement of that order Tacoma is directed to prepare an annual report. The WDFW is responsible for implementing the plan on project lands under the terms and conditions of the Wildlife Settlement Agreement. This annual report provided by WDFW to Tacoma fulfills the reporting requirement under the Wildlife Settlement Agreement.

FERC directed that the annual report include a description of implementation of the final wildlife management plan and contain any significant changes to the plan that will be submitted for Commission approval. This annual report describes lands acquired, mitigation/enhancement activities undertaken, and wildlife benefits derived during the previous calendar year. Also included is an accounting of revenues and expenditures in accordance with generally accepted accounting principles, along with a listing of funds currently held in accounts where Tacoma funds have been deposited. Additionally, this annual report outlines future activities, expected wildlife benefits, and estimated costs. This report fulfills the WDFW reporting requirement for 2003.

MITIGATION HISTORY

The Federal Energy Regulatory Commission (FERC) effectively licensed the Cowlitz River Project, FERC 2016, January1, 1952. The project includes Mossyrock and Mayfield Dams on the Cowlitz River, at river miles 65 and 52, respectively. The two reservoirs formed as a result

of this project inundate approximately 14,080 acres.

On November 17, 1964, FERC issued an Order Further Amending License (Major) for the Cowlitz Project, at which time Article 37 was incorporated into the project license. Since that time, Article 37 has been regarded by the state and federal wildlife resource agencies as a mandate for Tacoma to mitigate project related wildlife impacts.

Beginning as early as 1966, the WDFW and the U. S. Fish and Wildlife Service (USFWS), in conjunction with Tacoma, studied the project's impacts to wildlife habitat. Over the years a number of wildlife enhancement measures were mutually implemented on project lands under the direction of the resource agencies.

In the early 1980s, Tacoma began funding full-time WDFW employees to help plan additional and more intensive habitat enhancement programs. A series of intensively managed on-project sites were developed on approximately 1,475 acres. These sites, in conjunction with other less intensively managed project lands that were set aside for wildlife, totaled approximately 4,555 acres. Tacoma funded the personnel, equipment, and supplies necessary to operate and maintain this program.

In 1985, at the request of the WDFW and USFWS, Tacoma conducted a Habitat Evaluation Procedure (HEP) study on the project lands to further assess the impact of the Cowlitz River Project on wildlife. When Phase I of the HEP study was completed in 1986, a ledger of losses and gains in habitat units attributable to the Cowlitz Project was developed.

In the following years, alternative wildlife mitigation packages were discussed. On January 5, 1993 a mutual agreement was reached on a package of activities Tacoma would undertake to mitigate for wildlife impacts. The resulting Settlement Agreement Relating to Wildlife for the Cowlitz Hydroelectric Project (Wildlife Settlement Agreement) identifies and credits existing wildlife mitigation undertaken by Tacoma and identifies new and additional projects Tacoma will undertake to meet requirements of the settlement. The Wildlife Settlement Agreement was approved and made part of the operating license by the Federal Energy Regulatory Commission (FERC) on July 17, 1998. A Wildlife Management Plan was prepared by WDFW and approved by FERC on January 26, 1999. A new license for the Cowlitz River Project was made effective July 18, 2003 and Article 24 continues the Wildlife Settlement Agreement obligations for the term of the new license.

MANAGEMENT HISTORY

One function of this annual report is to document progress of wildlife habitat mitigation on properties owned by Tacoma. Described below are current management practices that have been implemented since the Wildlife Area Management Plan was developed in 1997, along with the primary management zones for each management unit. The Cowlitz Wildlife Area was divided into management zones for the purpose of prioritizing management activities and selecting compatible and optimal management prescriptions and activities to achieve habitat and species objectives. Complete management zone definitions can be found in the Cowlitz Wildlife Area Management Plan, Appendix C.

Cowlitz Trout Hatchery Unit:
The Cowlitz Trout Hatchery Unit consists of 280 acres adjacent to the Cowlitz Trout Hatchery. Management zones for this unit are cavity nesting duck, black-tailed deer, and riparian forest. Management has included planting and maintaining big game forage plots, visual screens, and installation and maintenance of wood duck nest boxes (Appendix 2). An intensive weed control program was established to control Scotch broom, which dominated parts of the unit, and Canada thistle (Appendix 3).

Also included in this unit is a large portion of the wetland known as Oxbow Lake. At one time there was a large heron rookery adjacent to the lake. Although recent observations have not confirmed current nesting, the area is still used heavily by herons and other wetland wildlife. All of Oxbow Lake on the Wildlife Area is managed as cavity nesting duck habitat. Oxbow Lake typically has the highest rate of nest box use by wood ducks on the CWA.

Swofford Unit:
This 520-acre unit consists of Swofford Pond and the surrounding upland areas. Swofford Pond was originally a steelhead / cutthroat rearing pond until 1983. This program was abandoned and the area was developed as wildlife habitat. A WDFW warm water fish program began with the introduction of bluegill, black crappie, largemouth bass, channel catfish, brown bullhead, and rainbow and brown trout. The fishery opened in 1985 and has become very popular. Appendix 5 summarizes the WDFW Swofford Pond Resident Fish Program.

Management zones for this unit are elk, black-tailed deer, dabbling duck, and riparian forest. Wildlife habitat developments include elk pastures, big game food plots, and goose pastures. Snag creation and Douglas fir, hydrophytic tree, and wetland plantings have also increased the unit's habitat value. Wood duck nest boxes have been placed in various locations around the pond.

The biggest problem at Swofford Pond has been an infestation of Eurasian watermilfoil (photo appendix 7c), an aquatic weed listed as a Class B Designate on the Lewis County Noxious Weed List (mandatory control). The milfoil was treated with *SONAR*® in 1988, 1989 and 1993. Although the eradication appeared to be complete, treatments were unsuccessful as each time milfoil was again found in subsequent years. *SONAR*® treatments also negatively impacted much of the native wetland plant community and dependent warm-water fishery. Winter drawdowns of water levels have also been used in the past in an attempt at control. Endothall treatment of 22 acres was tried in 1996 but plants were again detected in Tacoma surveys in 1998 and 1999. The WDFW planted native wetland plants following the endothall treatment.

Tacoma has expressed an intention to pursue further treatments to control milfoil in Swofford Pond. Tacoma prepared an Integrated Aquatic Vegetation Management Plan in 1999 to guide future aquatic plant control efforts. Currently milfoil is abundant which has led to complaints from the boat fishing public.

Overnight camping has historically been allowed on along the north side of Swofford Pond up to 14 days. Problems continue to persist with garbage, human waste, and public access to the waters edge. The wildlife area will re-visit these problems in 2004 and if deemed necessary, may restrict camping.

Mossyrock Unit:
This unit is approximately 640 acres of wetland, upland, and forested habitat. Management zones for this unit are black-tailed deer, riparian forest, dabbling duck, and cavity nesting duck. Management activities have included wetland enhancement and creation, farming, tree and shrub planting, snag creation, placing nest boxes, big-game forage production, blackberry control, and creation and maintenance of numerous timber clearings. Douglas fir and hydrophytic trees have been planted for cover and visual buffers. Persistent problems of wildlife harassment and poaching in this unit have been partially corrected by gating field accesses, ditching and placing rock barriers where necessary.

Kosmos Unit:
The 520-acre Kosmos Unit received most of the initial attention when WDFW management began. Management zones for this unit are emergent wetland, black-tailed deer, riparian forest, dabbling duck, bald eagle, and riparian shrub. Habitat developments have included big game food patch management, Douglas fir and hydrophytic tree plantings, timber thinning, and duck nest boxes. Several loafing ponds were expanded to improve wintering waterfowl habitat. Initiation of the Rainey Creek Dike project impounded water to create additional waterfowl/wetland habitat. Consequent work on the project was not completed and final assessment of project feasibility for completion of original design is awaiting a decision by the Wildlife Management Coordinating Committee in spring of 2004.

The Kosmos Unit has a high level of non-wildlife oriented recreational use, particularly in the summer and fall. These uses include hang gliding and wind surfing staging areas, which appear to have little impact on wildlife populations and habitat in the area. Other activities that have a more significant impact are "dispersed" camping and off road vehicle (ORV) travel on the mudflats. Posting of signs and enforcement have reduced the negative impacts within this area and ongoing vigilance continues to protect important natural and cultural resources.

Davis Lake Unit:
This unit contains 243 acres with acquisition of additional parcels a priority. Lewis County maintains a road easement to the lake that is used for fishing access. The lake is reported to support brown bullhead and cutthroat trout and is planted annually by the WDFW with rainbow trout. Most fishing is from boats, as the shoreline is inaccessible.

Management zones for this unit are riparian forest, black-tailed deer, dabbling duck, and salmonid. Wetland enhancement activities are planned to improve waterfowl habitat, however an additional lead-shot contamination assessment is needed before soil-disturbing activities should be planned. The upland pastures are maintained to benefit a diversity of game and non-game species.

Peterman Unit:
This 6,855-acre unit supports a mixed hardwood and conifer forest varying from clearcut to 100+ year-old aged stands. When first purchased in 1992, Tacoma acquired 2,212 acres of land with standing timber, and 4,643 acres of land where Hancock Timber Resource Group owned the timber rights through year 2026. Between 1992 and 1999, approximately 2,147 acres of land were cut with timber rights reverting to Tacoma. These areas have been replanted and are managed as part of the CWA. No timber harvest activity occurred in 2001. Hancock TRG sold their remaining harvest rights to Simpson Resource Company in 2001. Simpson began substantial harvest activity in 2002. Simpson timber harvests for 2002 totaled

725 acres and in 2003 totaled 560 acres. The remaining acreage that Simpson will harvest falls into two general age classes. The 40+age class totals approximately 325 acres and will be harvested by 2008 with 132 of those acres scheduled for 2004. The remaining acreage (<40 age class) totals approximately 600 acres and is tentatively scheduled for 2014. In 2003, Simpson and Tacoma Power cost-shared a road inventory and developed a Road Management and Abandonment Plan in compliance with Washington State Forest Practices rules. The plan prescribes annual and preventative maintenance of forest roads.

Management zones for this unit are black-tailed deer, pileated woodpecker, riparian forest, and emergent wetland. The management objective on this unit is to create and maintain desired composition of 20 percent foraging habitat, 30 percent hiding cover, 30 percent thermal cover, and 20 percent optimal cover, to benefit black-tailed deer, Douglas squirrels, pileated woodpeckers, and forest dependent species. A Geographical Information System (GIS) inventory of the 4,600+ acres where timber rights were retained or have reverted to Tacoma has been initiated to determine status relative to the desired composition. The GIS work is the cornerstone of a future forest management plan designed to develop long-range stand treatments to provide desired stand conditions as identified in the Cowlitz Wildlife Area Management Plan. As of 2003 Simpson retains approximately 925 acres of harvestable timber, it is assumed that Simpson will continue to commercially clearcut these stands over the next 25 years. Annual timber harvests and associated stand conditions will be included in the Peterman Ridge GIS to describe overall forest conditions, foraging habitat requirements will be partially met by this even-aged management. Approximately 368 acres are dedicated as pileated woodpecker habitat and will have no major timber removal, although snag creation to provide forage and nesting cavities is planned. Douglas squirrel is another priority species on this unit. (Management for Douglas squirrel is compatible with the management objectives for black-tailed deer and pileated woodpecker.) Any timber removed from this unit will be for the purpose of enhancing wildlife habitat pursuant to the Wildlife Area Management Plan and Addenda.

Kiona Creek Unit (formerly known as Smathers Unit):
Purchased as part of the wetland mitigation agreement in 1995 and 1996, this unit consists of approximately 415 acres. The majority of the unit consists of wetland habitat, with a small portion of upland pasture. Management zones for this unit are dabbling duck, black-tailed deer, forested wetland, salmonid, and riparian forest. Management activities have included wood duck box placement, mowing and riparian tree and shrub plantings. In 2002 an experimental reed canarygrass control plot was initiated to determine the effects of different treatments in controlling reed canarygrass and improving wildlife habitat. In 2003 the experimental plot was increased from 1 acre to 6 acres after site visits showed an increase in big game and waterfowl usage. In 2003 a request proposal for wetland restoration/enhancement was sent out to vendors for bid and accepted. A restoration/enhancement prescription is expected from the vendor during the fall of 2004. This area is a priority area for riparian wetland habitat restoration and related enhancement projects. The upland pasture portion will be managed as big-game foraging pasture.

