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WEATHERS' WETLAND MITIGATION BANK
2291 Waconda Road NE, Gervais, Oregon

FINAL BANKING DOCUMENT

presented to

Division of State Lands (DSL)
U.S. Army Corp of Engineers (ACOE)
U.S. Environmental Protection Agency (USEPA)
Oregon Department of Fish and Wildlife (USFWS)
Marion County Planning
Department of Environmental Quality (DEQ)
Division of Land Conservation and Development (DLCD)

July 1998

MEMORANDUM OF AGREEMENT

between

Weathers Mitigation Bank Review Team (MBRT) composed of:

Division of State Lands (DSL)

U.S. Army Corp of Engineers (ACOE)

U.S. Environmental Protection Agency (USEPA)

Oregon Department of Fish and Wildlife (ODFW)

U.S. Fish and Wildlife Service (USFWS)

Marion County Planning

Department of Environmental Quality (DEQ)

Division of Land Conservation and Development (DLCD)

and

Harley and Emilie Weathers and Don Causey (Bank Sponsors)

Preamble

The Weathers Wetland Mitigation Bank (Bank) is a wetland mitigation bank established to serve the mitigation needs of any source, public or private. The Bank has been established in accordance with the Oregon Administrative Rules for Compensatory Wetland Mitigation Banking (OAR 141-85-400 thru 141-85-445).

The purpose of the bank is to provide compensatory wetland mitigation for anticipated losses in wetland functions and values, when on-site mitigation is not possible or when off-site mitigation would prove to be environmentally preferable. Potential buyers must explore alternatives in addition to avoidance and minimization prior to mitigating in the Bank. The creation of this Bank does not allow DSL or ACOE to permit wetland losses through a Joint Removal-Fill Permit in excess of losses that would have been permitted regardless.

The Bank's service area is within the Willamette Valley Basin in an area centering around the Salem-Keizer metropolitan area (See Service Area Map - Figure 2). The Bank will provide compensatory mitigation for impacts to palustrine emergent, forested, scrub-shrub, semi-permanently flooded, and flooded wetlands within the service area. Although the service area is delineated on a map, this is only a guide for regulatory agencies and prospective Bank purchasers. The final decision for use of this Bank will be made on a case-by-case basis by the DSL Resource Coordinator, and the ASCOE Regulatory Specialist.

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 DEMONSTRATED NEED AND SERVICE AREA 2

3.0 ADJACENT PROPERTY OWNERS 4

4.0 PROOF OF OWNERSHIP 5

5.0 MITIGATION BANK SITE PLAN 6

 5.1 Wetland Design Overview 6

 5.2 Design Assumptions 6

 5.3 Design Details 7

 5.3.1 Water Sources 7

 5.3.2 Vegetation 7

 5.3.3 Grading and Erosion Control 8

 5.3.4 Operation Schedule 8

 5.3.5 Limited Hunting Rights 9

6.0 PAST AND PRESENT USES OF SITE 10

7.0 MITIGATION BANK WETLAND FUNCTIONS 12

8.0 EFFECTS OF ADJACENT LANDUSES 13

9.0 WETLAND CREDITS OFFERED 14

10.0 SITE ASSESSMENT 15

 10.1 Hydrogeomorphic and Cowardin Wetland Classes 15

 10.2 Ecological Baseline 15

 10.2.1 Vegetation 15

 10.2.2 Soils 15

 10.2.3 Existing Hydrology 16

 10.2.4 Proposed Hydrology 18

 10.2.5 Additional Hydrological and Soil Studies 18

 10.2.6 Wildlife 19

 10.3 Wetland Determination 19

11.0 PHASE 1 - FUNCTION AND VALUE ASSESSMENT 20

12.0 MONITORING PLAN 24

13.0 GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS 25

 13.1 Hydrology Objective 25

 13.2 Vegetation Objective 26

 13.3 Habitat Objective 27

14.0 CONTINGENCY PLANS 29

 14.1 Funding 29

 14.2 Responsible Parties 29

15.0 REFERENCE SITE 30

16.0 CONSISTENCY WITH LOCAL COMPREHENSIVE PLAN 31

17.0 WATER RIGHTS APPLICATION 32

18.0 CREDIT BANKING SYSTEM 33

19.0 PROJECT COSTS & FINANCIAL RESOURCES 34

20.0 DRAFT LONG TERM PROTECTION DOCUMENTATION 35

21.0 MITIGATION BANKING TEAM 36

22.0 BUFFER AREA 37

LIST OF FIGURES

- Figure 1 - Location Map
- Figure 2 - Service Area Map
- Figure 3 - Site Map and Plans
- Figure 4 - National Wetlands Inventory Map
- Figure 5 - Soils Map
- Figure 6 - Willamette Mission State Park Reference Site
- Figure 7 - Revised Site Map with Buffer Area

LIST OF ATTACHMENTS

- Attachment 1 - Letters of Support
- Attachment 2 - Adjacent Landowners
- Attachment 3 - Site Ownership Deed
- Attachment 4 - Wetland Delineation
- Attachment 5 - Marion County Landuse Approval and Floodway Development Permit
- Attachment 6 - Water Rights Application
- Attachment 7 - Credit Banking System Spreadsheet
- Attachment 8 - Performance Bond
- Attachment 9 - Restrictive Covenant
- Attachment 10 - Resumes of Mitigation Banking Team
- Attachment 11 - Noxious Weed List

WEATHERS' WETLAND MITIGATION BANK FINAL BANKING DOCUMENT

1.0 INTRODUCTION

The Weathers' Wetland Mitigation Bank (Bank) is located north of Keizer, Oregon, approximately two miles west of I-5 and two miles east of the Willamette River. The site address is 2291 Waconda Road NE, Gervais, Oregon (T6S, R3W, Sec. 1, Tax Lot 200) (See Figure 1). Of the 94-acre parcel, ten acres will be retained as a home site. Approximately 22 acres of the parcel is occupied by Hubbard Lake, an old oxbow of the Willamette River. The remaining 61 acres of land is available to restore previously existing site wetlands, create new wetlands, and provide upland buffer areas surrounding the mitigation site.

The Bank will be developed in phases. Phase 1 of the bank consists of 13.69 acres of restoration and creation. Approximately 47 acres are available for development in future phases of the Bank. This document outlines plans for only Phase 1 of the Mitigation Bank. The Instrument contained herein is accompanied by a Memorandum of Agreement (MOA) between the bank sponsors and agencies. For each subsequent phase of the bank, a separate Instrument and MOA will be prepared.

In order for a mitigation bank to be successful there are many attributes the site must have. These include: a willing landowner; proper site conditions which allow wetlands to be enhanced, restored, and created; the need for mitigation within the service area; a cohesiveness with adjoining and nearby natural areas; and no negative impacts to adjacent properties.

The location of this mitigation bank is ideal in many respects. The entire site is within either the 100 or 500 year floodway. Some of the site is prior-converted croplands which were drained in the past by field tiling of the adjacent lands and agricultural use. Natural seeps, springs, and high groundwater levels surround the area suggesting that wetland hydrology will be fairly easy to recreate for the site by allowing the natural water levels to be reestablished.

The landowners, Harley and Emilie Weathers, are extremely dedicated to enhancing the existing site wetlands (Hubbard Lake), restoring and creating wetlands, and providing an upland buffer around the site. They hope to create an environmental education facility that will be open to public schools and the general public as well. The Weathers' Mitigation Bank is a joint venture by Harley and Emilie Weathers, Rob Weathers, and Don Causey.