Spears Unit (formerly known as Gibbs Lake):
Approximately 293 acres were purchased in 1994 and 1995 as part of the wetland mitigation agreement. An additional 125 acres of wetland, riparian, and forested habitats were acquired in 2002. Management zones for this unit are black-tailed deer, dabbling duck, emergent wetland, forested wetland, riparian forest, salmonid, and riparian shrub. Removal of fence and

assorted outbuildings from new acquisitions were done in 2002 to facilitate big game movement and restore areas for habitat management. In 2003 a request proposal for wetland restoration/enhancement was sent out to vendors for bid and accepted. This area is a priority area for riparian / wetland habitat restoration and related enhancement projects. Upland portions of this unit will be managed to benefit black-tailed deer, elk, and a variety of wildlife species. Visual screens will be planted along some major roadways. The new parcel acquisitions will require additional oversight regarding public access and control of noxious weeds, especially scotch broom.

Buffer Zones:
Approximately 30% of the acreage designated as CWA land exists as a narrow band surrounding both Riffe and Mayfield Reservoirs. The wildlife area buffer on Mayfield Lake is interspersed with Tacoma lands that have been modified with recreational parks, docks, and permitted uses. The recreational lands are managed by Tacoma to mitigate for recreational losses. Very limited development has occurred on Riffe Lake. Management zones for this unit are primarily eagle/osprey foraging with some smaller areas of bald eagle, emergent wetland, riparian forest, Canada goose, and black-tailed deer.

Most of the buffer zone on Riffe Lake is steep or inaccessible, and primary management has focused on protecting them in their current state. Activities that have taken place include placement of wood duck, eagle, and osprey nest structures.

Part of the Mayfield buffer zone includes the Harmony Unit. This area, approximately 50 acres, includes backwater habitat that is one of the highest waterfowl use areas on the reservoir, as well as a 14-acre pasture that provides forage for Canada geese and other wildlife. Management of this area is primarily to benefit Canada geese. The goose pastures are maintained through a grazing permit with an adjoining landowner.

COWLITZ WILDLIFE AREA PLANNED ACTIVITIES – 2003

The activities planned for 2003 were presented in the annual report for 2002. Table 1 summarizes those activities and their status at the end of 2003. A short description of each activity, its management objective and monitoring plan are included following the table. For accounting of 2003 expenditures, see Table 3.

Table 1. Planned Activities on the Cowlitz Wildlife Area for 2003

[illegible]	[illegible]	[illegible]
Wetland Restoration/Enhancement Planning	In Process	N/A
Dabbling Duck-Pond Enlargement	Combined with above project	N/A
Goat Creek Flat Rehabilitation	October	$276.00
Information Kiosk – Kosmos Access Area Upgrades	February	$118.00
300 Rd. Spur Barriers	February	$1056.00
[illegible]		
Riparian Zone: tree planting.	Not Completed	N/A
Black-tailed deer: Timber clearing rehabilitation.	Ongoing	N/A
Dabbling Duck: Nesting: shrub planting.	Not Completed	N/A
Mossyrock Trail-Footbridge Installation	Postponed	N/A
Pasture Rehabilitation	Ongoing	$406.00
Monitoring	Annual	CWA Personnel
Duck Pond Rehabilitation	Ongoing	$350.00
[illegible]		
Tree Planting for Visual Screens/Soil Testing	Postponed until 2004	N/A
Monitoring	Annual	CWA Personnel
Gate Installation and Barriers	April	$1323.00
Information Kiosk	February	$575.00
Brim Bar Access Improvement	June	$3640.00
[illegible]		
Riparian Zone planting/restoration.	Postponed until 2004	N/A
Interagency coordination and unit management improvement.	Ongoing	CWA Personnel
Monitoring	Ongoing	CWA Personnel
Information Kiosk	Pending	N/A
North Shore Improvement and Rehabilitation	Ongoing	N/A

Develop Monitoring Program	Ongoing	CWA Personnel
Road Management Planning	Ongoing	Tacoma/WDFW Staff
Black-tailed Deer Road Management Program: Access Control Barriers	Summer	$800.00
Wildlife Habitat Enhancement-Thinning	Ongoing	N/A
Boat Launch planning/improvement	Not Completed	N/A
Dabbling Duck Wetland Enhancement/Restoration Planning/Implementation.	Ongoing	Contract to be determined
Information Kiosk	Pending	N/A
Wetland Restoration/Enhancement Planning	Contract Awarded – Work began Winter 2003	N/A
Reed Canarygrass Control and test plots	August	CWA Personnel
Information Kiosk	Not Completed	N/A
Wetland Restoration/Enhancement Planning	Contract Awarded – Work began Winter 2003	N/A
Site Restoration	Ongoing	N/A
Access Improvements and Control	May	$667.00
Boundary Surveys	Ongoing and as necessary	N/A
Gates and barriers	Ongoing and as necessary	N/A
Wildlife Area Brochures Reproduction	Updates and revisions as necessary	N/A
Information Kiosk-Modifications	Spring	$600.00
Office improvements-electric	January	$3785.00
TOTAL COSTS [a]		**$ 13,596.00**

a-Does not include salaries/benefits and overhead.

SUPPLEMENTAL PROJECTS

Washington Department of Natural Resources (DNR) Forest and Fish Rules (WAC 222-24-051(2)) require a Road Maintenance and Abandonment Plan (RMAP) for forestlands. Landowners with more than 500 acres of forest within the state are required to provide DNR with a RMAP for 20% of their ownership per year, beginning in 2001, with full coverage by 2005. In 2002 Tacoma and Simpson Resources conducted a road system assessment. This resulted in a Road Management and Abandonment Plan with planned activities for 2004-2005 agreed to by Tacoma, Simpson, and WDFW.

The RMAP outlines road improvement and maintenance responsibilities on wildlife area roads, shared roads (Simpson, TPU, and WDFW), and Simpson operational roads. Roads that currently have identified problems are scheduled for improvement by 2006 and an annual work

plan must be submitted on the anniversary of the plan submittal date to describe progress and planning. These improvements will benefit fish and wildlife habitat by allowing fish passage in formerly restricted areas, by preventing sediment delivery, and by closing roads to reduce densities.

Kosmos Unit:
In general activities on this unit focus on reducing resource impacts due to recreational use. This includes monitoring public use and maintaining "dispersed" camping areas.

- In 2003, a formal land use agreement was established with the Cloud Base Country Club (CBCC) providing access to a safer alternate "landing zone" for their hang gliders. Compliance with wildlife area rules were maintained and wildlife and wildlife habitat needs were not compromised.
- The wetland enhancement project (Rainey Creek Project) includes creating open water, planting desirable wetland vegetation, and increasing the amount of wintering habitat for waterfowl (photo appendix 7d). Also, it is desirable to tie together the Rainey Creek Project and the enlarging of the existing duck ponds to meet ideal habitat specifications. This project is compatible with moving Dabbling Duck management zones toward optimum conditions (Priorities H and L). An inventory will be required to assess current conditions and subsequent monitoring will ensure activities move habitat attributes toward desired future conditions.
- The impacted areas at Goat Creek Flats, gated in 2002 to prevent further resource degradation, were scarified using a harrow pulled behind an ATV and seeded with a pasture seed mix (photo appendix 7d). The pasture seed mix will provide erosion control, help to suppress noxious weeds from germinating and provide forage value for area wildlife.
- The Information Kiosk located at the Kosmos Access Area parking lot was upgraded with a Plexiglas cover and the information was replaced or updated as needed.
- A spur road off of the 300 Road was blocked to vehicle access due to the extensive dumping of household garbage. This spur road has no recreational or management purpose.
- The hay contract continues on the Kosmos hayfields, and wildlife area staff continues to cut additional areas in order to improve forage for big game.

Mossyrock Unit:
- Efforts to rehabilitate the Orchard Meadow began in 2003 and will continue through 2004 (photo appendix 7b). This rehabilitation is necessary to establish both a diverse mix of palatable vegetation and to maintain the overall health of the meadow maximizing big game forage values. This activity is compatible with management plan priorities for black-tailed deer (Priorities I and M), and will be beneficial for deer and elk. A long-term goal is to develop a rotational planting schedule to maintain high quality black-tailed deer foraging value in meadows and timber clearings.
- Work began to clear the riser structures and ditches connecting pond impoundments at the Mossyrock Unit that are heavily choked with reed canarygrass thus restricting flows and reducing the value of the habitat. This project is ongoing and will continue through 2004.

- The hay contract on the Mossyrock hayfields continues, and wildlife area staff cut additional areas in order to improve forage for big game.

Cowlitz Trout Hatchery Unit:

- Monitoring continues at Oxbow Lake to determine the necessity of implementing weed control measures to control populations of bog bean (*Menyanthes trifoliata*) and yellow pond lily (*Nuphar polysepalum*).
- The planting of trees to improve existing visual barriers and to create additional screens was postponed until early 2004 due to the lack of nursery stock.
- A gate was installed off Spencer Road as well as several "tank traps" to prevent motorized vehicular traffic from entering the wildlife area (photo appendix 7a). This will discourage unlawful dumping of household garbage as well as further destruction of the resource.
- An informational kiosk was erected at the main entrance off Spencer Road (photo appendix 7a).
- Riprap was installed at Brim Bar to define a parking area and to prevent off road travel into sensitive areas (photo appendix 7a). This activity maximizes public access while protecting natural resources.

Swofford Unit:

- Interagency coordination was the main focus of management at Swofford Pond and adjacent uplands. Monitoring has indicated a severe degradation of the resource that can be linked to camping along the north shore area (photo appendix 7c). Several planning sessions have outlined prescriptions to be implemented in 2004.
- Concentrated restoration efforts continued along Sulphur Creek (photo appendix 7c). Planting of additional trees to provide shade along the banks (Priority G) will occur in early 2004. The moisture content of the ground at this time will encourage root sprouting of whips placed into the ground. Vegetation control will be necessary to prevent competition from reed canarygrass. Monitoring for mammal predation of the newly planted trees will indicate the need for fencing to be installed.
- The information kiosk has been built but not yet installed pending implementation of a defined parking area and trailhead extension.

Peterman Unit:

- Continued updating the Geographical Information System (GIS) inventory of Peterman Hill.
- Continued monitoring hardwood populations within fir plantings. If determined to be necessary, reducing hardwood competition may accelerate growth of fir plantings toward hiding, thermal, and mature habitat characteristics.
- A need to conduct conifer thinning was established and efforts are being conducted to develop a "thinning plan" so that growth towards successional mature habitat characteristics can be accelerated. Designated thermal cover areas will be left dense to accomplish management goals.
- Road management planning continues with the Road Management and Abandonment Plan guiding management decisions. No new gates were installed on Peterman in 2003. However, a "tank trap" was excavated at the P-1340 road to block a route that was created around the gate. A "tank trap" was excavated at the P-700 road to block vehicular traffic from driving through a sensitive habitat area.

Davis Lake Unit:

- Planning for improvements to the Davis Lake boat access site continue. Access problems plague current projects. Possible mitigation by Lewis County PUD could resolve these access issues.
- Planning for wetland restoration/enhancement is ongoing with current activities suspended pending project completion on the Spears and Kiona Creek Units. The Wildlife Management Coordinating Committee will determine future restoration project specifications for the Davis Lake Unit.
- The information kiosk for the Davis Lake Unit is built but installation is pending resolution of the access problems.

Kiona Creek Unit:

- The wetland restoration and enhancement project proposal contract was awarded to Sheldon & Associates Inc. Sheldon & Associates Inc. began work in November of 2003. Proposal completion is anticipated by Fall 2004.
- The 1-acre plot prepared in 2002 to test methods of controlling reed canarygrass was expanded to 6-acres in 2003. Site preparation (mowing) and monitoring were the two main activities conducted in the test area during 2003. Field observations appear to indicate that deer and elk favor the test area as a foraging site.
- The informational kiosk is ready to be assembled on site. Installation is pending completion of property line survey in 2004.

Spears Unit:

- The wetland restoration and enhancement project proposal contract was awarded to Sheldon & Associates Inc. Sheldon & Associates Inc. began work in November of 2003. Proposal completion is anticipated in Fall 2004.
- Large-scale site restoration on the Spears Unit is pending the outcome of the work being done by Sheldon & Associates Inc. However, restoration efforts have begun on and near the site of the old mill where a population of scotch broom has successfully out-competed native vegetation. The extent of the scotch broom population was surveyed utilizing hand-held GPS units. The data was entered into the Geographical Information System (GIS). This information will be useful in monitoring the effectiveness of control methods planned for 2004.
- The access across the old bridge on the Spears Unit was blocked to motor vehicles utilizing ecology blocks (photos appendix 7e). This bridge is quite dilapidated and deemed unsafe for vehicle traffic. The access to the mill site bypass road that runs parallel to State Route 131 (Forest Service Road 25) was blocked to motor vehicles using large riprap near Spears Road to prevent dumping of household garbage and resource degradation.