Each of the conditions of this Instrument will terminate five years after the last credit in this phase of the Bank is sold, except the conservation easement which is perpetual in nature. Additionally, each condition of this Instrument will be carried out to fulfillment barring catastrophic acts of nature, such as but not limited to earthquakes, drought, volcanic activity, etc. which could prohibit fulfillment. In such a case no further credits in the Bank will be sold unless remediation is practical.

2.0 DEMONSTRATED NEED AND SERVICE AREA

The service area for the Bank was discussed at great length and numerous options were reviewed by the Mitigation Bank Review Team (MBRT) at great length over a period of several months. The final service area boundary line developed by the MBRT is included as Figure 2. This service area should be viewed as a guideline and not as a mandatory line for inclusion or exclusion from the Bank.

The service area lies entirely within Marion County and is composed of agricultural lands with a mixture of large, mid-sized, and small cities, the most notable of which is the Salem-Keizer urban area. Marion County has grown significantly in the last ten years and the growth is projected to continue. According to Portland State University the 1997 population estimate for Marion County is 267,700. The population estimate for the year 2000 is 280,438 and for the year 2010, 319,729. Over the next thirteen years Marion County's population is projected to grow by 19.4%.

The past growth in population is also documented through the building permit departments for Marion County and the City of Salem. Tables 1 and 2 indicate the number of new residential and commercial structures for Marion County and the City of Salem for a period of years.

Table 1 -Marion County Building Permits

Year	Residential	Commercial
1985-86	32	87
1986-87	38	110
1987-88	47	114
1988-89	57	151
1989-90	75	165
1990-91	59	171
1991-92	35	173
1992-92	86	255
1993-94	99	195
1994-95	82	168
1995-96	70	185
1996-97	78	188

*Information provide by Marion County Building Permit Department

Table- 2 City of Salem Building Permits

Year	Residential	Commercial
1995	671	103
1996	803	131
1997	712	176

*Information provided by City of Salem Building Permit Department

As the population grows, increases in residential and commercial development must also occur, this creates pressure to develop lands that have traditionally been marginal for development, such as wetlands. This increasing pressure to develop the marginal areas is demonstrated in the increase in the number of removal/fill permits processed by the Division of State Lands over the past five years.

The Division of State Land's "*Summary of Activities in the Removal-Fill Program for Waters of the State for the 1993-1995 Biennium*" listed 14 removal/fill permits requiring compensatory mitigation in Marion County. Of the 14 permits, information on the acreage affected was available for eight. These eight permits totaled 23.73 acres of wetland that was mitigated for during this time frame. A review for Marion County was not available from DSL for the 95-97 biennium.

In an effort to determine the potential utilization of the mitigation bank, Mr. Don Causey, one of the Bank developers, has contacted local government entities and private companies. Attachment 1 includes letters of support for the development of the mitigation bank from Coldwell Banker-Mountain West Real Estate and DJ Epping and Associates.

3.0 ADJACENT PROPERTY OWNERS

Attachment 2 includes all property owners adjacent to and within 500 feet of the proposed Bank.

4.0 PROOF OF OWNERSHIP

The Bank is located on T6S, R3W, Section 1, Tax lot 200. The current owners of this property are Harley and Emilie Weathers. The Weathers are buying the site on contract from Barbara J. Goulet Zaffino. Attachment 3 contains the current deed, ownership records and letter from Barbara J. Goulet Zaffino indicating her approval for the proposed mitigation bank.

5.0 MITIGATION BANK SITE PLAN

The site plan for the entire mitigation bank was devised through the combined efforts of Mr. Pat Thompson and Ms. Carla Cudmore, Abiqua Engineering Inc. (AEI); Mr. Don Causey, estimator for an excavation firm; Mr. Harley Weathers, owner; Mr. Dick Novitzki, Hydrologist, and owner of Novitzki and Associates; and Dr. Gerald Simonson, Soil Scientist. Development of the Bank includes both raising the current groundwater elevation and excavation to create seasonal and semi-permanently, flooded and saturated, palustrine emergent, scrub-shrub and forested wetland areas, with open water in the early spring. The hydrogeomorphic classifications will consist of a depressional geomorphic setting, water sources will consist of groundwater and precipitation, and the hydrodynamics will be vertical movement.

5.1 WETLAND DESIGN OVERVIEW

Phase 1 of the Bank is detailed on Figure 3, the Site Map and Plans. The restoration portion of the Bank is located in the northeast corner of the property, directly adjacent to and east of the creation portion. These two areas will be constructed simultaneously and will be excavated to an approximate depth of two to three feet, in a meandering pattern. The initial excavation in the creation portion will be approximately one foot deeper than the final grade elevation shown on the site plan. This over excavation will be done so that the hydric soils derived from the restoration area can be overlaid in the excavated upland of the created area. The characteristics of the hydric soil will enhance the survival of wetland plants and provide a seed bank for the wetland.

Habitat islands will be constructed to provide a variety of wetland types and habitat for mammals, birds, reptiles and amphibians using the Bank. The habitat islands have been designed with a southwest exposure and long gradual slopes catering to Western Pond Turtles which migrate out of Hubbard Lake. Currently, the Western Pond Turtle experiences difficulty with nesting in agricultural areas due to activities such as discing and plowing. The islands will be planted with Oregon ash and native grasses. The lower edges will be planted with herbaceous wetland vegetation. This design, along with the silty clay soil, which is optimum for pond turtle nesting, will provide excellent turtle habitat.

Upon completion of the excavation, the wetland will be planted with wetland vegetation as shown on the planting plan and cross-section. The species, sizes and density of the plants are indicated in the planting plan (See Figure 3).

5.2 DESIGN ASSUMPTIONS

Successful implementation of the Bank plan is based on the following assumptions which are necessary for the seasonally high ground water to serve as the primary hydrologic connection:

- Normal rainfall will occur over the establishment and monitoring periods (normal rainfall being consistent with historic precipitation in regards to amount, form, and seasonality)
- Evaporation is less than precipitation or input
- Normal flooding pulses, and normal groundwater levels persist

In addition, it is assumed planting zones are correct, soils are of the proper types to support the vegetation planted, and sufficient plant material will be available to execute the plan. Suppliers have been identified in *Hortus West Publications LLC*, 1998, Volume 9, Issue 1, for each species proposed. However, they have not been specifically contacted, as of this report, for verification of particular plant material stock on hand. In the event the prescribed species are unavailable, other native plants capable of providing similar functions will be substituted. All deviations from the approved plans will be noted and reported to the MBRT with the as-built reports.

5.3 DESIGN DETAILS

The mitigation bank plan (Figure 3) shows the detailed site, grading, and planting plan for the Bank. The following sections detail the measures to be taken regarding water sources, grading and erosion control, vegetation establishment, and the operational schedule.

5.3.1 Water Sources

The hydrologic source for the proposed restored and created wetlands is of utmost importance to the success of the mitigation bank effort. The grading plan develops the landscape contour so that all surface water derived from precipitation will be captured within the swale and ponded areas, at depths that will intercept ground water flows during periods of high water tables. The hydric soils within Phase 1 will maintain the hydrology for a significant period of time to support the wetland plants prescribed for these areas. The construction will be done by Mr. Don Causey, the construction manager, and Harley Weathers, owner of the Bank.

5.3.2 Vegetation

As soon as possible after excavation of the wetland, the area will be seeded with a mulch-seed mixture consisting of four species of grasses ranging from 2 lb/ac to 8 lb/ac for each. In addition, the wetland will be planted with at least two species of rush (total plants 2,000); two species of bulrush (total plants 2,000); two species of sedges (total plants 3,000); six scrub/shrub species (total plants 560); and four species of trees (total plants 290). The wetland areas will be planted with the species, amounts, and at the locations shown on the planting plan in Figure 3. Natural clumping and dispersing of these species will be encouraged in those areas suitable for this purpose.