OTHER ACTIVITIES

Public Outreach

The Cowlitz Wildlife Area Brochure was restructured and updated. The brochure describes the Cowlitz Wildlife Area mitigation, natural history, management units, objectives, and was developed to inform and educate the general public. In addition the brochure serves to inform

the public on the activities that individuals might pursue while visiting the Wildlife Area as well as the rules and regulations that must be observed. Reproduction of the brochures will be accomplished in-house and distributed for public benefit. (See Appendix 6)

GIS maps depicting the Cowlitz Wildlife Area extents in relationship to the Lewis County boundaries and major highways were produced for public distribution. GIS maps of the separate units that comprise the wildlife area were also produced for public distribution. Upgrades to the GIS software in 2003 have prompted additional map production in 2004, as the previous maps will need to be updated and/or upgraded.

An informational and instructional seminar was conducted with area Boy Scouts on the topic of wood duck habitat needs and nest box construction.

Weed Control

The WDFW has responsibility for weed control on portions of the CWA under active management. Wildlife Area staff mechanically treated several units including the Cowlitz Trout Hatchery, Mossyrock, Kosmos, Swofford Pond and Kiona Creek. Staff also monitored these units for new infestations of noxious weeds. A Weed Management Plan (drafted in 2003) will, upon finalization, direct noxious weed control efforts in 2004 as part of an integrated vegetation management regime (See Appendix 4).

In 2003, one staff member successfully passed pesticide applicator license training allowing use of chemical controls to increase weed control options. It is planned that in 2004 the remaining two staff members will receive the training. Year 2003 weed control activities are summarized in Appendix 3.

COWLITZ WILDLIFE AREA UNSCHEDULED ACTIVITIES -- 2003

Management of the Cowlitz Wildlife Area requires proactive and adaptive strategies to help control access and implement management activities relative to current conditions. Sometimes these are singular events, other times they may become the basis for future planned activities. For this report we refer to these as unscheduled activities and Table 2 provides a brief project description, completion date, and cost. Below the table is a short summary of management objectives for each unscheduled activity.

Table 2. Unscheduled Activities on the Cowlitz Wildlife Area for 2003

Activity	Completion Date	Actual Cost*
300 Road Dispersed Campsite Closure & Rehabilitation	April	$ 657.00
Goat Creek Dispersed Campsite Closure & Rehabilitation	June	$ 555.00
300 & 400 Roads – Signage Improvements	July	$ 215.00
Kosmos Unit – Old Highway Barrier Improvements	August	$ 100.00
Peterman Hill Unit – Kiosk Installations	May	$ 300.00
Peterman Hill Unit – Firewood Cutting (windthrow)	November	CWA Staff
Davis Lake Unit – Outbuilding and blackberry removal	May	CWA Staff
Mossyrock Unit – Slab Site Rehabilitation	April	$ 1,342.00
Swofford Pond Unit – Trail Extension Planning	September	CWA Personnel
Swofford Pond Unit – Reed canarygrass control	Ongoing	CWA Staff
Geographic Information System (GIS) Upgrades	Spring	$ 1500.00
GPS Data Surveys	Ongoing	CWA Staff
Total Costs* *Does not include salaries/benefits and overhead.		**$ 4,699.00**

300 Road Dispersed Campsite Closure & Rehabilitation
Rock barriers were installed to block vehicular access to the high-use dispersed campsite adjacent to the Rainier 300 Road at the east end of the Rainier 310 Road (photo appendix 7d). The site was then scarified and seeded with a general pasture seed mix. Future plantings will focus on returning the site to a native state. This activity was undertaken to reverse resource impacts from garbage dumping, soil erosion and soil compaction.

Goat Creek Dispersed Campsite Closure & Rehabilitation
Rock barriers were installed to block vehicular access to the high-use dispersed campsite adjacent to the Rainier 300 Road at the Goat Creek Bridge. The site was then scarified and seeded with a general pasture seed mix. Future plantings will focus on returning the site to a native state. Sediment delivery to Goat Creek from this site was likely due to the extreme loss of vegetation and the close proximity of this site to Goat Creek. This activity was undertaken to reverse resource impacts from garbage dumping, soil erosion and soil compaction.

300 & 400 Roads – Signage Improvements
The signage along the Rainier 300 and 400 Roads was outdated, confusing to the public and overall aesthetically unappealing. Additionally, individuals parking along the Rainier 400 Road to gain access to the Taidnapam Fishing Bridge were creating a safety hazard and a bottleneck for truck traffic from nearby logging operations. The Campbell Group, in cooperation with Tacoma

Public Utilities, installed riprap at the site to block parking which further exacerbated the problem. The Cowlitz Wildlife Area removed the old signs from the Rainier 300 and 400 roads and installed new signs. The new signs are less confusing to the public and this appears to have increased compliance as well as remove the safety issues that were prevalent.

Kosmos Unit – Old Highway Barrier Improvements
The ecology block barriers located at the end of the old highway at Kosmos were determined to be ineffective at controlling vehicular traffic into the sensitive areas. In order to improve compliance and enforceability the ecology blocks were painted yellow and stenciled with black block letters. The message clearly states that vehicular traffic beyond this point is prohibited.

Peterman Unit – Kiosk Installations
Two additional kiosks were installed on the Peterman Hill Unit. They were placed on the 1000 Road where individuals would see them as they entered the wildlife area. They were then outfitted with basic regulatory information. The new kiosk located on the east end of Peterman Hill was destroyed in the summer of 2003 and has not yet been replaced.

Peterman Unit – Firewood Cutting (windthrow)
Strong winter winds in 2003 created an abundant amount of windthrow that blocked many roads on the Peterman Hill Unit. The Cowlitz Wildlife Area staff painted the windthrow with marking paint and then issued wood cutting permits to the general public. The staff monitors the wood cutting activity to ensure compliance with the terms of the permit. This activity will continue into 2004 until management objectives are met.

Davis Lake Unit – Outbuilding and Blackberry Removal
Cowlitz Wildlife Area staff and a local contractor removed an outbuilding from that portion of the Davis Lake Unit known as the Allen Barn. Portions of the outbuilding were pushed to field edges to provide woody debris piles. The majority of the demolition waste was removed and deposited in a landfill by the contractor. Additionally, Cowlitz Wildlife Area staff removed and/or mechanically mowed the blackberry patches currently covering the fields.

Mossyrock Unit – Slab Site Rehabilitation
In 2002 the concrete slab was removed from this site to prevent further degradation from squatter activity. The site was then left to reseed naturally. In 2003, responding to complaints about the poor aesthetics of the area and the likely invasion by blackberry and other noxious weeds, the Cowlitz Wildlife Area staff had the site prepared and the area reseeded (photos appendix 7b). The seed used was a general pasture mix; the same mix used in the Mossyrock Fields. Future plantings in this area will focus on revegetating the site with native species.

Swofford Pond Unit – Trail Extension Planning
In an effort to provide maximum opportunity for the public to enjoy the Swofford Pond Trail a trail extension connecting the boat ramp parking area with the existing main trail was flagged. The trail is planned for construction in 2004. This will provide a safer route for accessing the trail. Currently, the individual must walk along the busy Green Mountain Road to gain access.

Swofford Pond Unit – Reed canarygrass control
Reed canarygrass is a main component of the shoreline vegetation along Swofford Pond. In many places it has become the climax species. Elk pastures on the south shore are at risk to the inevitable invasion of the reed canarygrass. In response to this the Cowlitz Wildlife Area

staff mowed additional area to prompt rejuvenation of the existing vegetation thus providing better forage to area wildlife. Future plans are to rehabilitate the area to provide quality forage.

Geographic Information System (GIS) Upgrades
The Cowlitz Wildlife Area Geographic Information System (GIS) software was upgraded.

GPS Data Surveys
The need for GIS data to produce maps and reports as well as plan management activities prompted field surveys to gather information on the extents of fields, existing roads and trails, weed locations and other spatial data. This is an ongoing project that will be incorporated into the planned activities in future reports.

OPERATIONS AND MAINTENANCE REVENUES AND EXPENDITURES – 2003

The Settlement Agreement Relating to Wildlife for the Cowlitz Hydroelectric Project (Settlement Agreement) directs Tacoma Power to provide an annual sum of monies to the WDFW for the management and restoration of acquired lowlands/wetlands and uplands/timberlands for the benefit of wildlife and their habitats. The initial annual payment of $250,000 has been adjusted each year for inflation using the current published Consumer Price Index for All Urban Consumers for the Seattle/Tacoma Metropolitan Area. The payment for year 2003 was $341,497.03. Interest earned in 2003 was $6,526. The project carried over a surplus from previous years of $344,453.

It is the obligation of the WDFW under this Agreement to use the annual funds to plan and implement wildlife management and enhancement measures and to operate and maintain the Wildlife Area. Table 3 shows the revenues, expenditures, and balances for the CWA in 2003 Equipment purchases are detailed in Appendix 1.

Table 3. Operations and Maintenance Revenues and Expenditures for 2003

Annual payment		341,497	
Special Wildlife Account[a]		344,453	
Salaries	100,979		
Benefits	27,748		
Goods and Services	76,724		
Travel	467		
Capital Outlay	38,340		
Overhead	50,490		
Totals	**292,748**	**685,950**	**393,202**

[a]– Operations and Maintenance Portion Only (Dec. 03')

WETLAND ACQUISITIONS REVENUES & EXPENDITURES – 2003

It is the priority of the Department of Fish & Wildlife and the Cowlitz Wildlife Area staff to acquire new wetland parcels that meet management objectives. However, in 2003 none of the identified parcels were available for purchase. The Cowlitz Wildlife Area staff will continue to monitor the availability of those parcels that have been targeted for purchase and will renew efforts to locate additional properties that meet management objectives for land acquisitions.

Tacoma made three payments of $1.0 million each over a three-year period to the WDFW for wetlands acquisition for the Cowlitz Wildlife Area. Unspent funds are held in an interest bearing account. At the beginning of 2003 the account balance was $1,422,437 (all values rounded to the nearest dollar). Table 4 summarizes revenues (interest) and expenditures from the wetlands acquisition portion of the Special Wildlife Account in 2003.

Table 4. Wetland Acquisitions Revenues and Expenditures for 2003.

[illegible]	[illegible]	[illegible]	[illegible]
Special Wildlife Account[a]		1,422,437	
2003 Interest		14,801	
Salaries/benefits	0		
Indirect Cost/Overhead	4,428		
Goods and Services	0		
Capital Outlay	0		
Travel, transportation, and training	0		
Totals	**4,428**	**1,437,238**	**1,432,810**

[a] - Wetlands acquisition portion only

COWLITZ WILDLIFE AREA PLANNED ACTIVITIES -- 2004

The activities planned for 2004 are included in Table 5. Table 5 summarizes the activities and the completion schedule. A short description of each activity, its management goals and monitoring plan, is included after the table for each planned activity. This should not be considered a comprehensive work plan but rather a summary of the more important projects and tasks we will be undertaking in 2004; cost estimates are provided for informational purposes and do not constitute a spending plan. It is the intention to reduce residual funds by constructively utilizing monies for operational needs and management objectives.

Table 5. Planned Activities on the Cowlitz Wildlife Area for 2004.