5.3.3 Grading and Erosion Control

The Bank will be graded by hydraulic excavator (Kamatso 220/1.5 cubic yard bucket) and bulldozer (Caterpillar/ D8), and a 23 cubic yard capacity scraper. The owner will also have a large farm tractor with all farming implements available for back blading, seeding, and cultivation needs the site might require.

The combination of swale and shallow ponded areas will range from 20 to 150 feet in width and six inches to three feet in depth depending on the season and the amount of rainfall (See Section 13.1).

A collection swale will be constructed on the east side of the Bank. This swale will intercept any overland flow that runs off the adjacent agricultural areas. This will help to assure that no agricultural pollutants enter the Bank through surface water runoff. The swale will flow toward and outfall into Hubbard Lake.

In order to minimize discharge of sediment into Hubbard Lake during construction of the Bank, the construction will take place during the summer months when runoff will be the smallest. In addition to this, the collection swale will be constructed and then immediately mulched and seeded. Should runoff occur in this sale prior to the vegetation being established, straw bales will be placed in the swale to slow the rate of runoff and decrease possible sedimentation.

Excavated materials not needed in construction will be sold and hauled off-site. If prior to selling the material, stockpiling is necessary, it will be done off the mitigation bank site, on upland property owned by Harley and Emilie Weathers.

5.3.4 Operation Schedule

Construction of Phase 1 of the Bank will begin immediately after completion of the final banking instrument. The Bank will be surveyed after the construction phase is completed, and as-built drawings will be prepared. A hydrologist will compare and evaluate the initial site design, as-built drawings and hydrological performance standards for the Bank. The as-built drawings and hydrologist review will be completed prior to the planting of the Bank.

We anticipate moving approximately 30,000 cubic yards of material for Phase 1 of the Bank. We will move approximately 5,000 cubic yards of material a day and anticipate finishing the excavation within two weeks.

5.3.4 Operation Schedule (Cont'd)

Planting of the mitigation site will begin once the hydrology of the site has proven successful. It is anticipated that the planting will occur in the late spring or early summer of 1998, and will be completed by late summer 1998. If necessary the planting season for this site can be extended past the normal planting seasons as on-site irrigation is available, and can be used for the first season. The planting operation will be overseen by a wetland specialist, horticulturalist, or biologist selected by the Bank owners. After planting, the Bank will be checked periodically by the selected individual for potential problems.

5.3.5 Limited Hunting Rights

Limited hunting will be allowed on the Bank. Hunting will comply with all State and Federal regulations. In addition, a maximum of four hunters will be allowed on site at any one time. Hunting will be allowed a maximum of 30 hours in any week and not exceed four days per week. The hunting season varies year to year based upon the health of the waterfowl populations and is Federally determined. The season generally lasts between 50 to 100 days between mid-October through early January.

6.0 PAST AND PRESENT USES OF SITE

A review of aerial photos for this site dating back to 1936 indicates the only uses of the site during that time have been agricultural or forest in nature. Mr. Harley Weathers, owner or lessee of the site for the past 17 years, stated that during his tenure, no toxic materials that could have resulted in contamination have been used on-site.

Table 3 lists the agricultural applications that occur on the Weathers farm and the rates of applications. This program was developed by Jim Todd of Willamette Ag Consulting and Mike Drew with Western Farm Service, agricultural consultants who specialize in crop and pest management, to ensure the correct types and rates of application. By using consultants the Weathers have not only ensured a high yield at a cost-effective rate, but also have protected their lands, water and wildlife through proper application. The following table provides the agricultural applications used on adjacent properties as well.

Table 3 - Agricultural Applications and Rates

HOPS: The following lists the chemicals and fertilizers that will be used and applied by ground application on crops grown on property owned by Harley and Emilie Weathers located at 2291 Waconda Road NE, which are adjacent to the Weathers Wetland Mitigation Bank.		
February	Gromoxone Extra	1 quart per acre
April	Aliette WDG 18-18-18 Fertilizer	5 pound per acre 600 pounds per acre
May	Aliette WDG	5 pounds per acre
June	Aliette WDG 46-0-0 Fertilizer	5 pounds per acre 225 pounds per acre
July	Aliette WDG Agri-Mek Provado	5 pounds per acre 12-16 ounces per acre 6 ounces per acre
August	Aliette WDG	5 pounds per acre
The following lists the chemicals and fertilizers that will be used on crops adjacent to the Weathers Wetland Mitigation Bank. These are applied by ground application.		
FILBERTS		
February	Gromoxone Extra	1 quart per acre
March	40-0-0-6	375 pounds per acre
April	Lorsban	1 pint per acre
May	Boron	1 pound per acre
June	Ambush Hi- Dep 2-4-8	1 pint per acre ½ pint per acre
GRASS FIELDS		
February	20-0-0-5 Fertilizer	250 pounds per acre
March	20-0-0-5 Fertilizer MCPA Banvel	250 pounds per acre 1 ½ pints per acre 6 ounces per acre
April	20-0-0-5 Fertilizer	250 pounds per acre
May	TILT 5-12-5 Fertilizer	6 ounces per acre 30 gallons per acre
June	TILT 5-12-5 Fertilizer	6 ounces per acre 30 gallons per acre

7.0 MITIGATION BANK WETLAND FUNCTIONS

Hubbard Lake, which borders the northern portion of the bank, is a natural oxbow lake in a former meander scar of the Willamette River. Hubbard Lake and its associated undeveloped margins provide a variety of wildlife habitat. It is part of an extensive wildlife corridor extending south westward over one and one half miles to the Willamette River. Once the Bank is fully developed, the addition of approximately 62 acres of wetland and upland buffer adjacent to 22 acres of Hubbard Lake will not only enhance the existing habitat corridor, but also help to buffer it from urban encroachment.

8.0 EFFECTS OF ADJACENT LAND USES

The mitigation bank is located within an agricultural area that is zoned EFU - Exclusive Farm Use, as are all of the adjacent properties. The zoning and comprehensive plans for this area provide for the necessary buffer and long term hydrologic protection that are vital to a mitigation bank, particularly to one of this size.

9.0 WETLAND CREDITS OFFERED

The mitigation bank will be developed in phases and subsequent credits will be sold commensurate with each phase. This will allow the operators to achieve a level of success with their initial phase; revise the subsequent phase plans, considering information gained during the initial phase; and generate capital through selling of credits to continue with the process. The character of subsequent phases will be determined after Phase 1 is complete. Phase 1 credits of the Bank are a combination of 13.69 acres of restoration and creation, for a total of 11.67 credits. A summary of Phase 1 credits is listed below.

<u>Acres</u>	<u>Mitigation Type</u>	<u>Credit Ratio</u>	<u>Credits Earned</u>
7.63	Restoration	1:1	7.63
<u>6.06</u>	Creation	1½:1	<u>4.04</u>
13.69 Total			11.67 Total

These wetland credits will be offered in the approximate ratios of 60% - palustrine emergent, 20% - palustrine forested, and 20% - palustrine shrub/shrub.

10.0 SITE ASSESSMENT

10.1 HYDROGEOMORPHIC AND COWARDIN WETLAND CLASSES

The only existing wetland area in the Bank (Figure 4) is Hubbard Lake, but it is not included in Phase 1. It is listed by the National Wetlands Inventory maps, Gervais and Mission Bottom quads as:

Cowardin Classifications

- PABF-Palustrine/ Emergent/ Aquatic bed/Semi-permanently flooded,
- P^{ABS}/_{OWZ} -Palustrine/Aquatic Bed/Unknown Perennial/Open Water/Intermittently Exposed/Permanent,
- P^{FO}/_{SS} 1Y - Palustrine/Forested/Scrub-Shrub/Broadleaf Deciduous/Saturated/Semi-permanently/Seasonal.

Hydrogeomorphic Classifications

- Riverine-Lateral-Unidirectional
- Depressional-Precipitation/Groundwater-Vertical

10.2 ECOLOGICAL BASELINE

10.2.1 Vegetation

Most of the site is currently used for agricultural purposes and is in hops (*Humulus lupulus*). A wetland seed bank of native wetland plants is assumed on-site in the prior converted wetland areas as well as in the Hubbard Lake area. Several patchy areas of wetland plant species were noted growing in among the hops, the most common being Curly Dock - *Rumex crispus* (FACW) and Smartweed - *Polygonum hydropiperoides* (OBL).

10.2.2 Soils

According to the Marion County Soil Survey, the following soils are found on the mitigation bank site: Bashaw clay (Ba), Mcbee silty clay loam (Mb), Cloquato silt loam (Cm), Chehalis silty clay loam (Ch) and Terrace escarpment (Te) (See Figure 5 - Soils Map.)

The *Bashaw clay* consists of poorly drained and very poorly drained soils. The permeability is very slow and runoff is very slow to ponded. The soils have an annual high water table and are listed as hydric soils. Bashaw clay is within the lowland oxbow meander of Hubbard Lake.

10.2.2 Soils (Cont'd)

McBee silty clay loam is a moderately well drained undulating soil that occurs on flood plains traversed by slough and old overflow channels. The permeability is moderate and runoff is slow. This soil series has a seasonal high water table, and inclusions of Waldo soils are considered hydric.

Cloquato silt loam is a well-drained soil that is nearly level and on the flood plains of major streams. Permeability is moderate and runoff is slow. Wet spots in the Cloquato soils are considered hydric.

Chehalis silty clay loam is a well-drained soil that is nearly level or gently undulating occurring on bottom lands that are traversed by old overflow channels and sloughs. Permeability is moderate and runoff is slow. Wet spots are considered hydric.

Terrace escarpments consist of gravelly and silty alluvium occurring on the sidewalls of streams and channels. The terrace escarpments border the site on the northwest and to the northeast between Hubbard Lake and the more upland portion of the Bank.

10.2.3 Existing Hydrology

The Bank is located in a large section of the Willamette River flood plain known as Mission Bottom. Mission Bottom is characterized by low gradient streams with large variations in flow, many oxbow lakes and meander scars, and abandoned stream channels that contain water only seasonally.

The soils of the flood plain are underlain by sand and gravel deposits. Well logs from the site indicate a sand and gravel layer beginning 12 to 15 feet below the ground surface. Irrigation wells completed in the alluvial gravel layers generally produce large volumes of water (in excess of 500 gallons per minute (gpm)).

The groundwater in this area is recharged seasonally through precipitation. As the water table rises during the seasonal recharge, the hydraulic gradient steepens toward points of discharge and increases the discharge at seeps and springs. Ground water continues to discharge through seeps and springs throughout the year, even though recharge decreases at the end of the rainy season. This phenomena is apparent along the base of the terrace escarpment just southeast of the mitigation bank where numerous seeps exist. According to Mr. Weathers, the seeps are year round and increase in volume during the winter. Water from these seeps collects in field tiles that drain through the mitigation bank site. Currently two main tile systems (8" and 12"), run beneath the surface of the mitigation site and discharge directly into Hubbard Lake. Neither of these tile systems extend into the Phase 1 portion of the Bank.

10.2.3 Existing Hydrology (Cont'd)

One test pit was dug on-site on June 18, 1997, approximately 180 feet east of the existing irrigation well. The pit was dug with a back hole in a low area of the site at an approximate elevation of 103 feet above msl. The pit was dug to seven feet (bgs) before significant water seepage was noted. The pit was allowed to stand for 24 hours and the water elevation re-measured. The water level had risen approximately 2½ feet in the pit. After standing 48 hours, the pit had three feet of standing water, which indicates a groundwater elevation of approximately 99 feet msl, which was four feet bgs. Five additional shallow test pits, four to five feet in depth, were dug in November 1997 and examined by Mr. Novitzki to gain a better understanding of the hydrology on-site.

The water level in an adjacent irrigation well (180' west of the initial test pit) was also measured in June 1997. The land surface at the well is approximately seven feet higher than the land surface at the test pit. The static level in the well was at 99.95 feet above msl. This groundwater elevation correlates to the groundwater level in the pit, taking into consideration the differences in the surface topography and elevation.

10.2.4 Proposed Hydrology

The plans for this project to both restore and create wetlands within Phase 1 will include excavation of the site (See Figure 3 - Site Plans) to retain precipitation and tap into the high water tables. Excavation on-site will be done to achieve a variety of soil and hydrological conditions including seasonal standing water and seasonally saturated soils.

Future phases may involve a combination of blocking and rerouting of the subsurface drain tile system to allow additional seasonal groundwater storage. All work will be done so that the restored elevation of the groundwater will not adversely impact adjacent land owners who depend on the tile system to drain their lands.

10.2.5 Additional Hydrological and Soil Studies

Additional hydrological and soil studies are planned for future phases of the Bank in order to better understand how the site hydrology works, how it worked in the past, and how best to recreate these historic conditions on-site. The types of studies planned include:

- Continued monitoring of water flow levels from two known drain tile outflows.

- Soil and water analysis to help determine a specific planting plan for plant survival and to alleviate concerns over possible water pollution in the drain tiles due to agricultural runoff. Discussions are underway with the Department of Environmental Quality (DEQ) to develop a sampling plan and protocol that will address water quality from the agricultural field drainage tiles that may enter future phases of the Bank. No water from the field drainage tile system will be used in Phase 1 of the Bank.

10.2.6 Wildlife

No formal wildlife studies have been completed on the site. Mr. Harley Weathers, owner of the site, has listed numerous species that have frequented the Hubbard Lake area and the surrounding agricultural fields. Those species he has seen utilizing the site include: mink, muskrat, raccoon, skunk, opossum, black tailed deer, cottontail rabbit, red-tailed fox, coyote, various voles, shrews and mice, river otter, beaver, nutria, turtles, Canadian geese, osprey, great blue heron, turkey vulture, ring-neck pheasants, various resident and migratory songbirds, waterfowl and raptors. Hubbard Lake and its associated lowlands connect to two other open water lakes: Ryan and Deep Lakes. This entire oxbow system provides for a wide variety of wildlife habitat and travel corridors. The establishment of the Bank will both complement and provide an additional buffer to this natural area.

10.3 WETLAND DETERMINATION

The only wetland areas on the site that meet the jurisdictional criteria for wetlands are the approximately 22 acres of Hubbard Lake. However, on the attached wetland determination (Attachment 4) conducted by AEI in June and July 1997, the site contains approximately 7.63 areas of prior converted cropland. The prior converted areas no longer meet the hydrology and vegetation criteria due to the installation of drain tiles and annual farming of the site. Please note, the exact acreage of the Phase 1 area was recalculated during the final design. At the time the delineation was conducted there were 7.01 acres of prior converted cropland included or restoration. The final calculations included 7.63 acres of prior converted cropland.