Tree Planting for Visual Screens	Early Spring	$300.00
Gate Installation	Early Spring	$1,500.00
Weed Control	Spring / Summer / Fall	$500.00
Duck Pond Rehabilitation	Spring / Summer	$1000.00
Tree Planting – Restoration.	Spring	$150.00
Orchard Field Rehabilitation	Spring / Summer	$1,400.00
Weed Control	Spring / Summer / Fall	$1,500.00
Tree Planting – Restoration	Spring / Fall	$2,500.00
Trail Extension	Spring / Summer	$750.00
North Shore Restoration	Summer / Fall	$5,000.00
Information Kiosk & Signs	Summer	$925.00
Black-tailed Deer Road Density Plan	Ongoing	CWA Staff
Wildlife Habitat Enhancement - Forage	Ongoing	$550.00
Wildlife Habitat Enhancement -Thinning	Ongoing	CWA Staff
Develop Monitoring Plan	Ongoing	CWA Staff
RMAP Road Enhancement & Upgrades	Spring / Summer	$41,325
Access Improvement Planning	Ongoing	CWA Staff
Restoration / Enhancement Planning	Ongoing	CWA Staff
Information Kiosk	Spring	CWA Staff
Wetland Restoration / Enhancement Planning	Ongoing	$5,000.00
Bridge Planning	Summer	CWA Staff
Weed Control	Spring / Summer / Fall	$1,000.00

Activity Name	Planned Completion Date	Estimated Cost
Reed Creek Unit		
Wetland Restoration/Enhancement Planning	Summer, Fall	$30,000.00
Reed Canarygrass Control and Test Plots	Summer	$500.00
Gate Relocation	Fall	$100.00
Information Kiosk	Fall	$675.00
Develop Monitoring Plan	Ongoing	CWA Staff
Speelyai Unit		
Wetland Restoration/Enhancement Planning	Summer, Fall	$30,000.00
Weed Control – Scotch Broom	Spring / Fall	$525.00
Access Improvements and Control	Summer, Fall	$1,800.00
Cowlitz Trout Hatchery Unit		
Weed Monitoring & Control	Ongoing as Necessary	CWA Staff
Field Maintenance	Annual	$500.00
Wildlife Area Signage	Spring	$600.00
Information Kiosk-Modifications	Spring	$650.00
GPS / GIS & Mapping	Ongoing as Necessary	CWA Staff
Boundary Surveys & Monitoring	Ongoing as Necessary	To Be Determined
Trail Maintenance	Annual	$450.00
Wood Duck Nest Box Maintenance	Annual	$200.00
Equipment		
Dump Truck	Spring	$65,200.00
Equipment Repairs	Ongoing	$3,500.00
TOTAL ESTIMATED COSTS [1]		**$198,100.00**

[1] - These are project costs only; do not include salaries/benefits, or overhead

Cowlitz Trout Hatchery Unit:

- In 2004, Douglas fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*) will be planted to augment the existing visual barriers and provide new ones where none exist. This will help to eliminate off road travel, enhance habitat value and control illegal harvesting of wildlife.
- Brim Bar, an informal access point to the Cowlitz River, has been plagued for years by vehicle access onto riparian and shoreline areas, dumping of trash, and illicit activities that have caused numerous complaints by adjacent landowners. In 2003, riprap was placed to control off road travel and to delineate a parking area. In early spring of 2004 a gate will be installed to prevent off road traffic onto the gravel bar while providing access for emergency services.
- Weed control activities on this unit will be directed towards control / eradication of the large scotch broom (*Cytisus scoparius*) population that plagues a portion of this unit. Additionally, efforts will be directed towards improving the forage value of the fields by eliminating the

competing and spreading population of Canada thistle (*Cirsium arvense*) in several of the units fields.

- Weed control in Oxbow Lake may be necessary to facilitate maintenance and monitoring of wood duck nest boxes, to control spreading bog bean (*Menyanthes trifoliata*) and yellow pond lily (*Nuphar polysepalum*), and to enhance waterfowl preferred forage. Coordination and approval by adjacent landowners must be gained before implementation of weed control activities. Inventory during the growing season will be necessary to determine current status relative to plan objectives; this project is low priority and was cancelled in 2003 due to staff and time constraints. If normal water levels occur in 2004, an inventory should be done to determine necessity for (and if so, extent of) control activities in 2004 – 2005.

Mossyrock Unit:

- The Duck Pond Rehabilitation project involves rehabilitating the pond development and existing ditches to allow for improved water flow to each of the water impoundments, currently the ditches and riser structures are choked with reed canarygrass. Shrubs will be planted along pond edges to establish nesting cover for ducks. This activity is compatible with Dabbling Duck zone management (Priorities H and L). Shrub survival and growth rates will be measured annually to evaluate effectiveness of plantings and direct future composition of nesting cover plantings. Supplemental plantings will be dictated by progress toward optimum conditions for dabbling duck nesting habitat. A long-term goal is to inventory Dabbling Duck management zone habitat composition to direct future management.
- In 2002 – 2003, the CWA began restoration activities on a site impacted by years of human disturbance. A large concrete slab was removed and the site was graded followed by reseeding the area with a pasture seed mix comprised of orchard grass, ryegrass and clover. The tree planting – Restoration project involves planting red alder (*Alnus rubra*) into this site as part of the plan to restore native vegetation to this location.
- Continued pasture rehabilitation is needed to establish a variety of grass and forb species to maximize big game forage values. This activity is compatible with management plan priorities for black-tailed deer (Priorities I and M), and will benefit deer and elk. A long-term goal is to develop a rotational planting / reseeding schedule to maintain the high quality forage values that will result from the initial rehabilitation.
- Weed Control at this site will focus on the eradication of the Japanese knotweed (*Polygonum cuspidatum*) population located on this unit. If time constraints allow, work on removing the English ivy (*Hedera helix*) from this location should begin in 2004.

Swofford Pond Unit:

- Coordination between Department of Fish & Wildlife and Tacoma Power will be a renewed focus for the management of Swofford Pond and adjacent uplands. Continued recreational pressure on the area has mandated the need to address various resource issues and will be the focus of planning activities for 2004. Planning and implementation for 2004 will include rehabilitation and improvement of the north shore area. This may include placement of riprap, gravel, and soil in highly eroded and compacted areas. Designated areas will be hardened to improve parking for recreational access and protect existing resources. Additionally, the north shore area will be closed to camping and stays limited to 8 hours. Informational kiosks will be erected at key locations to provide information to the public.

- Restoration efforts will continue along Sulphur Creek with the planting of additional trees and shrubs to provide shade along the banks (Priority G). Fencing may be required to prevent herbivory and additional efforts will be made to weed and nurture plantings as they mature. Site preparation is a large component of this project as the reed canarygrass (*Phalaris arundinacea*) is very aggressive and makes controlling competition difficult. Effort will be made to direct activity at chemically controlling the reed canarygrass prior to planting.
- A trail extension connecting the parking area by the boat ramp to the main trail will be constructed to facilitate access. This will also serve to provide a safer access then the current location. One of the kiosks will be located at this trailhead to provide information about the trail, including a map.

Peterman Unit:

- A Geographical Information System (GIS) Inventory of Peterman Hill was completed in 2002. This GIS work will serve as the cornerstone of a future forest management plan designed to develop long-range stand treatments to provide desired stand conditions as identified in the Cowlitz Wildlife Area Management Plan. Annual timber harvests and associated stand conditions will be included in the Peterman Ridge GIS to describe overall forest conditions. Also, the GIS program will serve as an integral part of the management plan to reduce average road densities below 1.5 miles of open roads per square mile. Roads will be gated or reclaimed to meet management goals. Limiting road densities will provide positive habitat security benefits for black-tailed deer and elk (Priority I and M). These activities will be implemented in conjunction with Tacoma Power and Simpson Resources.
- Hardwood control within fir plantings will continue if monitoring indicates a need for this activity. Reducing hardwood competition may accelerate growth of fir plantings toward hiding, thermal, and mature habitat characteristics.
- Conifer thinning may be done in areas with more than 300 stems per acre to accelerate growth toward later successional mature habitat characteristics. Designated thermal cover areas will be left dense to accomplish management goals.

Davis Lake Unit:

- Improvement to the Davis Lake boat access site will continue. This will enhance public access for fish and wildlife oriented recreation, as well as management activities (e.g., installing wood duck boxes, monitoring). Possible enhancements might include the removal of some vegetation and silt, to enhance boat launching and access to the open water interior of the lake. A more permanent dock structure may also be built to facilitate public use. Upon project completion on the Spears and Kiona Creek Units the Wildlife Management Coordinating Committee will determine future restoration project specifications.

Kosmos Unit:

- This wetland enhancement project includes creating open water, planting desirable wetland vegetation, and increasing the amount of wintering habitat for waterfowl. Enlargement of the current duck ponds are compatible with moving dabbling duck management zones toward optimum conditions (Priorities H and L). Inventory and monitoring will be required to assess current conditions and ensure activities move habitat attributes toward desired future conditions.
- The installation of a bridge across Frost Creek would facilitate the implementation of maintenance activities on the north side of the creek. Current access is a "wet crossing" with

access limited by the necessity to accommodate fish needs. The current window for access limits early spring and summer crossings. In 2004 staff will look into the feasibility both economically and environmentally.

Kiona Creek Unit:

- Bids for a wetland restoration and enhancement project were received from private consultants and the work on the production of a proposal began in the winter of 2003. The enhancement of wetlands will take place to provide increased habitat values (Priorities E, F, G, H, J, K, L, N, Q and R). The Wildlife Management Coordinating Committee will determine project specifications from selected proposals. Completion of the restoration project proposal is anticipated by fall of 2004.
- Continued control of reed canarygrass and enhancement of unit fields will be expanded as part of an experimental treatment. This treatment will enhance seasonal habitat for dabbling ducks and serve as foraging areas for elk while at the same time reduce the amount of reed canarygrass. Inventory and monitoring will be required to assess current conditions and ensure activities move habitat attributes towards desired future conditions.
- A property line survey is needed to effectively plan and implement projects on this unit. A survey would ensure that no negative results occur to adjacent landowners when implementing the restoration specifications. Also, the gate relocation is dependent upon the property lines of this unit being accurately defined.

Spears Unit:

- In conjunction with proposals for the Kiona Creek Unit, bids for a wetland restoration and enhancement project were received from private consultants and the work on the production of a proposal began in the winter of 2003. The enhancement of wetlands will take place to provide increased habitat values (Priorities E, F, G, H, J, K, L, N, Q and R). The Wildlife Management Coordinating Committee will determine project specifications from selected proposals. Completion of the restoration project proposal is anticipated by fall of 2004.
- The old mill location and a site near the junction of Spears Road and SR 131 has a large community of scotch broom. The Lewis County Weed Board has targeted the scotch broom on this site for mandatory control. In response, weed control activities on this site will be directed towards the removal and subsequent monitoring of the site for scotch broom reoccurrence.
- The unlawful dumping of garbage as well as abandoned vehicles will require gating and barriers to protect and conserve resources. In 2004 barriers will be placed to eliminate vehicular travel along the dike road located at the old mill site. This would also be a possible location for an informational kiosk to provide relevant information to the general public.

Other Enhancement Activities:

Weed Monitoring & Control

The WDFW has responsibility for weed control on portions of the CWA under active management. In 2003, CWA staff mechanically treated several units including the Cowlitz Trout Hatchery, Mossyrock, Kosmos, Swofford Pond and Kiona Creek. Staff also monitored these units for new infestations of noxious weeds. A Weed Management Plan (drafted in 2003) will, upon finalization, direct noxious weed control efforts in 2004 as part of an integrated vegetation management regime (See Appendix 4).

Field Maintenance
Continual maintenance on wildlife area fields is necessary to maintain optimal forage value. Activities may include but are not limited to mowing, seeding, plowing and other agricultural practices. In addition, activities could include the addition of fertilizer to the fields to improve productivity. These activities are ongoing processes that occur as needed.

Wildlife Area Signage
Signage is an ongoing activity that includes the posting of missing, vandalized or worn out signs already in place on the wildlife area. Also, flexible signs to control access to the mud flats at Kosmos were purchased in 2003 and will be installed in 2004. In 2004 a sign identifying the posted rules and regulations will be designed and posted at key locations as well as wildlife area points of entry.

Information Kiosks – Modifications
In 2004 kiosks will be installed as highly visible information centers that will provide the public with consistent information that will include unit maps derived from GIS data, overview map, rules and regulations, and other Department of Fish and Wildlife information. Existing kiosks will be repaired as needed.

GPS / GIS & Mapping
This is an ongoing project that will generate geospatial and attribute data for the wildlife area to enhance the planning and implementation of related projects. In 2004 weed locates will be inventoried and mapped. This will facilitate future monitoring efforts and aid planning and implementation of control activities where needed. Other projects may be done as necessary.

Boundary Surveys
With increased demands on the CWA natural resources it remains important to survey and mark boundaries. Encroachment onto CWA lands, fencing issues, and differentiating between Tacoma Recreation and Wildlife lands is vital to maintaining the integrity and conservation of the wildlife area. Efforts should be made to better define a program aimed at surveying and marking remaining lines, identifying encroachments, and creating a timetable to address relevant issues. In addition a monitoring program will be developed to monitor property boundaries so that encroachment issues can be identified and addressed immediately. Priority will be given to those areas most likely to receive encroachments (i.e. Riffe and Mayfield Lake buffer areas with neighboring private property).

Trail Maintenance
Trail maintenance is performed as necessary to remove danger trees and blockages. Maintenance also includes the "brushing out" of encroaching vegetation. This is an annual project to ensure public safety and to preserve the integrity of the trail.