Concurrence with the delineation was made on January 8, 1998 by Mary Packerham-Walsh of the DSL and on July 10, 1998 by Brian Lightcap of the COE. Copies of the concurrence letters are included in Attachment 4.

11.0 PHASE 1 - FUNCTION AND VALUE ASSESSMENT

The only existing wetlands on the project site are those within and immediately surrounding Hubbard Lake. However, in delineating the property AEI found that there was evidence of prior converted wetlands on the site. These areas have been converted to cropland by drain tiles and ditches and are now cropped in hops. There are no adverse impacts involved in the proposed mitigation bank, due to the fact that this effort will be to restore wetlands that have been lost due to conversion to cropland, and the creation of new wetlands from upland areas.

Table 5 indicates the pre-construction function and values as noted during the wetland delineation for the 7.63 acres of restoration included in Phase 1 of the Bank. Following the table is an explanation of the ranking of each of the functions and values.

Table 5 - Wetland Functions and Values

FUNCTIONS & VALUES	PRE-CONSTRUCTION	POST-CONSTRUCTION
1. Hydrologic Control	Low	High
2. Water Quality	Low	Moderate
3. Wildlife Habitat	Low	Moderate
4. Fish Habitat	N/A	N/A
5. Recreation	N/A	N/A in Phase 1
6. Education	NA	N/A in Phase 1
7. Aesthetics	Moderate	High
8. Impact Resiliency	N/A	High
9. Enhancement Potential	High	Low

The following explains the ranking of low, moderate, high, or not applicable (NA) for each of the functions and value categories of the prior converted wetland and uplands, both pre- and post-construction.

1. Hydrologic Control

PRE- Due to the prior conversion of this property, the existing hydrology is either contained in ditches or drain tiles, and is transported to Hubbard Lake at high velocities.

POST- The created and restored wetlands will slow the rate of runoff and increase the retention time, thereby allowing additional groundwater recharge.

2. Water Quality

PRE- The existing hydrology is contained within ditches and drain tile which does not allow for treatment opportunities.

POST - The precipitation that falls on the Bank will be retained in the restored/created wetland which will provide retention and slow runoff, thereby reducing possible turbidity problems in the area.

3. Wildlife Habitat

PRE - Due to present farming practices there is little habitat in place to attract wildlife other than the existing Hubbard Lake area.

POST - Wildlife habitat will be improved due to the change in land use from farming to a natural resource area and the diversity of wetland types which will provide opportunities for nesting and feeding areas for anticipated future wildlife residents.

4. Fish Habitat

PRE - There is no possibility for any type of fish habitat as there is no permanent water on this portion of the property.

POST - There will not be an opportunity to provide fish habitat as there will not be a suitable connection to a live stream.

5. Recreation

PRE - The prior converted wetland areas have been historically closed to public access due to farming of the site.

POST - The habitat area and planting scheme will improve access and provide an opportunity for non intrusive forms of recreation which could be included in future phases.

6. Education

PRE - The prior converted wetland areas have been historically closed to public access due to farming of the site.

POST - Habitat areas and planting schemes will provide schools with an invaluable tool to educate students of the importance of intact natural resources, and the role they play in overall watershed health. Full implementation of this component will not be realized until future phases of the Bank are completed.

7. Aesthetics

PRE - The existing wetland aesthetics are limited due to farming practices.

POST - The restoration and creation of wetlands on the site will vastly improve the natural resource aesthetics of the entire area.

8. Impact Resiliency

PRE - Not applicable

POST - As there are no wetlands being impacted, this has no application.

9. Enhancement Potential

PRE - The enhancement potential of this property is high due to the number of degraded functions and values caused by the prior conversion.

POST - Phase 1 of the Bank has enhancement potential from subsequent phases of the Bank by the addition of contiguous acreage of wetlands and upland buffers.

In summary, AEI believes the successful execution of this mitigation bank plan will result in a net benefit to society with increased wildlife habitat, recreational opportunities, and aesthetic functions and values. Hydrologic control, water quality, and impact resiliency are being restored to the site which will have a long term affect on the entire watershed below the point of entry into the Willamette River. The construction of the Bank is also in line with the Willamette River Task Force's recommendations to Governor Kitzhaber, M.D. for implementation of the Oregon Plan and supplements.

12.0 MONITORING PLAN

An as-built survey will be submitted to DSL within sixty days of final grading to verify topography and water sources. Photos will be taken throughout the spring and summer months to verify that the hydrology will be adequate to assure success of this plan. An initial vegetation survival survey will be completed in the spring, either in May or June, following planting and again the following October to document planting success and to initiate any remedial action that might be required to meet the applicable performance standards. Wildlife surveys will be conducted annually in the spring using protocols detailed in the performance standards section. The results of the surveys and photo documentation will be included in the annual monitoring reports submitted to DSL.

Annual monitoring reports for Phase 1 will be filed with the DSL each November, for five years after the sale of the last credit generated in Phase 1. These reports will specifically address progress toward the performance standards and any remedies taken to correct deficiencies that occurred in meeting the standards. Particular attention will be given to monitoring the status of the wetland species (FAC, FACW, and OBL) to insure they are becoming stable at the levels necessary to meet the hydrophytic vegetation criteria. Yearly photographs will be taken from the established photo points, providing representative perspectives of the mitigation area. These photo points will be set, surveyed, and shown on the as built survey. One color photo from each photo point will be included in each annual report.

The planting of the Bank will be supervised by a wetland specialist, horticulturalist, or biologist who will be hired and paid for by the Bank's sponsors, Harley Weathers and Don Causey. The monitoring program will be conducted by a Certified Wetland Delineation Specialist and a qualified biologist also hired and paid for by the Bank sponsors. As contracts and relationships tend to change overtime, the specific individuals that will be conducting the monitoring are not available at this time.

The Bank's annual review by the MBRT will be conducted each January, beginning in 1999. This will allow time for the annual monitoring report (due each November) to be prepared and disseminated prior to the MBRT meeting. Any remediation measures that might become necessary will be reviewed with the MBRT as they become necessary and will be summarized at the annual review meeting.

13.0 GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

The primary goal of Phase 1 of the Bank is to restore 7.63 acres and create 6.06 acres of seasonally flooded wetland. This will be accomplished by excavating to create ponding during the wet season (November - April), which will become a seasonally flooded meandering swale as the wet season dissipates. The upper areas and around the perimeter of the Bank will be a mixture of saturated wet meadow, palustrine scrub/shrub, and palustrine forested wetland.

The swale area will be a palustrine emergent seasonally flooded wetland (hydrogeomorphic classification depressional/precipitation-groundwater/vertical). The seasonal ponded area will be a palustrine emergent seasonally flooded wetland (hydrogeomorphic classification depressional/precipitation-groundwater/vertical). This goal will provide intact hydrologic control; an increase in water quality and wildlife habitat; and enhanced aesthetics, functions, and values similar to those found at the reference site.

13.1 HYDROLOGY

Objective: Create a connection to a seasonal source of hydrology which will result in a seasonal ponded area, meandering swale, emergent wetland, and saturated wet meadows.

Performance Standard: During the winter (November - April) the Bank will have five to nine acres of open water present (in three out of five years) with a minimum depth of 3 inches and a maximum depth of 36 inches. The remaining acreage of the Bank will be inundated or saturated within 12 inches of the surface, thus meeting the hydrology criteria for a wetland.

As the ponded area dissipates from May through June, one and one-half to two acres of the Bank will become a combination of meandering swale, emergent wetland, and saturated wet meadow. It will be inundated to a depth of 6" or saturated to within 12" of the surface throughout the month of June.