Wood Duck Nest Box Maintenance and Installation
The wood duck nest box program is an annual project to provide artificial cavity-nesting habitat in an effort to substitute for a general lack of natural suitable nesting cavities. The boxes are inspected annually. During this inspection data on use and productivity is collected then, the boxes are cleaned and filled with cedar chips. These boxes are highly weathered and many need replacing. The number of boxes available for nesting has declined by 19% due to attrition and several are in such disrepair that they need to be replaced. In 2004 CWA staff will replace

several boxes. In addition, if resources allow, boxes may be relocated as well as some additional boxes placed into service.

APPENDICES

Appendix 1. Cowlitz Wildlife Area 2003 Equipment Purchases

EQUIPMENT	COST ($)
Chain Hoist	$347.00
Utility Trailer	$915.00
Shop Tools	$1875.00
Chemical Storage Cabinet	$1012.00
Pick-up Bed Mounted Utility Boxes	$2000.00
Back Pack Fire Extinguishers (Water)	$315.00
Computer Printer	$1,235.00
Front End Loader / Backhoe	$32,328.00
Office Equipment	$475.00
TOTAL	$40,502.00

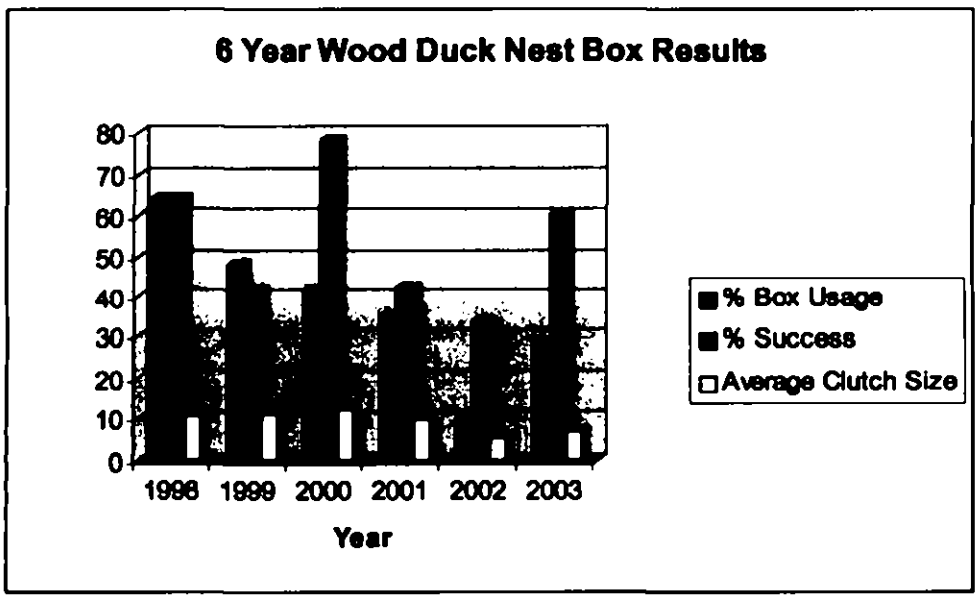
Appendix 2. Cowlitz Wildlife Area Wood Duck Nest Box Use

Due to staffing changes duck boxes were not chipped for 2002. Therefore productivity and use data are not included for the 2002-reporting season.

Table 1. 2003 Nest Box Production Monitoring Data.

Unit	# Of Boxes	% Box Use	# Eggs	# Hatched	Hatching Success
Cowlitz Trout Hatchery	19	11	10	2	20%
Oxbow Lake	23	57	92	41	45%
Kosmos	10	0	0	0	0%
Mossyrock	12	50	52	44	85%
Swofford	12	0	0	0	0%
Harmony (Cowlitz Arm)	6	67	17	16	94%
Kiona Creek	2	0	0	0	0%
Spears	3	0	0	0	0%
Peterman	2	0	0	0	0%
Totals	**88**	**28**	**171**	**103**	**60%**

Chart 1. 6 Year Wood Duck Nest Box Results



Appendix 3. Cowlitz Wildlife Area 2003 Weed Control Activities

Management Unit	Habitat Type	Species Treated	Treatment	Acres Treated	Total Acres
Cowlitz Trout Hatchery	Field	Scotch Broom	Hand Pull	2	2
	Field	Canada Thistle	Mechanical	1.5	1.5
Mossyrock	Field	Blackberry	Mechanical	5	5
	Forest/Riparian	Japanese Knotweed	Manual	400 sq ft.	400 sq ft.
Swofford	Wetland Edge / Field	Reed Canarygrass	Mechanical	10	10
	Field	Canada Thistle	Mechanical	1	1
Kosmos	Roadside	Japanese Knotweed	Manual	100 Plants	100 Plants
Davis Lake	Field	Blackberry	Mechanical	3	3
Kiona	Field	Reed Canarygrass	Mechanical	6	6

Appendix 4. Cowlitz Wildlife Area – Weed Management Plan Overview

Management Philosophy & Priorities

Weed control is an important part of the Cowlitz Wildlife Area management plan and restoration program. We focus on the species and communities we want in place of the weed species, rather than on simply eliminating weeds. We will implement preventative programs to keep the site free of species that are not yet established there but which are known to be pests elsewhere in the region. We will set priorities for the control or elimination of weeds that have already established on the site, according to their actual and potential impacts on native species and communities, particularly on our conservation targets. We will take action only when careful consideration indicates leaving the weed unchecked will result in more damage than controlling it with available methods. Additionally, high priority will be given to those weed species that state or county authority mandates us to control within our property boundaries.

We use an adaptive management strategy. First, we establish and record the goals for the site. Second, we identify species that block us from reaching these goals and assign them priorities based on the severity of their impacts. Third, we consider methods for controlling them or otherwise diminishing their impacts and, if necessary, re-order priorities based on likely impacts on target and non-target species. Fourth, we develop weed control plans based on this information. Fifth, the plan is implemented, and results of our management actions monitored. Sixth, we evaluate the effectiveness of our methods in light of the site goals, and use this information to modify and improve control priorities, methods and plans. Finally, start the cycle again by establishing new/modified goals.

We set priorities in the hope of minimizing the total, long-term workload. Therefore, we act to prevent new infestations and assign highest priority to existing infestations that are the fastest growing, most disruptive, and affect the most highly valued area(s) of the site. We also consider the difficulty of control; giving higher priority to infestations we think we are most likely to control with available technology and resources (The Nature Conservancy Weed Management Template, 2002). Weed Management Table 1 below contains a prioritized listing of those species determined to be problematic. The list is organized so that the species with the highest priority for control are listed first with the rest being organized by descending priority

Summary of Specific Actions Planned

Specific methods of control for high priority weeds are outlined below but in general an integrated vegetation management approach with emphasis on natural competition will be employed. The Cowlitz Wildlife Area (CWA) will actively control those species that have been selected by legal authority for control and will be maintained within our boundaries with an emphasis on eradication. Weed species, present in large populations in fields designated as hay fields, will be controlled by mechanical means when effective to do so otherwise weeds will be treated chemically to ensure the viability and palatability of the hay. Other problem weeds will be maintained within our boundaries but emphasis will be given to maintaining populations at a level where they are part of a diverse community of vegetation. When a non-native plant's invasive nature ensures it of becoming a climax species it will be controlled in a matter suitable to encourage complete control. Chemical control is a part of the CWA's Weed Management Plan but in general will be used in the lowest recommended concentrations and only as a last resort.

Weed populations will be mapped utilizing GPS / GIS technology. The extents will be charted and outlying populations identified. Monitoring will be on an annual basis with information being recorded using GPS units and the resulting data imported into the GIS system. Trends can then be projected and treatment results compared to previous years. Treatment procedures will then be adjusted as necessary to ensure that weed management projects meet CWA weed management goals.

The first year's (2004) emphasis will be directed towards gathering population data and control will target those populations that the CWA has a legal requirement to control. Following years will target weed species with lower priorities, continual monitoring for effectiveness and identification of new populations.

Weed Management Tables

Table 1. Prioritized List of Weed Species

Note: Yellow fields must be completed--they are used elsewhere in this workbook.

		-- Rank/Priority --				
Scientific Name	Common Name	Riparian / Perennial	Perennial	Grassland	Trails / Roads	Comments
Polygonum cuspidatum	Japanese knotweed	1				Localized, High priority for control, Legal requirement for control
Lythrum salicaria	purple loosestrife	1				Localized, High priority for control, Legal requirement for control
Cytisus scoparius	scotch broom		3	2	2	Present in several units; Legal requirement for control
Senecio jacobaea	tansy ragwort				2	Increasing along roads; Legal requirement for control
Cirsium arvense	Canada thistle			3		Present on the Trout Hatchery, Mossyrock, Swofford, Kosmos and Klone Units
Phalaris arundinacea	reed canarygrass	1		2		8-acre experimental control plot located at the Klone Creek Unit
Clematis vitalba	old man's beard		3		2	Limited but highly damaging infestation adjacent to industrial timber lands
Rubus discolor	Himalayan blackberry	2		3	2	Prevalent on all units; Extensive hedgerows needs management
Rubus laciniatus	evergreen blackberry	2		3	2	Present w/Rubus discolor, not as pervasive
Hedera helix	English ivy		4		3	Limited but highly damaging infestation -- Mossyrock Unit

Table 2. Management Implementation Schedule

Note: purple fields are calculated for you automatically
Codes: S=survey; T=treatment; P=plan control efforts

	Year 1				Year 2				Year 3				Year 4			
Target Species	Win	Spr	Sum	Fall	Win	Spr	Sum	Fall	Win	Spr	Sum	Fall	Win	Spr	Sum	Fall
		S,T	T	T	T,P	S,T	T	T	T	S,T	T	T	T	S,T	T	T
		S	T		P	S	T			S	T			S	T	
			S	T	P		S	T			S	T			S	T
				T	S,P			T				T				T
		S	T		P	S	T			S	T			S	T	
			S	T	P		S	T			S	T			S	T
		S	T	T	P	S	T	T		S	T	T		S	T	T
		S	S	T	P	S	S	T		S	S	T		S	S	T
		S	T	T	P	S	T	T		S	T	T		S	T	T
			S		P		S				S				S	

Table 3. Projected and Actual Resource Uses (per year)
Year: 2004

Note: purple fields are calculated automatically

	Staff Hrs		Invasive Hrs		Equip. Hrs		Other Costs		Difference (Estimated - Actual)			
Species/Cl	Est.	Actual	Est.	Actual	Est.	Actual	Est.	Actual	Staff Hrs	Vol. Hrs	Equip Hrs	ther Costs
	$272		$0		$0		$250		$272	$0	$0	$250
	$34		$0		$0		$0		$34	$0	$0	$0
	$680		$756		$100		$744		$680	$756	$100	$744
	$408		$0		$0		$80		$408	$0	$0	$80
	$1,360		$0		$400		$250		$1,360	$0	$400	$250
	$680		$0		$1,000		$400		$680	$0	$1,000	$400
	$680		$756		$0		$344		$680	$756	$0	$344
	$408		$0		$800		$300		$408	$0	$800	$300
	$136		$0		$200		$100		$136	$0	$200	$100
	$408		$0		$0		$0		$408	$0	$0	$0
Resource	$5,086	$0	$1,512	$0	$2,300	$0	$2,436	$0	$5,086	$1,512	$2,300	$2,436

Specific Control Plan for Japanese Knotweed

Scientific name: *Polygonum cuspidatum* **Common name:** Japanese knotweed

Updated:2004

PRIORITY: High

DESCRIPTION

Polygonum cuspidatum is an herbaceous perennial which forms large clumps 1-3 meters high. It is fully dioecious and can reproduce by seed and by large rhizomes which may reach a length of 5-6 meters. The stout stems are hollow and bamboo-like, extend from an erect base and are simple or little branched and glabrous with thinly membranous sheaths. Leaves are broadly ovate, truncate to cuneate at base, abruptly cuspidate, 5-15 cm long, 5-12 cm broad, with petioles 1-3 cm long. Greenish white flowers 2.5-3 mm long, densely arranged in axillary panicles; 3 styles; 8-10 stamens with longitudinally dehiscing anthers. Fruiting calyx wing-angled, 6-10 mm long. Achenes shiny black-brown, 3-4 mm long, acutely trigonous. Male flowers have branched panicles on upright racemes with the distal end of the raceme in the highest position; individual panicles generally point up. Female flowers are drooping or decumbent with the distal end in the lowest position; individual panicles are not oriented in a particular direction. Both male and female flowers possess vestigial organs of the other sex (Seiger, 1991).

CURRENT DISTRIBUTION ON THE SITE

To be mapped in 2004

DAMAGE & THREATS

Once Japanese knotweed has established it forms large, almost pure stands which are extremely persistent and difficult to eradicate (Seiger, 1991). This stand is located adjacent to a multi-use trail that receives a generous amount of horse traffic annually. Dispersal can occur naturally when rhizome fragments are washed downstream by the current and deposited on banks (Conolly, 1977; Locandro, 1978). Rhizomes can regenerate from small fragments, and have even been observed to regenerate from internode tissue (Locandro, 1973). Its early emergence and great height combine to shade out other vegetation and prohibit regeneration of other species (Sukopp and Sukopp, 1988). Thus it reduces species diversity and damages wildlife habitat (Palmer, 1990; Scott and Mars, 1984).

GOALS

Complete Eradication

OBJECTIVES

- Map existing populations
- Treat and eradicate existing plants within 4 years
- Continual yearly monitoring

MANAGEMENT OPTIONS

- Cut plants to diminish rhizomal reserves
- Dig out plants and rhizomes
- Shade out existing plants
- Herbicide

ACTIONS PLANNED

A combination of mechanical and chemical means will be employed to combat this highly invasive species. Initial control efforts will consist of cutting the stalks close to ground level. New shoots generally begin to emerge around the first part of April. Therefore, when possible the first cutting should occur near the end of April first part of May. Two additional cuttings will be conducted to deplete rhizomal reserves and help weaken the plant. These two cuttings should be conducted in late May and June. A final cutting will be conducted in early August just prior to the application of herbicide. The purpose of this cutting is to open the space in the stem between the nodes and should be conducted above the first node and first set of leaves. This will facilitate the application of herbicide by establishing a "pocket" where herbicide can be concentrated. Finally, glyphosphate should be applied in August while plants are translocating at a rate of 2.67 fluid ounces to one gallon of water. Yearly treatments should be expected. Monitoring will be done annually in April / May.

RESOURCE NEEDS

Monitoring and controlling *P. cuspidatum* will require approximately 16 hours of staff time at a cost of $272 dollars. An additional $250 dollars (approx.) will be needed for herbicide.

Specific Control Plan for Purple Loosestrife

Scientific name: *Lythrum salicaria* **Common name:** Purple Loosestrife

Updated:2004

PRIORITY: High

DESCRIPTION

Lythrum salicaria is a stout, erect perennial herb with a strongly developed taproot. The plant ranges in height from 0.5 to 2.0 m. The four-angled stem can be glabrous to pubescent. The sessile leaves are opposite or in whorls, lanceolate to narrowly oblong, with cordate bases. The inflorescence is spike-like, 1-4 dm long. Petals 5-7, usually magenta, but white or light pink flowers are also common. The flowers are trimorphic in regard to the relative lengths of the stamens and style. The fruit is a capsule, with small seeds, each weighing 0.06 mg (Balogh 1985, Rawinski 1982, Gleason 1952, Fernald 1950).

At a distance, *L. salicaria* may be confused with *Epilobium angustifolium*, *Verbena hastata*, *Teucrium canadense*, or *Liatris spp.* Upon closer examination however, purple loosestrife is easily distinguished from these other magenta-flowered plants.

CURRENT DISTRIBUTION ON THE SITE

To be mapped in 2004

DAMAGE & THREATS

Once purple loosestrife becomes established in a wetland it displaces endemic vegetation through rapid growth and heavy seed production (Rawinski 1982). *L. salicaria* has a detrimental impact on native wetland vegetation and associated wildlife. Important wildlife food plants such as cattails and pondweed are displaced or shaded out as *L. salicaria* expands across a wetland. If purple loosestrife is left unchecked, the wetland eventually becomes a monoculture of loosestrife (Rawinski 1982). The invasion of *L. salicaria* leads to a loss of plant diversity, which also leads to a loss of wildlife diversity.

GOALS

Maintain Complete Eradication

OBJECTIVES

- Check for no new populations
- Map any existing populations
- Treat any existing populations
- Continue annual monitoring

MANAGEMENT OPTIONS

- Pulling plants
- Plant competing vegetation
- Biological controls
- Herbicide

ACTIONS PLANNED

The CWA has a legal requirement to control *L. salicaria* and therefore seeks complete eradication of this species. Currently, there is no reoccurrence of this species where it was discovered on the south shore of Swofford Pond. The plants were removed in 2002 by hand pulling and have not yet been observed reestablishing in the area. The proximity of these plants to the pond makes the use of chemicals undesirable. Additional occurrences will be handled by the same mechanical means as the previous plants. Monitoring will continue to be done annually in late July / August.

RESOURCE NEEDS

Monitoring and controlling *L. salicaria* will require approximately 2 hours of staff time at a cost of $34 dollars.

Specific Control Plan for Scotch Broom

Scientific name: *Cytisus scoparius* **Common name:** Scotch Broom

Updated: 2004

PRIORITY: High

DESCRIPTION

Scotch broom is a perennial shrub of the Fabaceae (Leguminosae) family. The shrubs are 1-2 meters high and deciduous. The green branches (Robbins et al. 1951) are strongly angled (Hitchcock and Cronquist 1973) and appear naked or almost so (Munz and Keck 1973). The leaves are trifoliolate with petioles 2-10 mm long. The leaflets are obovate to oblanceolate, entire, strigose and 6-12 mm long.

The yellow flowers of Scotch broom are usually borne solitary in axils, blooming between April and June. The glabrous banner is ovate to rounded; wings are oblong to ovate; and the keel is straight or curved. Petals are about 2 cm long. The flaring calyx is glabrous, about 7 mm long and is two-lipped with short teeth. The brownish black pods, 3.5 to 5 cm long, are villous on the margins only. These pods are compressed, several seeded, with a callous appendage or strophiole near the base (Munz and Keck 1973).

CURRENT DISTRIBUTION ON THE SITE

To be mapped in 2004

DAMAGE & THREATS

Scotch broom is a non-designated Class B noxious weed and is mandated by Lewis County for control. Scotch broom invades pastures and cultivated fields, dry scrubland and "wasteland", native grasslands and along roadsides, dry riverbeds and other waterways (Gilkey 1957, Johnson 1982, Williams 1981). It does not do well in forested areas but invades rapidly following logging, land clearing and burning (Mobley 1954, Williams 1981). It is very aggressive and spreads rapidly. It grows so dense that it is often impenetrable. It prevents reforestation, creates a high fire hazard, renders rangeland worthless and greatly increases the cost of maintenance of roads, ditches, canals, power and telephone lines. Wildlife suffers as the growth becomes too dense for quail to thrive and there is no forage left for deer. They must move to new range or starve. Being slightly toxic and unpalatable it is browsed very little by livestock (Mobley 1954).

GOALS

- Eradicate existing stands
- Prevent new occurences

OBJECTIVES

- Map existing populations
- Treat and eradicate existing plants within 4 years
- Continual yearly monitoring

MANAGEMENT OPTIONS

- Manual removal
  - Hand pulling
  - Hand hoeing
  - Cutting
  - Hand digging
- Mechanical removal
  - Cutting with equipment mounted rotary mower
  - Cutting with equipment mounted flail chopper
- Burning
- Planting / encouraging desirable plant competition
- Herbicide

ACTIONS PLANNED

A combination of mechanical, chemical and cultural means will be employed to combat this highly invasive species. Initial control efforts will consist of cutting the plants close to ground level using either manual or mechanical means. This initial cutting should occur in late March early April. The debris can be burned, mulched or piled to allow for desiccation. Care should be taken to avoid the vegetative reproduction through cuttings. Resprouting from the roots is to be expected and the new growth will be treated chemically in late summer after the plants are fully leafed and in seed head stage. Competing vegetation can be planted once initial treatments are employed and control has been achieved. Monitoring will be done annually in May / June when flowers should be in full bloom.

RESOURCE NEEDS

Monitoring and controlling of *C. scoparius* for 2004 will require approximately 40 hours of staff time, a 10 man inmate crew for 2 days, 4 hours of equipment time and approximately $750 dollars of additional resources. The total resource allocation for 2004 is approximately $2300 dollars. Subsequent years should require only 70 percent of the total resources for 2004.

Specific Control Plan for Tansy Ragwort

Scientific name: *Senecio jacobaea* **Common name:** Tansy Ragwort

Updated: 2004

PRIORITY: High

DESCRIPTION

Senecio jacobaea is a member of the Groundsel Tribe (Senecioneae) of the Sunflower Family (Asteraceae=Compositae). It is a biennial or short-lived perennial, 3-10 dm tall, with one to a few coarse, erect purplish-red stems, simple except above. The herbage is thinly floccose-tomentose, later becoming more or less glabrate. The leaves are well distributed, mostly 2-3 pinnatifid, about 5-20 cm long, with only the lower petioled.

The inflorescence is short, broad, and of several to many heads. The involucre is about 4 mm high. The are about 13 phyllaries, most with dark tips. The bracteoles are narrow, though sometimes quite evident. There are about 13 yellow rays, 5-10 mm long. The akenes of the disk flowers are pubescent, while those of the ray flowers are glabrous.

Senecio jacobaea can be distinguished from other Senecios by its perennial nature, being largely herbaceous but with a woody base; stems 3-10 dm; and leaves 5-20 cm long, not narrow linear or divided into linear segments, but being 2-3 times pinnatifid (Macdonald and Russo, 1989).

CURRENT DISTRIBUTION ON THE SITE

To be mapped in 2004

DAMAGE & THREATS

Tansy ragwort is a non-designated Class B noxious weed and is mandated by Lewis County for control in selected areas. Due to the toxicity of tansy ragwort on livestock the CWA has adopted the management guideline of managing tansy ragwort within our boundaries when feasible to do so or mandated by county authority. Additionally, there have been some recent concerns that the densities of S. jacobaea may be increasing.

GOALS

- Monitor existing populations
- Control expanding populations
- Prevent new occurences

OBJECTIVES

- Map existing populations
- Treat new and expanding populations
- Continual yearly monitoring

MANAGEMENT OPTIONS

- Monitor
- Manual removal
- Mechanical mowing
- Chemical application

ACTIONS PLANNED

S. jacobaea is mandated for control on the CWA by county authority. The extents and locations of populations of *S. jacobaea* have never been mapped and there is some concern that populations might be expanding. However, efforts to validate this have not been conducted. Control efforts on this species will focus on expanding populations and new occurrences in areas with no previous occurrences.

Introduction of the cinnabar moth in Lewis County proved to be an effective biocontrol to combat *S. jacobaea* and plant populations on the CWA are now generally small and isolated. Little control appears to be needed but there is a need to quantify the population densities of *S. jacobaea* and monitor those communities to establish whether they are indeed expanding and in need of some control measures. The communities will be mapped using GPS technology and placed into the GIS system so that changes over time can be more accurately depicted.

Actual control method will be determined on a site-by-site basis. Small populations with expansion will likely be controlled by manual means; whereas mechanical mowing will likely control occurrences within fields. Large populations will receive chemical treatments to gain initial control.

Monitoring will continue on an annual basis.

RESOURCE NEEDS

Monitoring and controlling of S. jacobaea for 2004 will require approximately 24 hours of staff time annually at an approximate cost of $450 dollars.

Appendix 5. Swofford Pond-Fish Management

Reported by Dan Harmon, WDFW Fish Biologist, Region 5

SWOFFORD POND 2003

The program goal at Swofford Pond is to maintain a quality warmwater fishery and secondarily, a viable trout fishery. For bass, the target proportional stock density (PSD) (number of >12 inch bass/ >8 inch bass) is 40 to 60 (Anderson 1976), a level thought to result in balanced predator/prey populations.

Swofford Pond encompasses 240 acres, opened to angling in 1985 with a 14-inch minimum size limit for bass. In 1986 through 1993, a 12-17 inch slot limit for bass was established, and in 1994, this was changed to 12-18 inches. In 2001-2003 there was a 12-17" slot limit, with only one of five fish legal limit being over 17 inches. In 1992, the regulation for channel catfish was changed from no size limit to a 20 inch (51cm) minimum length, and then in 2000, it was changed to the statewide regulation with a minimum length of 12 inches (30 cm) with a 5 fish limit. Current regulations are state minimum and size/daily limits. Internal combustion engines prohibited.