The hydrology of the Bank and reference site will be compared seasonally during high and low water periods to evaluate similarities and differences in the water levels of both sites. In the event that there is a problem with the hydrology of the Bank, the reference site will be used to determine if the hydrological problem is site specific or a wide spread occurrence such as drought conditions or possible outside hydrologic interference due to changes in surrounding land use.

Methodology: Hydrology of the site will be evaluated in late March or early April and again in late June. At four locations shown on the as-built drawing, depth of inundation and saturation will be measured in the field using piezometers and staff gauges. In addition, these areas will be visually documented with photographs corresponding to the established photopoints. The Bank will meet the standard if:

- (1) there are 5-9 acres of open water (3-36 inches depth) in late March or April, and;
- (2) there are 1.5 to 2 acres of the site that are inundated to a depth of 6" or saturated within 12 inches of the surface at the end of June.

13.2 VEGETATION

Objective: Establish native wetland vegetation in the Phase 1 area that will result in a combination of wet meadow, emergent, scrub/shrub and forested swale community.

Performance Standards: Herbaceous Layer By the end of the second growing season the wetland will have a minimum of 75% native, facultative or wetter vegetative cover in the herbaceous layer, and by year five, a minimum of 85% cover. This assumes a maximum threshold value of 30% cover by any one species throughout the entire wetland and a maximum of 20% cover of exotic or noxious species.

Over Story and Scrub/Shrub Layer Initial planting of the Bank over story and scrub/shrub species will meet or exceed 90% of the species richness of the reference site (excluding exotic or noxious species). By year two, the over story and scrub/shrub areas will have a 75% survival rate of at least 80% of the species planted. A combination of both planted and desirable native volunteers will be used to determine this survival rate. These ratios will be maintained throughout the monitoring period. No more than 20% of individuals will be exotic or noxious species and no more than 50% of individuals will be of any one scrub/shrub or over story species.

Open Water In open water areas there will be no more that a total of 20% cover of exotic or noxious species.

Methodology: A stratified systematic plot method for sampling points within the Bank and reference site will be used. Both the transects and sample plot locations will be laid out in a stratified arrangement with equal distance between each transect and sample plot.

Twenty-one sample plots for each of the sites will be assessed according to the performance standards. The sample plots for both the reference site and Bank will be placed on seven transect lines (approximately 120 feet apart) which will be placed in a systematic pattern across the entire wetland, generally perpendicular to the topography. The sampling plots for the Bank and reference site will be predetermined and systematically plotted on the transects at equal distance from each other. The starting point of the sample plots will be staggered in order to cover a broader area.

Prior to monitoring the 21 sampling plots at each site, the number of sample plots will be evaluated to determine if this number of plots is sufficient, using a species area curve. The species area curve will be used to check not only the number of sampling plots, but also the radius of the sampling plots for each of the major plant communities - herbaceous, scrub/shrub and over story. If the species area curve indicates that more sampling plots are needed they will be added. However, no fewer than 21 sampling plots for each site will be examined.

Each sample point is the center of a circular plot, the diameter of which will be a minimum of 10 feet for the herbaceous layer and 30 feet for the scrub/shrub and over story layers. The sampling plot radii distances for each plant community will be checked using the species area curve. If it is determined that a larger sampling plot size is needed, the larger distance will be used, but in no case will sampling radii of less than 10 feet (herbaceous) and 30 feet (scrub/shrub and over story) be used.

Herbaceous Layer

Each sample plot in the herbaceous layer of the Bank, will be evaluated for species, indicator status and the percent cover of each species present.

Over story and Scrub/Scrub Layers

The sampling methodology will differ from the reference site to the Bank for the scrub/shrub and over story species. An initial assessment at the reference site was conducted to establish the species present along with approximate ratios of each species. The initial monitoring information at the reference site will be used to confirm the assessment. The Bank will be monitored after planting for the species present and the survival rates for both planted and volunteer species.

After the second growing season and for the following monitoring years, the Bank will be monitored for areas with less than 25% cover. While walking the vegetation transects, 50 to 60 feet on either side of the transect will be examined looking for areas 10 feet x 10 feet or greater in size with less than 25% cover. Each area noted will be mapped and included in the monitoring report. If these areas persist, and are observed during the next monitoring, the areas will be replanted. This excludes ponded areas.

Established site photo stations will be used in each of the monitoring years to provide a visual record of the overall health of the wetland vegetation. Photo station locations are included on the Site Plan (Figure 3).

If the percent of vegetation cover, diversity and survival rates are within the specified design goals then the wetland will meet the standard.

13.3 HABITAT

Objective: Establish habitat for migratory birds, mammals, waterfowl, amphibian, and reptile species within the over story, scrub/shrub, ponded and emergent areas.

Performance Standard: No performance standards for wildlife habitat are being developed at this time. If the vegetation and hydrology performance standards are met, wildlife will begin using the area. As the Bank matures this use will increase and change over time.

Methodology:

1. The sponsor will keep a journal of all wildlife sightings within the Bank. He will note the species, approximate numbers, its location within the Bank and the approximate number of individuals.

2. Once a year, in the early morning, during the spring vegetation monitoring three census stations will be selected within the Bank with prescribed routes to be traversed between them. The census stations will be located within (or adjacent to) each of the major plant communities herbaceous, forested-shrub/scrub and open water. All direct observations or evidence such as scat, tracks etc. individual birds, mammals, amphibians, and reptiles will be recorded. Any wildlife or evidence observed while walking between census stations will be recorded as observations, but separately from observations made at the census stations. Location by plant community of the sighting and the activity of the individual observed will be recorded. Upon entering the Bank to conduct the wildlife survey, the Bank will be scanned for the presence of any species that are likely to take cover and be undetected during the remainder of the survey. Special note will be taken of open water and downed woody debris areas. In addition to the census described above, the ponds will be examined for amphibians and their egg masses.

Additionally, during any site visit, note of any wildlife species will be made. The results of the various forms of wildlife monitoring will then be included in the annual monitoring report.

14.0 CONTINGENCY PLANS

If during monitoring inspections and surveys, a failure to meet one or more performance standard is probable, an analysis will be conducted immediately to determine the cause or causes of the possible failure. This determination will be made by the mitigation bank staff which will include a wetland specialist, hydrologist, soil scientist, horticulturalist, biologist, the owners, and the construction company. This team will then recommend an immediate action plan to the MBRT that can be implemented to bring the mitigation bank effort back on track to meet the performance standards. If in the future something should occur that causes the loss of one or more of this staff, it will be the owner's responsibility to see that they are replaced to the satisfaction of the DSL and the COE. Examples of possible actions that could be taken as contingency efforts include: replanting, plant species changes, additional limited excavation, or addition of water via adjacent tile drain system not tapped into for Phase 1 (providing the water quality issues are adequately addressed.)

The owners of the bank will be ultimately responsible for completing the necessary action to ensure success of the remediation plan. Prior to the sale of credits in the bank, a \$75,000 surety bond will be posted to provide for the implementation of any remediation that may become necessary, or until such time that success is ensured and DSL and the COE agree that the bond release is warranted.

14.1 FUNDING

The owners of the proposed mitigation bank will guarantee that the necessary finances will be made available to successfully execute this mitigation plan and any contingencies which might arise through the development of a surety bond, as described in Section 19.0.

14.2 RESPONSIBLE PARTIES

The responsible parties who will implement and provide for monitoring the success of the correction actions are indicated below:

<u>Name</u>	<u>Address</u>	<u>Phone</u>
Harley & Emilie Weathers	391 Waconda Rd. NE Gervais, Oregon 97026	503-391-0188
Don Causey	P.O. Box 12488 Salem, Oregon 97309	503-580-9713

15.0 REFERENCE SITE

A reference site has been identified to establish target conditions, and for background monitoring purposes. The reference site is located at Willamette Mission State Park (See Figure 6). Permission to use Willamette Mission State Park was issued by Rob Wessburg, Park Manager. This site was selected for the following reasons:

- It is similar in topography to the Bank.
- It is a natural wetland with the same or similar Cowardin and hydrogeomorphic classifications, as those to be restored and created at the Bank site.
- The site is publicly owned and will provide guaranteed access.
- Both sites are subject to flooding pulses of the Willamette River.
- The sites have similar soil types.

An initial evaluation of the site revealed considerable amounts of reed canary grass (*Phalaris arundinacea*) in the open areas, and creeping jenny (*Lysimachia nummularia*) in the shaded areas, both of which are non-native and considered invasive species. The invasion of non-native species is a problem throughout most of the Willamette Valley and makes finding a suitable, reference site nearly impossible. Due to the disturbed nature of the herbaceous layer, the reference site will only be used to measure diversity of the scrub/shrub and overstory layers as it pertains to the diversity at the Bank.

The reference site will be monitored the first year prior to planting the Bank. This monitoring will measure the diversity of the scrub/shrub and overstory species for the reference site. This information will be used to alter the planting plan for the Bank, if necessary, to meet or exceed 90% of the same species richness as found at the reference site. This is more fully discussed in the Section 13 - Objectives, Goals and Performance Standards.

The reference site will also be used to compare seasonal water level differences. In the event that there is a problem with the hydrology of the Bank, the reference site will be used to determine if the hydrological problem is site specific or a wide spread occurrence such as drought conditions or possible outside hydrologic interference due to changes in surrounding land use.

16.0 CONSISTENCY WITH LOCAL COMPREHENSIVE PLAN

Attachment 5 includes the signed land use form from Marion County Planning Department and a copy of the approved floodway development permit required by the County. The subject property is zoned Exclusive Farm Use (EFU) in which a wetland restoration project is an outright allowed use.

17.0 WATER RIGHTS APPLICATION

An "Application for a Permit to Store Water - Expedited Review Process" has been submitted to the Oregon Water Resources Department (OWRD). The approval of this permit will allow the mitigation bank to store water for the purposes of wetland enhancement (primarily in future phases). The Bank Prospectus has been explained to the OWRD and they feel the application process will be completed in approximately six months. They voiced no concerns regarding its approval. A copy of the submitted application is included as Attachment 6.

18.0 CREDIT BANKING SYSTEM

The credit banking system for the Weathers' Mitigation Bank site is based on DSL's mitigation ratios as specified in OAR 141-85-135. A mitigation credit is the unit of measurement describing wetland impact compensation requirements. For each acre of wetland impact, one mitigation credit is required and can be purchased from the Bank to satisfy the impact requirement.

Phase 1 credits of the Bank are a combination of 13.69 acres of restoration and creation, for a total of 11.67 credits. Phase 1 credits are summarized below.

<u>Acres</u>	<u>Mitigation Type</u>	<u>Credit Ratio</u>	<u>Credits Earned</u>
7.63	Restoration	1:1	7.63
<u>6.06</u>	Creation	1½:1	<u>4.04</u>
13.69 Total			11.67 Total

Upon completion of the grading and proof of hydrologic connection, up to 30 percent of the available credits could be made available for sale (to be determined by MBRT). After the second growing season (summer 1999), the site will be monitored to determine if the Bank meets the first year's performance standards. If the standards are met, the MBRT could certify the final 70 percent of the credits for sale. A copy of the spreadsheet credit tracking system to be used is included as Attachment 7.

An Annual Report will be submitted to DSL and COE comprised of the monitoring report documenting the performance of the mitigation progress, accounting of credits earned and sold, and any other data the MBRT may request throughout the year.

19.0 PROJECT COSTS & FINANCIAL RESOURCES

One of the most prohibitive cost components of the project is already in place. There is no land acquisition involved as the owner of the land is a partner in the mitigation bank. Construction activities associated with the bank will be handled by another partner in the mitigation bank, Mr. Don Causey. Mr. Causey is chief estimator for an excavating and grading company and as such, is very familiar with the actual costs of construction.

A surety bond will be posted prior to any credits being sold in the bank. A copy of the surety bond for Phase 1 is included as Attachment 8. The amount of the surety bond is based upon an evaluation of the mitigation site and the likelihood that individual or a combination of factors influencing the bank could fail. This evaluation was based on the three main types of work to be completed on-site 1) excavation and hydrological connection, 2) restoration and creation, and 3) monitoring.

The initial excavation of the site, consisting of moving 30,000 cubic yards of material at \$1.50 per yard (\$45,000), will have occurred prior to posting the surety bond or selling any credits in the bank. Thus, we have not included costs for initial excavation in the surety bond. The volume of water available for this project makes the likelihood of hydrologic connection failure slim. If the hydrologic connection is not intact after initial excavation, the bank will not be allowed to sell any credits. If, however, during the monitoring period the hydrologic connection should need additional work, \$20,000 will be available through the surety bond.

The next major hurdle in wetland development is complying with the planting plan and ensuring plant survival rates. We have estimated that the initial costs for planting the entire 13.69 acres of restoration and creation area to be \$30,000.00 or less (approximately \$2,300 per acre).

The monitoring cost for Phase 1 of the Bank and reference site, for five monitoring years required under the surety bond (See Attachment 8) is estimated to be approximately \$5,000.00 for each full monitoring report for a total cost of \$25,000.00. It should be noted that depending on the condition of the Bank and the timing of the sale of credits, the five years of monitoring may not occur in five contiguous years with approval of the COE and DSL.

The amount of the surety bond for Phase I is \$75,000. This covers \$20,000.00 if regrading becomes necessary, \$30,000.00 for the planting and \$25,000.00 for five years of monitoring.

20.0 DRAFT LONG TERM PROTECTION DOCUMENTATION

The mitigation bank will be protected through a conservation easement that has been written to the MBRT's satisfaction. This easement was based upon the conservation easement language provided by the DSL. The conservation easement providing protection of the Bank will be perpetual in nature. A copy of the conservation easement is included in Attachment 9.