In 1988 and 1989, Swofford Pond was treated with the aquatic herbicide SONAR to eradicate Eurasian milfoil (*Myriophyllum spicatum)*. In 1993, Swofford Pond was treated for milfoil with a low dosage of SONAR for an extended period, which did not kill emergent vegetation. Milfoil was observed again in fall 1995 and thereafter. Scale analysis has shown that Swofford bass take 2 to 3 years to reach 203-305 mm (Tipping, 2000), so the lack of 203-305 mm fish in 1995 and 1996 (see table 3) would indicate a catastrophic event 2 to 3 years previous, pointing directly at the 1993 herbicide treatment.

These treatments and their effects were devastating to fish population. Sport harvest numbers respectively for Bluegill, Bass and Crappie went from 6,908, 116, 3,987 in 1994 to 151, 47, 0 in 1995 and 0, 3, 0 in 1996. Bluegill population did not start recovering till 2000 after numerous plantings of Bluegill from local ponds.

Emergent vegetation is again being dominated by Eurasian milfoil resulting in a dense canopy of growth that makes fishing and boating extremely difficult. Additional effects of these mats are an increase of phosphorus and nitrogen in water column, higher ph, decreased oxygen content and higher water temperatures all of which may contribute to fish kills in late August and early September.

Fish Plants

Table 1. Fish plants in Swofford Pond in 2003.

Species	Date	Number	Fpp	Pounds	Description
Rainbow	4/4	3,474	3.6	965	Mossyrock Trout Hatchery
	4/7	3,376	3.2	1,055	Mossyrock Trout Hatchery
	4/14	3,200	3.2	1,000	Mossyrock Trout Hatchery
Brown trout	4/8	4,019	4.7	855	Mossyrock Trout Hatchery
Cutthroat	10/14	100	1.0	100	Cowlitz Trout Hatchery

Lake Sampling

A population estimate for bass over 20 cm was conducted in June. The pond was electrofished with a Smith-Root Model GPP Electrofisher using pulsed Pulsed DC at 30 pulse/sec, duty cycle of 50-60 % at high range[1]. Entire pond circumference was fished as well as the small island southeast of boat-ramp. Bass over 20 cm were tagged on the first and second nights and a Peterson mark-recapture estimate was generated for the second and third nights.

Results:

The bass population sampling indicated standing stock of 668 bass, with a PSD of 48.4 and a biomass of 3.0 kg/hectare (see table 2). Due to extremely dense growth of emergent vegetation (milfoil, pondweed) PSD is probably biased toward larger fish that were easier to recover in dense vegetation.
A total of 10 previously tagged bass were recovered in 2003 (see table 4) and were used to estimate annual growth. Growth from 2002 to 2003 averaged 0.9 cm (see table 5). One channel catfish were also caught with a length of 473 mm.

Table 2 Mean length (cm), proportional stock density, population estimates and biomass of 20+ cm bass in Swofford Pond.

Year	No. Bass Captured	Population Sampled %	(XL) mm Length	PSD	Population Estimate	Biomass Lbs/acre
1987	323	24.6	282	23	1,312	3.8
1989	349	32.3	267	17	1,080	2.6
1990	70	NA	304	51	NA	-
1991	120	42.6	280	51	282	0.8
1992	113	37.5	298	45	301	1
1993	347	31.1	301	40	1,116	4
1994	177	55.5	362	84	321	2.1
1995	97	40.8	388	100	238	1.9

1 In past years used duty cycle of 20-40%, but higher rate required because of emergent vegetation.

1996	54	47	419	100	115	1.2
1997	62	56.9	445	97	109	1.4
1998	62	59	391	84	105	0.9
1999	81	42	301	52	193	0.7
2000	56	38.9	368	82	143	0.8
2001	159	22.1	301	25	NA	-
2002	71	14.5	395	96	489	4.2
2003	62	9.3	323	48	668	3

Table 3. Length (mm) distribution of bass boatshocked in Swofford Pond by %.

Year	<306	306-381	382-508	508<	N
1987	77.0	20.1	3.0	0.0	323
1989	86.6	9.4	4.0	0.0	298
1990	64.3	32.9	1.4	1.4	70
1991	48.4	47.5	3.3	0.8	122
1992	59.3	23.9	15.9	0.9	113
1993	59.8	31.6	8.3	0.3	348
1994	15.8	46.9	36.7	0.6	177
1995	0.0	45.7	52.1	2.1	94
1996	0.0	11.1	83.3	5.6	54
1997	3.2	0.0	87.1	9.7	62
1998	19.7	23.0	47.5	9.8	61
1999	48.1	37.0	13.6	2.5	81
2000	17.9	42.4	34.3	5.4	56
2001	76.7	9.4	12.0	1.9	159
2002	4.2	52.1	38.0	5.6	71
2003	51.6	9.7	35.5	3.2	62

Table 4. Length (cm-1) in 2003 of previously tagged Swofford Pond bass.

Floy Tag#	Year Tagged	mm	2003	Year	mm
834	?	?	522	2002	515
6030	99	524	575		
6155	01	270	400		
6164	01	274	410		
6426	02	473	475		
6444	02	440	455		
9915	98	340	505		
9919	98	230	451		
9920	98	450	485	2000	450
6273	01	290	390		

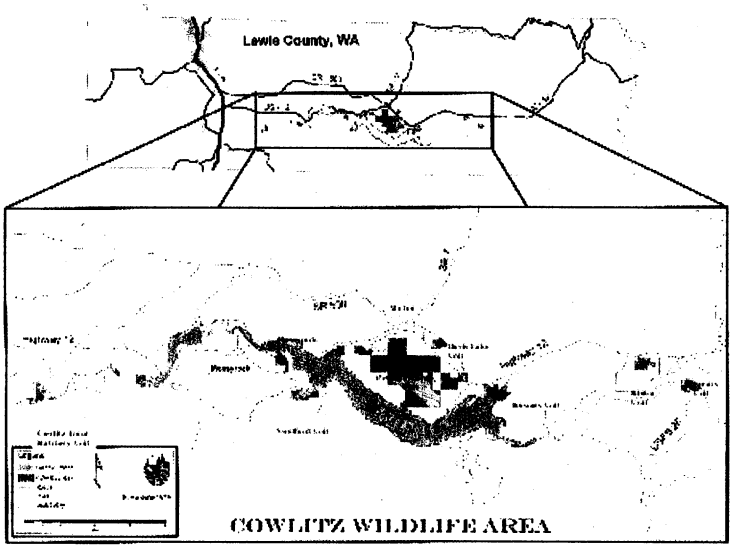
? No record.

Table 5. Growth (cm-1) of previously tagged bass in Swofford Pond.

1-YR	Time Period	Growth	Growth/Yr	N
	2002 to 2003	0.9	0.9	3
	2001 to 2002	6.4	6.4	3
	2000 to 2001	3.3	3.3	2
	1999 to 2000	6.1	6.1	12
	1998 to 1999	3.9	3.9	5
	1997 to 1998	2.3	2.3	6
	1996 to 1997	2.2	2.2	6
	1995 to 1996	3.8	3.8	16
	1994 to 1995	3.5	3.5	24
	1993 to 1994	2.6	2.6	29
	1992 to 1993	5.3	5.3	8
	1991 to 1992	2.9	2.9	2
	1989 to 1990	4.4	4.4	9
2-YR	2001 to 2003	12.2	6.1	3
	2000 to 2002	5.6	2.8	2
	1999 to 2001	12.4	6.2	2
	1998 to 2000	7.2	3.6	5
	1997 to 1999	5.5	2.8	2
	1996 to 1998	4.0	2.0	3
	1995 to 1997	5.1	2.5	8
	1994 to 1996	7.3	3.6	12
	1993 to 1995	7.3	3.7	9
	1992 to 1994	6.6	3.3	4
	1991 to 1993	13.4	6.7	7
	1989 to 1991	3.6	1.8	7
	1987 to 1989	3.9	2.0	17
3-YR	2000 to 2003	3.5	1.2	1
	1999 to 2002	16.6	5.5	4
	1998 to 2001	11.1	3.7	2
	1997 to 2000	5.7	1.9	3
	1996 to 1999	1.8	0.6	1
	1995 to 1998	7.4	2.5	3
	1994 to 1997	8.4	2.8	12
	1993 to 1996	9.9	3.3	3
4-YR	1999 to 2003	5.0	1.3	1
	1996 to 2000	9.3	2.3	1
	1995 to 1999	6.9	1.7	1
	1994 to 1998	9.9	2.5	6

	1993 to 1997	8.8	2.2	5
	1991 to 1995	23.7	5.9	1
	1989 to 1993	19.4	4.8	2
	1987 to 1991	27.0	6.8	3
	Time Period	Growth	Growth/Yr	N
5-YR	1998 to 2003	14.0	2.8	5
	1995 to 2000	8.7	1.7	2
	1994 to 1999	12.0	2.4	2
	1993 to 1998	10.3	2.1	3
6-YR	1994 to 2000	12.4	2.1	2
	1992 to 1998	8.1	1.4	1
	1989 to 1995	20.0	3.3	1
7-YR	1994 to 2001	15.5	2.2	2
	1989 to 1996	25.0	3.6	1
8-YR	1994 to 2002	15.9	2.0	3
	1992 to 2000	14.1	1.8	1
	1989 to 1997	26.5	3.3	1

Appendix 6. Cowlitz Wildlife Area Tri-Fold Brochure
CWA Brochure Page 1



SW WASHINGTON REGION 5

COWLITZ WILDLIFE AREA

The Washington Department of Fish & Wildlife (WDFW) manages the Cowlitz Wildlife Area (CWA), encompassing approximately 13,940 acres, to preserve, protect and perpetuate Washington's diverse wildlife and wildlife habitats. The CWA is owned by Tacoma Power and is managed by the WDFW to mitigate for the loss of habitat when the Cowlitz River was impounded creating Riffe and Mayfield Lakes.

There are eight units that make up the CWA with the largest unit being the Peterman Ridge Unit (6,855-acres). The following list shows the remaining units of the CWA and there acreage.

- Mossyrock Unit 640-acres
- Swofford Unit 520-acres
- Kosmos Unit 520-acres
- Kiona Creek Unit 415-acres
- Spears Unit 390-acres
- Cowlitz Trout Hatchery Unit 280-acres
- Davis Lake Unit 343-acres

The remaining 4177 acres lies adjacent to Riffe and Mayfield Lakes as a riparian buffer. The riparian buffers are managed primarily as eagle and osprey foraging habitat.

One of the goals the WDFW strives for in managing the CWA is to maximize hunting, fishing and non-consumptive recreational opportunities that are compatible with healthy, diverse fish and wildlife populations.

Contact Information

Cowlitz Wildlife Area Office
350 Highway 7 / PO BOX 758
Morton, WA 98356
360.496.6223 *

Hours:
8:00am — 4:30pm *
* Staff may be in the field

Emergency Contact Numbers
360.748.6633 (24 Hours)
800.477.6224 (8a –5p weekdays)

Rules and Regulations

- Firewood cutting by permit only
- Removal of forest products prohibited
- Harvesting of wildlife prohibited without a valid permit and only during legal seasons
- Camping stays limited to 14 consecutive days
- Campfires prohibited during all burn bans (DNR's Summer Fire Rules Apply)
- No Fireworks
- Off-road vehicles (ORV) prohibited
- No digging or removal of artifacts of any kind
- Non-toxic shot requirement
- Pack it in — Pack it out
- Obey all signs and posted regulations

CWA Brochure Page 2

The Cowlitz Wildlife Area (CWA) provides abundant hunting opportunities. Peterman Ridge, the largest unit of the CWA, is host to such big game species as elk, deer, bear and cougar. Small game is prevalent as well; forest grouse, cottontail rabbits and band-tailed pigeons are species seen often by visitors to the CWA. Those individuals seeking to hunt waterfowl will find plenty of supporting habitat on the CWA and should find large populations of birds as well.

The Kosmos Unit is home to the pheasant release site where during the legal season the staff of the CWA releases approximately 40 birds a week. The last release occurs the week of Thanksgiving but you can hunt the pheasants until the end of December. However, non-toxic shot is required on the CWA even if you are not hunting waterfowl.

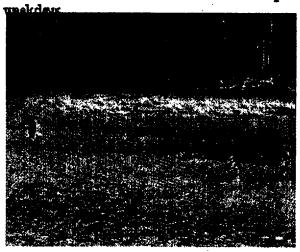
Basic hunter education training is required in Washington State for all first-time hunters born after January 1, 1972. There are no exceptions under the law. To hunt there must be an open season and you must possess the appropriate licenses and tags for the species you are hunting. The WDFW distributes the regulation booklets for all types of hunting annually. These booklets can be found and obtained in area stores that sell license and tags. Additionally, regulation booklets can be obtained at the CWA office located in Morton or by internet at http://wdfw.wa.gov/.