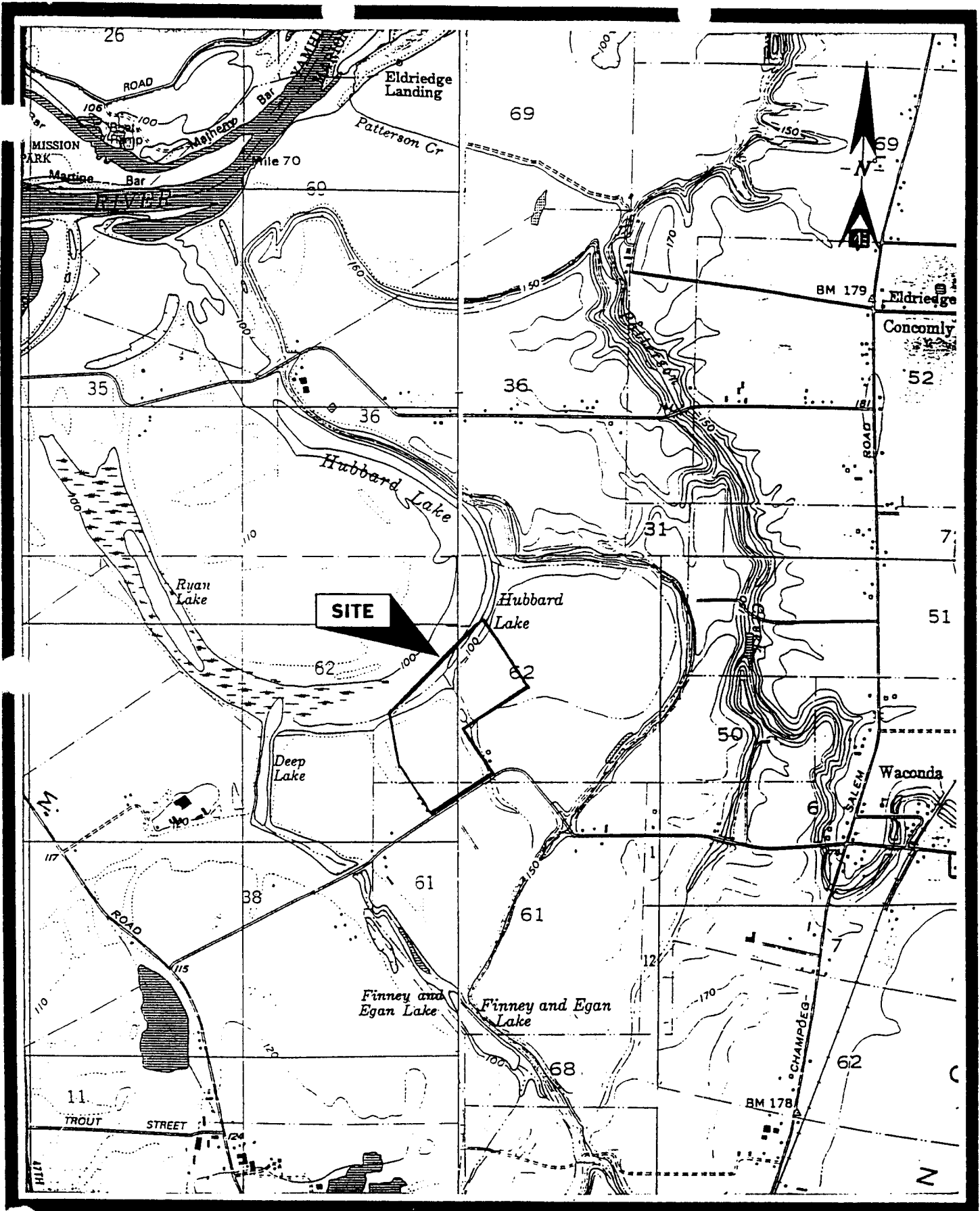


FIGURE 1

21.0 MITIGATION BANKING TEAM

Abiqua Engineering Inc. has brought together an impressive team of individuals to develop the Weathers' Mitigation Bank Team. The following summarizes each individuals' input to the process and Attachment 10 includes resumes of the key individuals and companies.

Mr. Pat Thompson - Wetland Specialist

Mr. Thompson is a wetland specialist for AEI and is the project manager. He has overseen the establishment of the mitigation banking team, creation of the prospectus document and completion of the final banking instrument. He also conducted the on-site wetland delineation and will oversee all future site activities.

Ms. Carla Cudmore, REP - Environmental Analyst

Ms. Cudmore is a Registered Environmental Professional who has worked within the environmental regulatory field for 15 years obtaining permits and reporting for an extensive array of projects. Ms. Cudmore has assisted in all phases of the bank's creation, development of the prospectus document and completion of the final banking instrument.

Mr. Harley Weathers - Owner and Partner

Mr. Weathers brings 17 years of knowledge from farming the Bank site. He has in-depth knowledge of the soils, the location of "wet" spots, the drain tile systems, seasonal changes in the hydrology, adjacent farmers and their practices, and the wildlife. His knowledge and associations with neighboring farmers has allowed a cooperation of the area farmers to occur that would not have been possible otherwise.

Mr. Don Causey - Partner

Mr. Causey is chief estimator for an excavating and grading company. His knowledge and skills in earth moving and estimating have given the partners a very real idea of the costs involved in the development of the bank. Additionally, Mr. Causey has been and will continue to contact various governmental, business and private individuals regarding selling the credits in the bank. Finally, he will oversee all construction activities on the site.

Dr. Richard Novitzki, Ph.D. - Professional Hydrologist

Mr. Novitzki brings over 30 years of civil engineering and hydrological experience to the team. He is in charge of determining the past and present hydrology of the site and what the future hydrology should be in order to recreate the lost wetlands and establish new ones.

Dr. Gerald Simonson, Ph.D. - Soil Scientist

Dr. Simonson has worked as a soil scientist his entire professional career. He has participated in the review of the SCS hydric soils criteria and the Oregon hydric soil list. Dr. Simonson verified the soils portion of the wetland delineation for the site to classify the soils as hydric or upland. This is of particular importance to the bank, as a portion of the site is prior converted wetland, with the soil characteristics being one of the only remnant wetland indicators.

22.0 BUFFER AREA

As an update to the original Final Instrument dated July 1998, a buffer has been added to the Bank. The buffer area surrounds the updated Bank boundary as is shown on Figure 7 - Revised Site Map. The updated Bank area totals 9.69 acres and the buffer area encompasses 3 acres for a total of 12.69 acres of wetland and buffer. The buffer is an undeveloped area, extending a minimum of 10 feet up to 300 feet wide around the Bank. The buffer will be maintained in a natural desirable vegetated state (per the performance standards) and will be included and protected under the restrictive covenant.

The buffer area will be evaluated after the Bank's fifth year for possible 10:1 buffer credits.

22.1 BUFFER AREA PLANTING PLAN

The area that is now in the three acre buffer was originally within the Bank and as such was planted according to the original planting plan for the Bank. Thus, the planting plan for the Bank applies to the buffer as well. The primary difference in the results of the planting is that due to the dryer nature of the buffer the herbaceous layer has more naturally occurring upland species than the remainder of the Bank.

A mixed herbaceous layer consisting of both planted and naturally recruited species will cover the buffer. A mixture of scrub/shrub and overstory species will be scattered throughout the buffer area in a random fashion to closely imitate a natural environment. Natural clumping and dispersing of these species will be encouraged. As the buffer area matures areas of shrub/scrub and overstory will likely overtake the underlying herbaceous areas.

22.2 BUFFER AREA PERFORMANCE STANDARD

Areas designated as "buffer areas" will be dominated (more than 50% cover) by desirable herbaceous species. Those areas to be used for possible maintenance access will only be planted with herbaceous species. No more than 15% of individuals will be invasive, undesirable species*.

The over story and scrub/shrub layer was initially planted to meet or exceed 90% of the species richness of the reference site (excluding exotic or noxious species). By year two, the over story and scrub/shrub areas will have at least a 75% survival rate of at least 80% of the species planted. A combination of both planted and desirable native recruitments will be used to determine this survival rate. These ratios will be maintained throughout the monitoring period. No more than 15% of individuals will be noxious, undesirable species as listed in Attachment 11.

22.3 METHODOLOGY

Random sampling plots within the buffer area will be used. Six sample plots will be assessed according to the performance standards.

Each sample point is the center of a circular plot, the diameter of which will be a minimum of ten feet for the herbaceous layer. Each sample plot will be evaluated for species and the percent cover of herbaceous species. The number of individual species (forest and scrub/shrub) within a 30 feet diameter (or to the buffer area boundary whichever is smaller) will be surveyed for survival rates.

If the vegetation cover is within the specified design goals, then the wetland buffer will meet the standard.