The fishing on the CWA and surrounding areas is some of the best fishing in the State of Washington. The CWA hosts a wonderful warm water fishery where you can fish for bass, crappie, perch, bluegills and channel catfish. The individual who wants to fight bigger fish can find steelhead and salmon in the Cowlitz River below the barrier dam in Salkum. Then of course there are Riffe and Mayfield Lakes.

Riffe Lake is home to bass, catfish and trout. However, one of the more popular species is the landlocked coho salmon (silvers) that can be found in large populations during different times of the year. People will line up elbow to elbow on the "108 bridge" near Tacoma Public Utility's Taitnapam Park for an opportunity to catch their limit of these landlocked salmon.

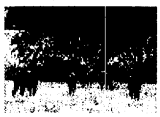
Mayfield Lake provides great fishing opportunities as well but the claim to fame for this lake is the population of tiger muskies that can be found here. The tiger muskie is a cross between a northern pike and a muskellunge and these fish can get very big with a minimum legal size limit of 36 inches.

You can obtain the necessary licenses and catch record cards from area stores. You can pick up the regulation pamphlets at license dealers, the CWA office and on the internet at http://wdfw.wa.gov/. If you have any questions you can contact the CWA staff at 360.496.6223 between 8:00am and 4:00pm weekdays.



So, you aren't interested in fishing or hunting. That's okay. The CWA has plenty of other recreational aspects that can entertain you. There are three multi-use non-motorized trails you can explore that are generally easy going and really great places to see wildlife.

- The 1.5 miles Swofford Trail runs along the south shore of Swofford Pond. Along this trail the lucky visitor may spot elk, deer and other mammals as well as a variety of bird species such as the pileated woodpecker. This is an in/out trail so you must return along the same route.



- Mossyrock Trail is a 3-mile loop that runs through deciduous forest, along riparian corridors and then a short climb takes you to a meadow that is visited by elk in the early mornings and late evenings. The return route of this trail takes you down along a couple of ponds that are frequented by a variety of waterfowl and wetland wildlife species.
- Kosmos Trail takes you along the Clevenger Rd through orchards and pastures where many species of animals gather to forage on the abundant supply of food in the area. The wildlife in this area is very diverse with the possibility of seeing everything from beaver to bear and pheasants to eagles. This trail is ADA accessible along Clevenger Rd to the Rainey Creek Bridge.

Additionally, Tacoma Public Utilities has two nice campgrounds located on Riffe Lake. Taitnapam Campground is located on the east end of the lake while Mossyrock Campground is located on the west end. Also, there is a nice day use park and boat launch that accesses Mayfield Lake just off highway 12.

So, whether you are a birdwatcher, photographer mountain biker or horseback rider, next time you want to launch an expedition to enjoy nature plan on doing it at the Cowlitz Wildlife Area in Lewis County Washington.

Appendix 7a. Cowlitz Trout Hatchery Project Photos

Brim Bar Access Rip Rap

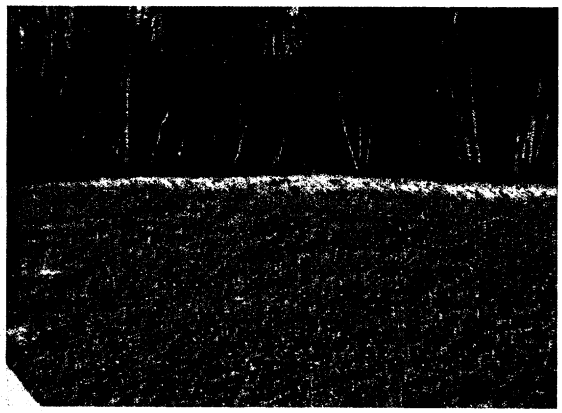
Cowlitz Trout Hatchery Tank Trap

Informational Kiosk

Appendix 7b. Mossyrock Unit Project Photos

Orchard Field Rehabilitation (Disking)

Slab Site Restoration 4/21/2003

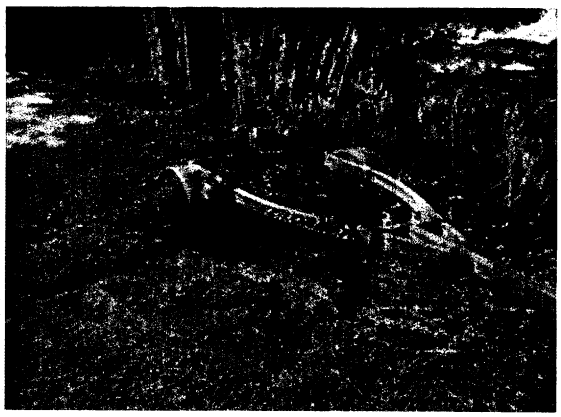


Slab Site Restoration 1/13/2004

Appendix 7c. Swofford Pond Unit Project Photos

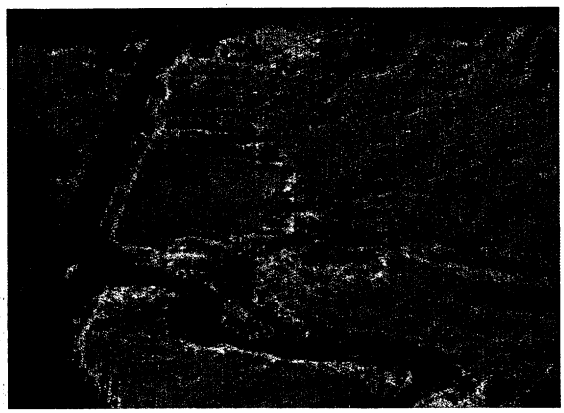
Sulphur Creek Habitat Enhancement

Shoreline Resource Degradation



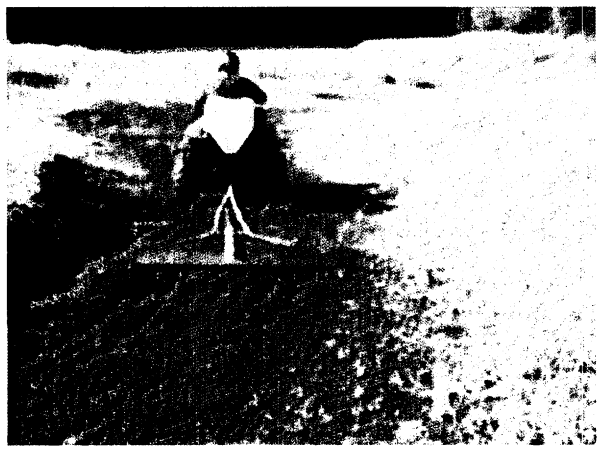
Eurasion Milfoil Problems

Appendix 7d. Kosmos Unit Project Photos



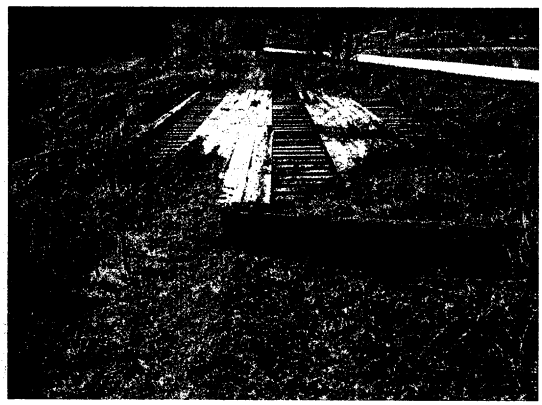
Rainey Creek Dike Wetland Enhancement

Goat Creek Flat Rehabilitation

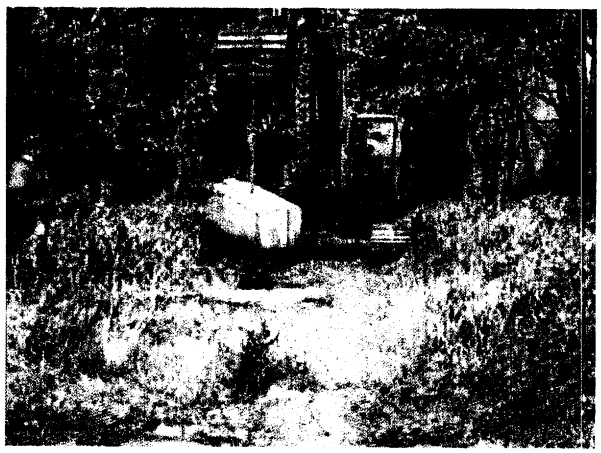


300 Road Restoration Site

Appendix 7e. Spears Unit Project Photos



Spears Bridge Site in Disrepair



Spears Bridge Site Work Progress

Spears Bridge Site Access Barriers

Appendix 8. Documentation of Required Consultation and Tacoma's Response

The following letters were sent to the Washington Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, and Lewis County on March 15, 2004. Recipients were asked to return comments by April 16, 2004.

One comment was received on April 15, 2004 from the Washington Department of Fish and Wildlife. They requested that several photos be added to the appendix. Tacoma has made the requested changes to the final document.

TACOMA POWER

3628 South 35th Street

Tacoma, Washington 98409-3192

TACOMA PUBLIC UTILITIES

March 15, 2004

Office of the Commissioners
Lewis County Courthouse
360 N.W. North Street
Chehalis, Washington 98532-1900

Dear Commissioners:

Subject: Cowlitz River Hydroelectric Project, FERC 2016

Enclosed is a draft copy of the 2003 Cowlitz Wildlife Area Report for your review and comment. Comments will be reviewed and included in the filing of the wildlife report with the Federal Energy Regulatory Commission on May 1, 2004.

To ensure that your comments receive fair consideration in this filing, please send them to me no later than April 16. Please feel free to call Cindy Swanberg at (253) 502-8362 if you have any questions.

Sincerely,

Debbie C. Young
Natural Resources Manager

Enclosure

Cc: Mark Grabski, Washington Department of Fish and Wildlife (w/o report)

TACOMA POWER

3628 South 35th Street
Tacoma, Washington 98409-3192

TACOMA PUBLIC UTILITIES

March 15, 2004

Mr. Gene Stagner
U.S. Fish and Wildlife Service
510 Desmond Drive S.E., Suite 102
Olympia, WA 98503-1273

Dear Mr. Stagner:

Subject: Cowlitz River Hydroelectric Project, FERC 2016

Enclosed is a draft copy of the 2003 Cowlitz Wildlife Area Report for your review and comment. Comments will be reviewed and included in the filing of the wildlife report with the Federal Energy Regulatory Commission on May 1, 2004.

To ensure that your comments receive fair consideration in this filing, please send them to me no later than April 16. We are also forwarding this report by e-mail to you should you find that format easier to use. Please feel free to contact Cindy Swanberg at (253) 502-8362 or cswanber@cityoftacoma.org if you have any questions.

Sincerely,

Debbie C. Young
Natural Resources Manager

Enclosure

cc: Mark Grabski, Washington Department of Fish and Wildlife (w/o report)

TACOMA POWER

3628 South 35th Street
Tacoma, Washington 98409-3192

TACOMA PUBLIC UTILITIES

March 15, 2004

Mr. David Mudd
Washington Department of Fish and Wildlife
600 Capitol Way N.
Olympia, WA 98501

Dear Mr. Mudd:

Subject: Cowlitz River Hydroelectric Project, FERC 2016

Enclosed is a draft copy of the 2003 Cowlitz Wildlife Area Report for your review and comment. Comments will be reviewed and included in the filing of the wildlife report with the Federal Energy Regulatory Commission on May 1, 2004.

To ensure that your comments receive fair consideration in this filing, please send them to me no later than April 16. We are also forwarding this report by e-mail to you should you find that format easier to use. Please feel free to contact Cindy Swanberg at (253) 502-8362 or cswanber@cityoftacoma.org if you have any questions.

Sincerely,

Debbie C. Young
Natural Resources Manager

Enclosure

cc: Mark Grabski, Washington Department of Fish and Wildlife (w/o report)

CERTIFICATE OF SERVICE

Federal Energy Regulatory Commission

Project No. 2016
Cowlitz River Hydroelectric Project
City of Tacoma, Tacoma Public Utilities (d.b.a. Tacoma Power)

I hereby certify that I have this day served, by first class mail, the foregoing document on all consulting parties to this license requirement in accordance with the Rules of Practice and Procedure.

Cowlitz Wildlife Area Annual Report 2003

Dated this 28th day of April, 2004.

Debbie Young
Natural Resources Manager
Tacoma Power
P.O. Box 11007
Tacoma, WA 98411